

# DEEPWATER PORT ACT OF 1973

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JOINT HEARINGS  
BEFORE THE  
SPECIAL JOINT SUBCOMMITTEE ON  
DEEPWATER PORTS LEGISLATION  
OF THE  
COMMITTEES ON COMMERCE,  
INTERIOR AND INSULAR AFFAIRS,  
AND PUBLIC WORKS  
UNITED STATES SENATE  
NINETY-THIRD CONGRESS

FIRST SESSION

ON

**S. 1751**

TO AMEND THE OUTER CONTINENTAL SHELF LANDS ACT  
AND TO AUTHORIZE THE SECRETARY OF THE INTERIOR  
TO REGULATE THE CONSTRUCTION AND OPERATION OF  
DEEPWATER PORT FACILITIES

**S. 2232**

TO PROMOTE COMMERCE AND PROTECT THE ENVIRON-  
MENT BY ESTABLISHING PROCEDURES FOR THE SITING,  
CONSTRUCTION, AND OPERATION OF DEEPWATER PORT  
FACILITIES OFF THE COAST OF THE UNITED STATES, AND  
FOR OTHER PURPOSES

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JULY 23, 24, 25; AUGUST 1; OCTOBER 2 AND 3, 1973

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Part 1

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Serial No. 93-59

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# DEEPWATER PORT ACT OF 1973

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MONDAY, JULY 23, 1973

U.S. SENATE,  
COMMITTEES ON COMMERCE,  
PUBLIC WORKS, AND  
INTERIOR AND INSULAR AFFAIRS,  
SPECIAL JOINT SUBCOMMITTEE ON DEEPWATER PORTS LEGISLATION,  
*Washington, D.C.*

The committee met at 10:10 a.m. in room 5110, New Senate Office Building, Hon. J. Bennett Johnston presiding.

## OPENING STATEMENT BY SENATOR JOHNSTON

Senator JOHNSTON. This morning we begin hearings on S.1751, the Deepwater Port Facilities Act of 1973. The bill was proposed in the President's energy message to the Congress and has been referred jointly to the Committees on Interior and Insular Affairs, Commerce, and Public Works. The hearings being held this morning are being conducted before a joint subcommittee of those three committees.

The issues relating to the development of deepwater ports—sometimes called “superports”—are numerous and complex. It is testimony in itself to the significance and diversity of the issues surrounding any discussion of deepwater ports that this legislation has been referred jointly to three committees of the Senate and that this special joint subcommittee has been established to consider the many problems connected with this very important issue.

The energy shortage we face, with its crisis potentials for the future, has been emphasized many times in the recent past. With heavier automobiles and more highly heated buildings than our European friends, we in the United States have been consuming per capita three times the energy of Western Europe. Although energy consumption in the United States has increased by more than 50 percent since 1960, domestic energy supplies have not increased sufficiently to meet the increased demand. Indeed, domestic production of crude oil and gas liquids has been declining since 1970. As a result, this country increasingly has had to turn to imported petroleum to fill the growing gap between domestic supply and demand. Projections of future domestic supply and demand suggest that the gap shortly will become substantially greater than presently exists, with some predicting that we may be importing as much as 60 percent of our petroleum by 1980. Inasmuch as the greatest supplies of petroleum for import to the United States lie in the Middle Eastern

countries, it is clear that waterborne petroleum imports will assume a major role in meeting national energy needs during the years ahead.

It is evident that the prospect of such a major role for waterborne petroleum imports was a major factor leading to the introduction of S. 1751. There are, however, I believe, other important factors as well, and I should like to note them briefly at this time.

First, supertankers are emerging as an increasingly important component of the world tanker fleet, and it is estimated that by 1980 as many as 130 supertankers will be transporting oil from the Middle Eastern countries to the United States.

Second, supertankers, as opposed to numerous smaller tankers, may offer significant economic and environmental advantages over the use of conventional size tankers in the transportation of imported petroleum.

Third, the United States presently has few if any ports capable of receiving supertankers of drafts thought necessary to meet this country's projected future energy needs.

Fourth, the development of offshore tanker terminals would allow supertankers to deliver petroleum imports to this country while avoiding costs and environmental risks of dredging coastal channels, harbors, and ports.

Fifth, there presently is no clear legal framework within which the Federal Government may authorize the development of offshore deepwater ports or exercise control over their use.

The task this special joint subcommittee begins today is not an easy one. Various institutions, organizations, and individuals in both the public and private sectors have addressed themselves to one or more of the issues with which we will be dealing in the consideration of this bill. The great number of Federal agencies alone that have an interest in, and detailed knowledge of, various matters relating to the development of deepwater ports demonstrates the broad range of subjects that must be considered in developing appropriate policies to deal with this important issue. While the issues are diverse and complex, however, the matter is one of both great urgency and significance. The decisions ultimately made in this area will have long-term implications, not only with respect to the patterns of energy distribution and use that will develop as a result of those decisions, but also with respect to the environmental and economic consequences of our action. It is, therefore, important, I believe, that this subcommittee consider the full range of the issues raised by this proposed legislation so that the action we ultimately take will deal effectively with the diverse interests affected by this important legislation.

What we have before us today is an opportunity for those of us in Government, in cooperation with those in the private sector, to develop resourceful and original solutions to one of the most important problems that our Nation faces. I am confident that the testimony that we will be hearing during the next 3 days will provide the members of this subcommittee with important guidance in finding those solutions.

[The bills and agency comments follow:]

93<sup>d</sup> CONGRESS  
1<sup>st</sup> Session

# S. 1751

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IN THE SENATE OF THE UNITED STATES

MAY 8, 1973

Mr. JACKSON (for himself, Mr. BAKER, Mr. COTTON, Mr. FANNIN, Mr. JOHNSTON, and Mr. RANDOLPH) (by request) introduced the following bill; which was read twice and, by unanimous consent, referred to the Committees on Interior and Insular Affairs, Public Works, and Commerce

---

## A BILL

To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities.

1        *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*  
3 That this Act may be cited as the "Deepwater Port Facilities  
4 Act of 1973".

5        SEC. 2. (a) Section 5 (a) (1) of the Outer Continental  
6 Shelf Lands Act is amended by adding the following sentence  
7 at the end: "The Secretary of the Interior shall prescribe such  
8 rules and regulations as may be necessary to accommodate the  
9 exploration and exploitation of the oil and gas and other min-

1 eral resources of the Outer Continental Shelf with the con-  
2 struction and operation of deepwater port facilities licensed by  
3 him.”

4 (b) Section 5 (c) of the Outer Continental Shelf Lands  
5 Act is amended by deleting the words “produced from said  
6 submerged lands in the vicinity of the pipeline”.

7 TITLE I

8 SEC. 101. (a) Congress finds and declares that:

9 (1) Onshore port facilities in the United States are be-  
10 coming increasingly congested as the United States trade  
11 in fuel and other commodities increases. Such facilities are  
12 not able to accommodate some of the large vessels which are  
13 being used increasingly in ocean shipping.

14 (2) The national interest in economic uses of resources,  
15 environmental protection, transportation safety, competitive  
16 advantage in world trade, and security in international rela-  
17 tions is best served by the use of larger vessels and develop-  
18 ment and operation of United States deepwater port facil-  
19 ities that can accommodate them.

20 (3) The environmental dangers and safety hazards in-  
21 herent in the increasing traffic in United States harbors,  
22 ports, and coastal areas make it desirable that appropriate  
23 offshore deepwater port facilities be constructed to protect  
24 the Nation's citizens, coastlines, and marine environment

1 from pollution and other dangers to life, health, and prop-  
2 erty.

3 (4) The construction and operation of such deepwater  
4 port facilities by United States citizens under Federal license  
5 in accordance with this Act would be a reasonable use of  
6 the high seas in accordance with international law.

7 (5) The construction and operation of deepwater port  
8 facilities off the coast of the United States by United States  
9 citizens should be subject to Federal license and regulation,  
10 and closely coordinated with the regulation of the explorat-  
11 tion and exploitation of natural resources under the Outer  
12 Continental Shelf Lands Act in order to assure an adequate  
13 accommodation of such uses.

14 (b) The purpose of this Act is to authorize and regulate  
15 the construction and operation of deepwater port facilities in  
16 accordance with the policy of this Act.

17 (c) Nothing in this Act shall be deemed to affect the  
18 legal status of the high seas, the superjacent airspace, or the  
19 seabed and subsoil, including the Continental Shelf.

20

#### DEFINITIONS

21 SEC. 102. As used in this Act the term—

22 (a) "Secretary" means Secretary of the Interior unless  
23 otherwise designated.

24 (b) "Deepwater port facility" means a facility con-

1   structed off the coast of the United States, and beyond three  
2   nautical miles from such coast, for the principal purpose of  
3   providing for the transshipment of commodities between  
4   vessels and the United States. It includes all associated  
5   equipment and structures beyond three nautical miles from  
6   such coast, such as storage facilities, pumping stations, and  
7   connections to pipelines, but does not include pipelines.

8       (c) "United States" or "State" includes the several  
9   States, the District of Columbia, any territory or possession  
10  of the United States, and the Commonwealth of Puerto  
11  Rico.

12       (d) "Citizen of the United States" means any citizen of  
13  the United States; any State or political subdivision of a  
14  State, or any private, public, or municipal corporation created  
15  by or under the laws of the United States or any State.

16       (e) "Application" means any application filed under  
17  this Act for a license to construct, operate, or make signif-  
18  icant alterations to a deepwater port facility, or for a renewal  
19  or modification of such license.

20       SEC. 103. (a) No citizen of the United States may con-  
21  struct or operate or make any significant addition to a deep-  
22  water port facility without first receiving a license from the  
23  Secretary. No commodities or other materials may be trans-  
24  ported between the United States and a deepwater port

## 5

1 facility unless such deepwater port facility is licensed under  
2 this Act.

3 (b) The Secretary is authorized to issue to any citizen  
4 of the United States a license to construct or operate a deep-  
5 water port facility if he first determines that:

6 (1) the applicant is financially responsible and has  
7 demonstrated his ability and willingness to comply with  
8 applicable laws, regulations, and license conditions;

9 (2) the construction and operation of the proposed  
10 deepwater port facility will not unreasonably interfere  
11 with international navigation or other reasonable uses  
12 of the high seas, and is consistent with the international  
13 obligations of the United States; and

14 (3) The facility will be located, constructed, or  
15 operated in a manner which will minimize or prevent  
16 any adverse significant environmental effects. In making  
17 the determination required by this paragraph, the Sec-  
18 retary shall consider all significant aspects of the facility  
19 including any connecting pipelines in relation to—

20 (A) effects on marine organisms;

21 (B) effects on water quality;

22 (C) effects on ocean currents and wave pat-  
23 terns and on nearby shorelines and beaches;

## 6.

1 (D) effects on alternative uses of the oceans  
2 such as fishing, aquaculture, and scientific research;

3 (E) susceptibility to damage from storms and  
4 other natural phenomena; and

5 (F) effects on esthetic and recreational values.

6 (c) The Secretary shall not limit the number of licenses  
7 or deny licenses on grounds of alleged economic effects of  
8 deepwater port facilities on the commodity and transporta-  
9 tion markets served by them or by other port facilities.

10 (d) Licenses issued under this section shall be for a  
11 term of no longer than thirty years, with preferential right  
12 in the licensee to renew under such terms and for such period  
13 not to exceed thirty years as the Secretary determines is  
14 reasonable.

15 (e) The Secretary shall consult with the Governor of  
16 any State off whose coasts the facility is proposed to be  
17 located to insure that the operation of the facility and di-  
18 rectly related land-based activities would be consistent with  
19 the State land-use program.

20 (f) The grant of a license under this section shall not  
21 operate as a defense to any civil or criminal action for viola-  
22 tion of the antitrust laws of the United States.

23 (g) Licenses issued hereunder may be transferred after  
24 the Secretary determines that the transferee meets the re-  
25 quirements of this Act.

1       (b) The Secretary shall not issue a license hereunder in  
2 any case where the President determines that it would be  
3 contrary to the national security of the United States.

4       SEC. 104. (a) The Secretary is authorized to issue rea-  
5 sonable rules and regulations governing application for and  
6 issuance of licenses and the construction and operation of  
7 deepwater port facilities under this Act. Such rules and regu-  
8 lations shall be issued in accordance with section 553 of title 5  
9 of the United States Code without regard to the exceptions  
10 contained in subsection (a) thereof.

11       (b) In carrying out all of his functions under this Act,  
12 the Secretary shall consult with all interest or affected Federal  
13 agencies. The Secretary is authorized to utilize on a reim-  
14 burstable basis the full resources of the Federal Government in  
15 ocean engineering and undersea technology for the purpose of  
16 determining standards and criteria for construction of all facil-  
17 ities licensed under this Act.

18       (c) An application filed with the Secretary for a license  
19 under this Act shall constitute an application for all Federal  
20 authorizations required for construction and operation of a  
21 deepwater port facility. The Secretary shall consult with  
22 other agencies to insure that the applications contain all  
23 information required by the agencies. The Secretary will  
24 forward a copy of the application to those Federal agencies  
25 with jurisdiction over any of the construction and operation

1 and will not issue a license under this Act until he has been  
2 notified by such agencies that the application meets the  
3 requirements of the laws which they administer. Hearings  
4 held pursuant to this Act shall be consolidated insofar as  
5 practicable with hearings held by other agencies.

6 (d) The provisions of this Act shall in no way alter or  
7 otherwise affect the jurisdiction of the Council on Environ-  
8 mental Quality or the requirements of the National Envi-  
9 ronmental Policy Act of 1969 except that a single detailed  
10 environmental impact statement shall be prepared in con-  
11 nection with each license by the Secretary and circulated  
12 in compliance with the guidelines of the Council on Envi-  
13 ronmental Quality. Such statement shall fulfill the responsi-  
14 bilities of all participating Federal agencies under section  
15 102 (2) (C) of that Act with respect to the proposed  
16 facilities.

17 **PROCEDURES FOR ISSUING LICENSE**

18 **SEC. 105. (a)** The Secretary shall prescribe by regu-  
19 lation the procedures, including appropriate charges, for  
20 the submission and consideration of applications for licenses.  
21 Each application shall contain such financial, technical, and  
22 other information to support the determinations required by  
23 section 103 (b) of this Act as the Secretary may by regula-  
24 tion require.

25 (b) Before granting any license the Secretary shall pub-

1 lish in the Federal Register a notice containing a brief de-  
2 scription of the proposed facility and information as to where  
3 the application and supporting data required by subsection  
4 (a) may be examined and given interested persons at least  
5 ninety days for the submission of written data, views, or  
6 arguments relevant to the grant of the license, with or with-  
7 out opportunity for oral presentation. Such notice shall also  
8 be furnished to the Governor of each State which may be  
9 significantly affected by the proposed facility, and the Sec-  
10 retary shall utilize such additional methods as he deems  
11 reasonable to inform interested persons and groups about the  
12 proceeding and to invite comments therefrom.

13 (c) If the notice published under subsection (b) did not  
14 provide for a public hearing, then upon the request of any in-  
15 terested person when in the judgment of the Secretary sub-  
16 stantial objections have been raised to the grant or the terms  
17 of the license the Secretary shall hold one or more public  
18 hearings to consider such objections. Where such objections  
19 relate to the proposed site of the facility, at least one such  
20 hearing shall be held in the vicinity of the proposed site.

21 (d) Where the Secretary concludes from the comments  
22 and data submitted pursuant to subsections (b) and (c) that  
23 there exist one or more specific and material factual issues  
24 which may be resolved by an evidentiary hearing, he may di-  
25 rect that such issues be submitted to a supplemental hearing

1 before a presiding officer designated for that purpose. Such  
2 officer shall have authority to preclude repetitious and cumu-  
3 lative testimony, to require that direct testimony be submitted  
4 in advance in written form, and to permit cross-examination  
5 only to the extent necessary and appropriate in view of the  
6 nature of the issues. After the hearing the presiding officer  
7 shall submit to the Secretary a report of his findings and  
8 recommendations, and the participants in the hearing shall  
9 have an opportunity to comment thereon.

10 (c) The Secretary's decision granting or denying the  
11 license shall be in writing and shall include or be preceded by  
12 an environmental impact statement, where required by section  
13 102 of the National Environmental Policy Act, a discussion  
14 of the issues raised in the proceeding and his conclusions  
15 thereon, and, where a hearing was held pursuant to subsec-  
16 tion (d), findings on the issues of fact considered at such  
17 hearing.

18 (f) The provisions of sections 554, 556, and 557 of title  
19 5, United States Code, are not applicable to proceedings  
20 under this section. Any hearing held pursuant to this section  
21 shall not be deemed a hearing provided by statute for pur-  
22 poses of section 706 (2) (E) of title 5, United States Code.

23 SEC. 106. (a) Any person adversely affected by an order  
24 of the Secretary granting or denying a license may, within  
25 sixty days after such order is issued, seek judicial review

1 thereof in the United States court of appeals for the circuit  
2 nearest to which the facility is sought to be located. A copy of  
3 the petition shall be forthwith transmitted by the clerk of  
4 the court to the Secretary or other officer designated by him  
5 for that purpose. The Secretary thereupon shall file in the  
6 court the record of the proceedings on which the Secretary  
7 based his order, as provided in section 2112 of title 28. This  
8 record shall consist of—

9 (1) The application, the notice published pursuant to  
10 section 105 (b), and the information and documents referred  
11 to therein;

12 (2) The written comments and documents submitted in  
13 accordance with the agency rules by any person, including  
14 any other agency and any agency advisory committee, at  
15 any stage of the proceeding;

16 (3) The transcript of any hearing held pursuant to sec-  
17 tion 105 (c) or (d); and the presiding officer's report, if any;  
18 and

19 (4) The Secretary's decision and accompanying docu-  
20 ments as required by section 105 (e).

21 (b) If the petitioner applies to the court for leave to  
22 adduce additional evidence, and shows to the satisfaction of  
23 the court that such additional evidence is material and that  
24 there were reasonable grounds for the failure to adduce such  
25 evidence in the proceeding before the Secretary, the court

1 may order such additional evidence (and evidence in re-  
2 buttal thereof) to be taken before the Secretary, and to be  
3 adduced in such manner and upon such terms and conditions  
4 as to the court may seem proper. The Secretary may modify  
5 his findings as to the facts, or make new findings, by rea-  
6 son of the additional evidence so taken, and he shall file  
7 such modified or new findings, and his recommendation, if  
8 any, for the modification or setting aside of his original  
9 order, with the return of such additional evidence.

10 (c) Upon the filing of the petition referred to in sub-  
11 section (a), the court shall have jurisdiction to review the  
12 order in accordance with section 706 of title 5, United  
13 States Code, and to grant appropriate relief as provided in  
14 such section.

15 **CONDITIONS IN LICENSES**

16 **SEC. 107.** The Secretary is authorized to include in any  
17 license granted under this Act any conditions he deems nec-  
18 essary to carry out the purposes of this Act. Such conditions  
19 may include but need not be limited to:

20 (1) Such fees as the Secretary may prescribe as reim-  
21 bursement for the cost of Federal activities occasioned by  
22 the application for licensing, licensing, development, and op-  
23 eration of the deepwater port facility.

24 (2) Such measures as the Secretary may prescribe to  
25 meet United States international obligations.

## 13:

1 (3) Such measures as the Secretary may prescribe to  
2 prevent or minimize the pollution of the surrounding waters.

3 (4) Such provisions as the Secretary may prescribe for  
4 the temporary storage of hazardous substances.

5 (5) Conditions designed to assure that the operation  
6 of the deepwater port facility will not substantially lessen  
7 competition to tend to create a monopoly. Such conditions  
8 shall include a requirement of nondiscriminatory access at  
9 reasonable rates.

10 (6) Provisions requiring that if a license is revoked or  
11 expires and is not reissued the licensee will be responsible  
12 for rendering the deepwater port facility harmless to navi-  
13 gation and the environment.

## 14 CIVIL PENALTIES

15 SEC. 108. (a) Any licensee who violates any condition  
16 of his license or any rule or regulation of the Secretary issued  
17 under this Act may be assessed a civil penalty by the Secre-  
18 tary, in a determination on the record after opportunity for  
19 a hearing, of not more than \$10,000 for each day during  
20 which such violation occurs.

21 (b) A licensee aggrieved by a final order of the Secre-  
22 tary assessing a penalty under this section may within sixty  
23 days after such order is issued seek judicial review thereon  
24 in the United States district court for the judicial district  
25 nearest to which the licensee's facility is located or in the

1 United States District Court for the District of Columbia,  
2 and such court shall have jurisdiction of the action without  
3 regard to the amount in controversy. Judicial review of the  
4 Secretary's determination shall be in accordance with sec-  
5 tion 706 of title 5, United States Code.

6 .(c) Penalties assessed pursuant to this section may be  
7 collected in an action by the United States, but the order of  
8 the Secretary shall not be subject to review otherwise than  
9 as provided in subsection (b).

10 **CRIMINAL PENALTIES**

11 **SEC. 109.** Any person who willfully and knowingly  
12 violates any provision of this Act or of any rule, regulation,  
13 restriction, or condition made or imposed by the Secretary  
14 under the authority of this Act shall, in addition to any other  
15 penalties provided by law, be punished by a fine of not more  
16 than \$25,000 for each day during which such offense occurs.

17 **REVOCAION OR SUSPENSION OF LICENSE**

18 **SEC. 110. (a)** Whenever a licensee fails to comply with  
19 any provision of this Act or any rule, regulation, restriction,  
20 or condition made or imposed by the Secretary under the au-  
21 thority of this Act or fails to pay any civil penalty assessed  
22 by the Secretary under section 108 (except where a proceed-  
23 ing for judicial review of such assessment is pending) the  
24 Secretary may file an appropriate action in a United States  
25 district court to (1) suspend operations under the license or

1 (2) if such failure is knowing and continues for a period of  
2 thirty days after the Secretary mails notice of such failure by  
3 registered letter to the licensee at his record post office ad-  
4 dress, revoke such license: *Provided*, That when such failure  
5 would in the judgment of the Secretary create a serious threat  
6 to the environment, he shall have the authority to suspend op-  
7 erations under the license forthwith. The licensee may seek  
8 judicial review of the Secretary's action in the United States  
9 district court for the district nearest to the deepwater port  
10 facility or in the United States District Court for the District  
11 of Columbia within sixty days after the Secretary takes such  
12 action.

13

## APPLICABLE LAWS

14 SEC. 111. (a) The Constitution and the laws and  
15 treaties of the United States shall apply to deepwater  
16 port facilities licensed under this Act and insofar as con-  
17 sistent with international law to activities connected with  
18 the operation and use of such deepwater port facilities  
19 in the same manner as if the facilities were located in the  
20 navigable waters of the United States. Foreign-flag vessels  
21 or natural or juridical persons who are not nationals of the  
22 United States using such facilities shall be deemed to consent  
23 to the jurisdiction of the United States for the purposes of this  
24 Act. To the extent they are applicable and not inconsistent

1 with the Act or with other Federal laws and regulations now  
2 in effect or hereafter adopted, the civil and criminal laws of  
3 the nearest State are declared to be the law of the United  
4 States for such facility. All such applicable laws shall be ad-  
5 ministered and enforced by the appropriate officers and courts  
6 of the United States. State taxation laws shall not apply to  
7 such facility, but this shall not affect the right of a State to  
8 tax its citizens or residents.

9 (b) The laws of the United States referred to in the pre-  
10 vious subsection include but are not limited to the following:

11 (1) Sections 301, 306, 307, 308, 309, 310, 311, 312,  
12 402, 403, 404, 504, and 505 of the Federal Water Pollution  
13 Control Act, Public Law 92-500, 86 Stat. and sections 111,  
14 112, 113, 114, 303, and 304 of the Clean Air Act (42  
15 U.S.C. 1857c-6 through 1857c-9 and 1857g through k):  
16 *Provided*, That to the extent any of the foregoing provisions  
17 require or presuppose action on the part of any State, such  
18 action may, as appropriate, be waived or taken by the  
19 Administrator of EPA: *And provided further*. That a deep-  
20 water port facility licensed under this Act shall not be con-  
21 sidered "a vessel or other floating craft" for purposes of  
22 section 502(12) of the Federal Water Pollution Control  
23 Act.

24 (2) Sections 9-20 of the Rivers and Harbors Act of  
25 March 3, 1899 as amended (30 Stat. 1151; 33 U.S.C. 401,

1 403, 404, 406, 407, 408, 409, 411, 412, 413, 414, and  
2 415).

3 (3) The Ports and Waterways Safety Act of July 10,  
4 1972, Public Law 92-340 (86 Stat. 424).

5 (4) Acts to establish loadlines for vessels, March 2,  
6 1929, as amended (45 Stat. 1492) and August 27, 1935, as  
7 amended (49 Stat. 888; 46 U.S.C., chapter 2a).

8 (5) Federal Boat Safety Act of August 10, 1971, Pub-  
9 lic Law 92-75 (85 Stat. 213; 46 U.S.C., chapter 33, secs.  
10 1451-1589).

11 (6) Vessel Bridge to Bridge Radio Telephone Act,  
12 August 4, 1971, Public Law 92-63 (85 Stat. 164; 33  
13 U.S.C., chapter 24, secs. 1201-1208).

14 (7) Sections (a) and (b) of Revised Statute 4370, as  
15 amended; Revised Statute 5294, as amended; sections 7, 8,  
16 and 9 of the Act of June 19, 1886, as amended (24 Stat.  
17 81); section 27 of the Merchant Marine Act of 1920 (41  
18 Stat. 999), as amended (46 U.S.C. 7, 289, 316(a),  
19 316(b), 319, 320, and 883).

20 (8) As they relate to pipeline safety, the Acts of  
21 June 25, 1948, as amended (62 Stat. 738; 18 U.S.C. 831),  
22 and August 12, 1968, as amended (82 Stat. 720; 49  
23 U.S.C. 1671, Public Law 90-481).

24 (9) The Marine Protection, Research, and Sanctuaries  
25 Act of 1972 (Public Law 92-532).

1 (c) The Secretary is authorized to promulgate such  
2 other regulations governing health and welfare of persons  
3 using deepwater port facilities licensed under this Act as  
4 he deems necessary.

5 SEC. 112. Facilities connected to a deepwater port  
6 facility licensed under this Act such as pipelines and cables,  
7 which extend above or into submerged lands or waters sub-  
8 ject to the jurisdiction of any State or possession of the  
9 United States, when in such waters shall be subject to all  
10 applicable laws or regulations of such State or possession  
11 to the extent not inconsistent with Federal law or regulation.  
12 Nothing in this Act shall be construed as precluding a State  
13 from imposing, within its jurisdiction, more stringent envir-  
14 onmental or safety regulations.

15 SEC. 113. The customs and navigation laws administered  
16 by the Bureau of Customs, except those specified in section  
17 111 (b) (7) herein, shall not apply to any deepwater port  
18 facility licensed under this Act; but all materials used in the  
19 construction of any such deepwater port facility and con-  
20 nected facilities such as pipelines and cables shall first be  
21 made subject to a consumption entry in the United States  
22 and duties deposited thereon. However, all United States  
23 officials, including customs officials, shall at all times be  
24 accorded reasonable access to deepwater port facilities li-  
25 censed under this Act for the purpose of enforcing laws

1 under their jurisdiction or carrying out their responsibilities.

2       SEC. 114. The Secretary of State, in consultation with

3 appropriate Federal agencies, shall seek appropriate inter-

4 national measures regarding navigation in the vicinity of

5 deepwater port facilities.

93<sup>d</sup> CONGRESS  
1<sup>st</sup> Session

# S. 2232

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IN THE SENATE OF THE UNITED STATES

JULY 23, 1973

Mr. HOLLINGS (for himself and Mr. MAGNUSON) introduced the following bill;  
which was read twice and referred to the Committee on Commerce

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## A BILL

To promote commerce and protect the environment by establishing procedures for the siting, construction, and operation of deepwater port facilities off the coast of the United States, and for other purposes.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled.*

3       That this Act may be cited as the "Offshore Marine Environ-  
4       ment Protection Act of 1973".

5       SEC. 2. The Ports and Waterways Safety Act of 1972 (86  
6       Stat. 424) is amended by adding at the end thereof the follow-  
7       ing new title:

1 "TITLE III—SITING, CONSTRUCTION, AND OPERA-  
2 TION OF DEEPWATER PORT FACILITIES IN  
3 THE OFFSHORE MARINE ENVIRONMENT

4 "DECLARATION OF POLICY

5 "SEC. 301. (a) FINDINGS.—The Congress finds and de-  
6 clares that—

7 " (1) plans now exist for the construction and opera-  
8 tion of large-scale deepwater port facilities off the coasts  
9 of the United States;

10 " (2) to protect human health and safety, to prevent  
11 damage to the marine environment, and to assure uniform  
12 standards, a Federal regulatory mechanism is needed to  
13 oversee the siting, construction, and operation of such deep-  
14 water port facilities;

15 " (3) the planned development of such deepwater  
16 port facilities involves and affects interstate and foreign  
17 commerce, fisheries and wildlife, and navigation and  
18 will affect United States citizens and the marine environ-  
19 ment over a broad geographical area;

20 " (4) any such deepwater port facility which is con-  
21 structed and operated will necessarily generate concur-  
22 rent development in the coastal zone of adjacent coastal  
23 States; and

24 " (5) there is a need to insure that each coastal  
25 State has an approved coastal management program to

1 regulate, control, and direct land use developments  
2 within the coastal zone so that Federal and State cooper-  
3 ation will effectively manage and protect both the coastal  
4 and marine environments.

5 “(b) PURPOSES.—Congress declares that the purpose of  
6 this title is to authorize and regulate the siting, construction,  
7 and operation of deepwater port facilities and to provide for  
8 the fullest possible protection of the marine and coastal en-  
9 vironment to prevent any adverse impact which might occur  
10 as a direct or indirect consequence of the development of  
11 such facilities.

12 “DEFINITIONS

13 “SEC. 302. As used in this title—

14 “(1) ‘Application’ means any application submitted un-  
15 der this title for a license to construct or operate a deepwater  
16 port facility, including renewal, modification, and certifica-  
17 tion as to environmental features of any such license or appli-  
18 cation for license.

19 “(2) ‘Coastal State’ means any State of the United States  
20 in or bordering on the Atlantic, Pacific, or Arctic Oceans, Gulf  
21 of Mexico, Long Island Sound, or the Great Lakes, and includes  
22 Puerto Rico, the Virgin Islands, Guam, American Samoa, and  
23 the District of Columbia.

24 “(3) ‘Deepwater port facility’ means any manmade struc-  
25 ture, either fixed or floating, located in the navigable waters of

1 the United States more than five hundred feet to the seaward  
2 of the mean low-water mark or located beyond the territorial  
3 sea of the United States and which is intended for use as a port  
4 or terminal for transportation of goods and commodities from  
5 vessels to shoreside.

6 “(4) ‘Citizen of the United States’ means any private  
7 person, individual, association, corporation, or entity; or any  
8 officer, employee, agent, department, agency, or instrumental-  
9 ity of the Federal Government or of the government of any  
10 State or political subdivision thereof.

11 “(5) ‘Licensee’ means a person to whom a license is issued  
12 pursuant to this Act to construct or operate a deepwater  
13 port facility.

14 “(6) ‘Marine environment’ includes, but it is not limited  
15 to, coastal navigable waters, the fish and wildlife resources of  
16 the coastal areas and coastal zone, and the recreational and  
17 scenic values of such waters and resources.

18 “(7) ‘Secretary’ means, except as otherwise specifically  
19 provided, the Secretary of the Department in which the Coast  
20 Guard is operating.

21 “(8) ‘United States’ includes the several States, the Dis-  
22 trict of Columbia, the Commonwealth of Puerto Rico, the  
23 territories and possessions of the United States, and the Trust  
24 Territory of the Pacific Islands.

1 "LICENSE TO CONSTRUCT OR OPERATE DEEPWATER PORT  
2 FACILITIES

3 "SEC. 303. (a) GENERAL.—No citizen of the United  
4 States may construct or operate a deepwater port facility  
5 except on the basis of written plans recommended for au-  
6 thorization and approval by the Commandant of the Coast  
7 Guard and authorized and approved by the Secretary. Upon  
8 such authorization and approval, pursuant to and in accord-  
9 ance with the provisions of this title, the Secretary may issue  
10 to, transfer to, or renew for a citizen of the United States a  
11 license to construct or operate a deepwater port facility.

12 "(b) ISSUANCE.—The Secretary may issue a license to  
13 construct or operate a deepwater port facility to any citizen  
14 of the United States if—

15 "(1) he determines that the applicant is financially  
16 responsible;

17 "(2) he determines that the applicant can and will  
18 comply with applicable laws, regulations, and license  
19 conditions;

20 "(3) he has been assured by the appropriate Fed-  
21 eral agencies that the proposed facility, as to which a  
22 license is sought, will not unreasonably interfere with  
23 international navigation or other reasonable uses of the  
24 high seas, as defined by treaty, convention, or customary  
25 international law;

1           “(4) he has been assured by the Secretary of State  
2 that issuance is consistent with the international obliga-  
3 tions of the United States;

4           “(5) he finds that the issuance would not adversely  
5 affect competition, restrain trade, or further monopoliza-  
6 tion; and

7           “(6) he has been assured, pursuant to section 304  
8 of this title, that such facility will not pose an unreason-  
9 able threat to the integrity of the marine environment  
10 in which it is to be located, and that all possible pre-  
11 cautions are being taken and will be taken to minimize  
12 adverse impact on the marine environment, including  
13 the marine environment of the State or States near the  
14 coast of which such deepwater port facility will be  
15 located.

16           “(c) TERM OF LICENSE.—Licenses issued under this title  
17 shall be for a term of no longer than thirty years, with pref-  
18 erential right in the licensee to renew under such terms and  
19 for such period, not to exceed thirty years, as the Secretary  
20 finds is reasonable and appropriate.

21           “(d) ANTITRUST LAWS APPLICABLE.—The grant of a  
22 license under this title shall not be admissible in any way  
23 as a defense to any civil or criminal action for violation of  
24 the antitrust laws of the United States.

25           “(e) TRANSFER OF LICENSE.—Licenses issued under

1 this title may be transferred after the Secretary determines  
2 that the transferee meets the requirements of this title.

3 “(f) CONDITIONS, MODIFICATION, REVOCATION, OR  
4 SUSPENSION OF LICENSES.—(1) No license shall be issued  
5 under this title unless the licensee or transferee first agrees in  
6 writing that—

7 “(A) there will be no change from the plans and  
8 operational systems detailed in the application without  
9 prior approval in writing from the Secretary; and

10 “(B) the licensee will comply with any reasonable  
11 condition or conditions which the Secretary may impose  
12 at the date of issuance or transfer of the license or at any  
13 time thereafter.

14 “(2) The Secretary, upon a petition in writing from—

15 “(A) the licensee;

16 “(B) a State adjacent to a deepwater port facility  
17 constructed or operated by the licensee;

18 “(C) any department or agency authorized under  
19 section 304 of this title to grant or deny any certification;

20 or

21 “(D) any aggrieved citizen of the United States  
22 may, with or without a hearing, modify by addition, deletion,  
23 or other amendment, the terms and conditions of any license  
24 issued, transferred, or renewed under this section.

25 “(3) The Secretary may, for violation of any condition

1 or for other cause shown, suspend or revoke any license is-  
2 sued, transferred, or renewed under this section.

3 “(g) NATIONAL SECURITY.—Notwithstanding the fore-  
4 going, the Secretary shall not issue a license under this  
5 section and shall cancel or suspend any license issued in any  
6 case in which the President determines that it would be  
7 contrary to the national security of the United States:  
8 *Provided*, That within ninety days of such determination  
9 by the President, the Senate, by majority vote, consents to  
10 such determination.

11 “ENVIRONMENTAL CERTIFICATION

12 “SEC. 304. (a) GENERAL.—Prior to the issuance,  
13 transfer, modification, or renewal of any license under sec-  
14 tion 303 of this title, the Secretary of Commerce, through the  
15 National Oceanic and Atmospheric Administration, shall  
16 grant, with or without any condition or conditions, or shall  
17 deny certification of a deepwater port facility, with respect  
18 to those features of the facility which would affect the marine  
19 and coastal environment. Upon a showing that the location,  
20 construction, and operation of such facility does not pose an  
21 unreasonable threat to the integrity of the marine and  
22 coastal environment and that all possible precautions have  
23 been taken to minimize anticipated adverse impact on the  
24 marine and coastal environment, the Secretary of Commerce  
25 may grant such certification.

1       “(b) CRITERIA.—The Secretary of Commerce, through  
2 the National Oceanic and Atmospheric Administration, shall  
3 establish and apply, and may from time to time revise, cri-  
4 teria for reviewing and evaluating deepwater port facilities.  
5 Such criteria may include, but are not limited to—

6           “(1) the effect on esthetic and recreational values;

7           “(2) the effect on fish plankton, shellfish, and wild-  
8 life resources;

9           “(3) the effect on the oceanographic currents or  
10 wave patterns and upon shorelines and beaches, includ-  
11 ing bays and estuaries and other features characteristic  
12 of the adjacent coastal zone;

13           “(4) the effect on alternate uses of the oceans and  
14 navigable waters, such as scientific study, fishing, and  
15 other living and nonliving resources exploitation;

16           “(5) the dangers to such facility occasioned by  
17 waves, winds, and weather and the steps which can be  
18 taken to protect against such dangers; and

19           “(6) such other considerations as the Secretary of  
20 Commerce deems appropriate or necessary to fully eval-  
21 uate any deepwater port facility.

22       “(c) CONDITIONS.—The Secretary of Commerce,  
23 through the National Oceanic and Atmospheric Adminis-  
24 tration, shall, where appropriate, recommend reasonable

1 conditions which shall be incorporated into a license issued,  
2 transferred, modified, or renewed under section 303 of  
3 this title to insure that a proposed deepwater port facility  
4 does not pose an unreasonable threat to the integrity of the  
5 marine environment and that all possible precautions to  
6 minimize environmental adverse impact are being taken  
7 and will be taken and maintained by the applicant and  
8 licensee.

9 “(d) APPROVED STATE PROGRAM REQUIREMENT.—  
10 No certification pursuant to this section shall be issued unless  
11 the adjacent coastal State, or States, shall have an approved  
12 coastal zone management program pursuant to the National  
13 Coastal Zone Management Act of 1972 (86 Stat. 1280).  
14 The Secretary of Commerce through the National Oceanic  
15 and Atmospheric Administration shall consult with the appro-  
16 priate State authorities concerning existing and prospective  
17 coastal management programs, and shall insure the coordi-  
18 nation of construction and operation of any deepwater port  
19 facility with such related development in the coastal zone  
20 as is permitted or contemplated to be permitted within an  
21 approved coastal management program of the adjacent  
22 coastal State or States.

23 “(e) ENVIRONMENTAL PROTECTION AGENCY.—The  
24 Administrator of the Environmental Protection Agency,  
25 prior to the issuance, transfer, modification, or renewal of any



1 to issue reasonable rules and regulations governing applica-  
2 tion for and issuance, transfer, modification, renewal, suspen-  
3 sion, or revocation of licenses pursuant to this title. Such  
4 rules and regulations shall be issued in accordance with sec-  
5 tion 553 of title 5, United States Code, without regard to  
6 subsection (a) thereof. Such rules and regulations shall con-  
7 tain a mechanism for full cooperation and coordination with  
8 the certification responsibility of the Secretary of Commerce,  
9 the Administrator of the Environmental Protection Agency,  
10 and the Secretary of the Interior under section 304 of this  
11 title.

12       “(b) SUBMISSION OF PLANS.—Any citizen of the  
13 United States making application to construct or operate or to  
14 modify a deepwater port facility shall submit detailed plans  
15 to the Secretary, the Secretary of Commerce, the Adminis-  
16 trator of the Environmental Protection Agency, and the  
17 Secretary of the Interior at least two years prior to the ex-  
18 pected commencement of construction. However, in the case  
19 of any such facility which was constructed in whole or in  
20 part prior to the date of enactment of this title or as to which  
21 construction was planned to commence prior to two years  
22 after such date, the applicant may submit such plans to such  
23 parties as soon as possible. The agencies shall agree on, and  
24 may from time to time modify, a single fee to be paid by the

1 applicant. Such fee shall be established in an amount which  
2 shall be sufficient to cover the full administrative costs.

3       “(c) OTHER AUTHORIZATIONS.—An application for a  
4 license concurrently filed with the Secretary, the Secretary  
5 of Commerce, the Administrator of the Environmental Pro-  
6 tection Agency, and the Secretary of the Interior shall con-  
7 stitute an application for all Federal authorizations required  
8 for construction or operation of a deepwater port facility. Af-  
9 ter insuring that an application contains all information re-  
10 quired, the Secretary shall forward a copy thereof to those  
11 Federal agencies which have or share jurisdiction over any  
12 such construction or operation. No license under this Act shall  
13 be issued, transferred, modified to authorize any extension or  
14 expansion of such facility, or reviewed, until the Secretary has  
15 been notified in writing by each such agency that the appli-  
16 cation is lawful and proper.

17       “(d) ENVIRONMENTAL IMPACT STATEMENT.—A  
18 single detailed environmental impact statement in connec-  
19 tion with each license shall be prepared jointly by the Secre-  
20 tary, the Secretary of Commerce, the Administrator of the  
21 Environmental Agency, and the Secretary of the Interior.  
22 Such statement shall be circulated in compliance with guide-  
23 lines established by the Council on Environmental Quality.

24       “(e) HEARING REQUIREMENT.—A license may be is-

1 sued, transferred, renewed, suspended, or revoked pursuant  
2 to this title only after notice and a public hearing in accord-  
3 ance with the provisions of section 554 of title 5, United  
4 States Code. So far as practicable, hearings held by the  
5 Secretary shall be consolidated with hearings held by other  
6 agencies. At least one public hearing shall be held in the  
7 vicinity of the actual or proposed site of a deepwater port  
8 facility.

9 "ENFORCEMENT OF REGULATIONS AND CONDITIONS ON  
10 LICENSES

11 "SEC. 306. (a) RECORDS.—(a) Each licensee shall estab-  
12 lish and maintain such records, make such reports, and provide  
13 such information as the Secretary shall reasonably require or  
14 request. Each such licensee shall submit such reports and make  
15 available such records and information to the Secretary as he  
16 shall by regulation require.

17 "(b) INSPECTION.—Any officer or employee duly desig-  
18 nated by the Secretary, upon presenting appropriate credentials  
19 and a written notice of inspection authority to any licensee,  
20 is authorized to enter a deepwater port facility or any prop-  
21 erty within such facility to determine whether such  
22 licensee has acted or is acting in compliance with the  
23 provisions of the license and the declaration of policy of this  
24 title. Such officer or employee may inspect, at reasonable  
25 times, records, files, papers, processes, controls, and facilities,

1 and may test any feature of a deepwater port facility. Each  
2 inspection shall be commenced and completed with reason-  
3 able promptness and such licensee notified of the results of  
4 such inspection.

5 "PUBLIC ACCESS TO INFORMATION

6 "SEC. 307. (a) GENERAL.—Copies of any communica-  
7 tion, document, report, or information received or sent by  
8 any applicant shall be made available to the public upon  
9 identifiable request, and at reasonable cost, unless such in-  
10 formation may not be publicly released under the terms of  
11 subsection (b) of this section. Except as provided for under  
12 subsection (b) of this section, nothing contained in this sec-  
13 tion shall be deemed to require the release of any informa-  
14 tion described by subsection (b) of section 552 of title 5,  
15 United States Code, or which is otherwise protected by law  
16 from disclosure to the public.

17 "(b) EXCEPTION.—The Secretary shall not disclose  
18 information obtained by him under this Act which concerns  
19 or relates to a trade secret referred to in section 1905 of  
20 title 18, United States Code, except that such information  
21 may be disclosed—

22 "(1) upon request, to other Federal Government  
23 departments and agencies for official use;

24 "(2) upon request, to any committee of Congress

1       having jurisdiction over the subject matter to which the  
2       information relates;

3               “(3) in any judicial proceeding under a court order  
4       formulated to preserve the confidentiality of such infor-  
5       mation without impairing the proceedings; and

6               “(4) to the public in order to protect health and  
7       safety after notice and opportunity for comment in writ-  
8       ing or for discussion in closed session within fifteen days  
9       by the party to which the information pertains (if the  
10      delay resulting from such notice and opportunity for  
11      comment would not be detrimental to the public health  
12      and safety).

13                       “RELATIONSHIP TO OTHER LAWS

14       “SEC. 308. No action taken pursuant to this title shall  
15      relieve, exempt, or immunize any person from any other  
16      requirements imposed by Federal, State, or local laws, regu-  
17      lations, or ordinances. Nothing contained in this title sup-  
18      plants or modifies any treaty or Federal statute or authority  
19      granted thereunder, nor does it prevent a State or political  
20      subdivision thereof from prescribing for deepwater port fa-  
21      cilities within its jurisdiction higher safety or environmental  
22      standards.

23                       “PENALTIES AND REMEDIES

24       “SEC. 309. (a) CRIMINAL VIOLATION.—Any person  
25      who willfully violates any provision of this title shall on convic-

1 tion be fined not more than \$25,000 for each day of violation  
2 or imprisoned for not more than one year, or both.

3 “(b) CIVIL VIOLATION.—(1) Any person who violates  
4 any provision of this title other than willfully shall be liable to  
5 the United States for a civil penalty of a sum which is not more  
6 than \$25,000 for each day of violation. The amount of such  
7 civil penalty shall be assessed by the Secretary after notice and  
8 an opportunity for an adjudicative hearing conducted in accord-  
9 ance with section 554 of title 5, United States Code, and after  
10 he has considered the nature, circumstances, and extent of such  
11 violation, the practicability of compliance with the provisions  
12 violated, and any good-faith efforts to comply with such pro-  
13 visions.

14 “(2) Upon the failure of the offending party to pay such  
15 civil penalty, the Secretary may commence an action in the  
16 appropriate district court of the United States for such relief  
17 as may be appropriate or he may request the Attorney General  
18 to commence such an action.

19 “(c) EQUITABLE REMEDY.—The Attorney General or  
20 the Secretary may bring an action in the appropriate district  
21 court of the United States for equitable relief to redress a viola-  
22 tion by any person of any provision of this title. The district  
23 courts of the United States shall have jurisdiction to grant such  
24 relief as the equities of the case may require.

## 1                                   “ADVISORY COUNCIL

2           “SEC. 310. (a) ESTABLISHMENT.—There is hereby  
3 established an ‘Advisory Council for Deepwater Port Policy’  
4 which shall assist the Secretary in the performance of his  
5 duties and obligations under this title.

6           “(b) MEMBERS.—The Council shall consist of fifteen  
7 members who shall be appointed by the Secretary on the  
8 following basis—

9                   “(1) two, to be selected from a list of not less than  
10 four qualified individuals recommended by the American  
11 Institute of Merchant Shipping, who shall be representa-  
12 tive of shipping management;

13                   “(2) two, to be selected from a list of not less than  
14 four qualified individuals recommended by the American  
15 Federation of Labor and Congress of Industrial Orga-  
16 nizations, who shall be representative of maritime labor;

17                   “(3) two, to be selected from a list of not less than  
18 four qualified individuals recommended by the chair-  
19 man of the Committee on Merchant Marine and Fisheries  
20 of the House of Representatives and the chairman of the  
21 Committee on Commerce of the Senate as having expert  
22 knowledge or experience in a scientific or technical  
23 discipline relevant to the development of marine trans-  
24 portation systems;

25                   “(4) two, to be selected from lists of qualified

1 individuals recommended by environmental organiza-  
2 tions, who shall be representative of environmental  
3 concerns;

4 “(5) two, to be selected from a list of not less than  
5 four qualified individuals recommended by the Ameri-  
6 can Petroleum Institute who shall be representative of  
7 the petroleum industry; and

8 “(6) two, to be selected from a list of not less than  
9 four qualified individuals recommended by the National  
10 Academy of Sciences as recognized authorities in the  
11 fields of marine biology, ecology, or other scientific area  
12 relevant to protection of the coastal and marine environ-  
13 ment; and

14 “(7) three, to be selected from lists of qualified in-  
15 dividuals recommended by the Governors of coastal  
16 States, who shall be representative of the coastal States.

17 As used in this subsection, ‘qualified individual’ means an  
18 individual who is equipped by education, experience, known  
19 talents, and interests to further the policy of this title effec-  
20 tively, positively, and independently if appointed to be a  
21 member of the Council. Each list of qualified individuals  
22 shall be accompanied by such biographical and other ma-  
23 terial on each person recommended and in such form as the  
24 Secretary shall direct.

25 “(c) **TERMS OF OFFICE.**—The terms of office of the

1 members of the Council first taking office shall expire as  
2 designated by the Secretary at the time of appointment, two  
3 at the end of the first year, two at the end of the second year,  
4 two at the end of the third year, three at the end of the  
5 fourth year, three at the end of the fifth year, and three at  
6 the end of the sixth year. Successors to members of the  
7 Council shall be appointed in the same manner as the origi-  
8 nal members and shall have a term of office expiring six  
9 years from the date of expiration of the term for which their  
10 predecessors were appointed. Any member appointed to fill  
11 a vacancy on the Council occurring prior to the expiration  
12 of the term for which his predecessor was appointed shall  
13 be appointed for the remainder of such term. No member  
14 may be reappointed upon the expiration of his term.

15       “(d) CHAIRMAN.—The members of the Council shall  
16 select one of their members to serve as Chairman of the  
17 Council for a period not to exceed one year.

18       “(e) STAFF SUPPORT.—The Secretary, the Secretary  
19 of Commerce through the National Oceanic and Atmospheric  
20 Administration, the Administrator of the Environmental  
21 Protection Agency, and the Secretary of the Interior may  
22 provide the Council with such staff support as the Council,  
23 with the concurrence of a majority of the members of the  
24 Council, may request and as any of the foregoing officials  
25 deems appropriate.

1       “(f) FUNCTION.—The Council shall assist the Secre-  
 2 tary by meeting periodically to confer upon and make spe-  
 3 cific recommendations concerning the administration and im-  
 4 plementation of this title and concerning the submission by  
 5 the Council of such material, views, and reports as the Secre-  
 6 tary, the Secretary of Commerce, the Secretary of the In-  
 7 terior, the Administrator of the Environmental Protection  
 8 Agency, or a committee of the Congress may request or as  
 9 the Council may determine to issue concerning any matter  
 10 relevant to the purposes of this title.

11                               “CITIZEN CIVIL ACTION

12       “SEC. 311. (a) ACTION AUTHORIZED.—Except as pro-  
 13 vided in subsection (b) of this section, any person may com-  
 14 mence a civil action for injunctive relief on his own behalf,  
 15 whenever such action constitutes a case or controversy—

16               “(1) against any person (including (A) the  
 17 United States, and (B) any other governmental in-  
 18 strumentality or agency to the extent permitted by the  
 19 eleventh amendment to the Constitution) who is alleged  
 20 to be in violation of any provision of this title or any  
 21 condition on a license issued pursuant to this title; or

22               “(2) against the Secretary where there is alleged  
 23 a failure of the Secretary to perform any act or duty under  
 24 this title which is not discretionary with the Secretary.  
 25 Any action brought against the Secretary under this para-

1 graph shall be brought in the district court for the District  
2 of Columbia.

3 The district courts shall have jurisdiction over suits brought  
4 under this section, without regard to the amount in controversy  
5 or the citizenship of the parties.

6 “(b) **ACTION BARRED.**—No civil action may be com-  
7 menced—

8 “(1) under subsection (a) (1) of this section—

9 “(A) prior to sixty days after the plaintiff has  
10 given notice of the violation (i) to the Secretary and  
11 (ii) to any alleged violator,

12 “(B) if the Secretary or the Attorney General  
13 has commenced and is diligently prosecuting a civil  
14 action with respect to such matters in a court of the  
15 United States, but in any such action any person may  
16 intervene as a matter of right.

17 “(2) under subsection (a) (2) of this section prior  
18 to sixty days after the plaintiff has given notice of such  
19 action to the Secretary. Notice under this subsection  
20 shall be given in such manner as the Secretary shall  
21 prescribe by regulation.

22 “(c) **GOVERNMENT INTERVENTION.**—In any action  
23 under this section, the Secretary or the Attorney General,  
24 if not a party, may intervene as a matter of right.

25 “(d) **COSTS.**—The Court, in issuing any final order in

1 any action brought pursuant to subsection (a) of this sec-  
2 tion, may award costs of litigation (including reasonable  
3 attorney and expert witness fees) to any party whenever  
4 the court determines that such an award is appropriate.

5 “(e) OTHER ACTIONS.—Nothing in this section shall  
6 restrict any right which any persons (or class of persons)  
7 may have under any statute or common law to seek enforce-  
8 ment or to seek any other relief.

9 “AUTHORIZATION FOR APPROPRIATIONS

10 “SEC. 312. There is authorized to be appropriated \$1,-  
11 000,000 for the fiscal year 1974, \$1,000,000 for the fiscal  
12 year 1975, and \$1,000,000 for the fiscal year 1976, for  
13 administration of this Act.”.

14 SEC. 3. The Administrator of the National Oceanic and  
15 Atmospheric Administration, in consultation with the Secre-  
16 tary of the Department in which the Coast Guard is operat-  
17 ing, the Secretary of the Interior, the Secretary of Commerce,  
18 the Administrator of the Environmental Protection Agency,  
19 the Council on Environmental Quality, the Secretary of  
20 Housing and Urban Development, the Secretary of Health,  
21 Education, and Welfare, and the heads of other appropriate  
22 Federal departments, agencies, and instrumentalities; the  
23 Governors of the coastal States and the heads of the appro-  
24 priate departments or agencies of such States and political  
25 subdivisions of such States; the scientific community; not-for-

1 profit organizations concerned about protection of the marine  
2 environment and coastal zone development and management;  
3 and private industry, shall coordinate a study and prepare  
4 a plan or plans for the development and protection of the  
5 offshore marine environment of the United States. This  
6 study and preparation—

7 (a) may be conducted outside of the National  
8 Oceanic and Atmospheric Administration under the  
9 direction of a university or recognized research center  
10 by an interdisciplinary group, none of the members of  
11 which may have a financial interest or conflict of in-  
12 terest (other than any fee paid by the Administrator  
13 for serving as a member of such group) with respect to  
14 the findings and conclusions of such study and the con-  
15 tent of such plan or plans;

16 (b) shall be completed not less than two years after  
17 the date of enactment of this Act; and

18 (c) shall be submitted, upon completion, by the  
19 Administrator to the Congress without prior clearance  
20 or review by any other official or agency of the executive  
21 branch of the Federal Government. For purposes of this  
22 section, there is hereby authorized to be appropriated  
23 such sums as are necessary, not to exceed \$10,000,000.

OFFICE OF THE SECRETARY OF TRANSPORTATION,  
Washington, D.C., July 27, 1973.

HON. WARREN G. MAGNUSON,  
Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.C.

DEAR MR. CHAIRMAN: Reference is made to your request for the comments of the Department of Transportation concerning S. 1751, a bill "To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities."

The bill is the Administration's proposal to provide for the licensing of deepwater port facilities on the high seas off the coast of the United States.

Section 2 of the bill would amend the Outer Continental Shelf Lands Act to authorize the Secretary of the Interior to prescribe such rules and regulations as may be necessary to accommodate the exploration and exploitation of the oil and gas and other mineral resources of the Outer Continental Shelf with the construction and operation of deepwater port facilities licensed by him. It should be noted here that the amendment in section 2 would not apply to the areas off the Gulf coasts of Texas and Florida between three and approximately nine miles offshore. This result occurs because of the reference in the Outer Continental Shelf Lands Act (67 Stat. 462, 43 U.S.C. 1331) back to the definition of "lands beneath navigable waters" in the Submerged Lands Act (67 Stat. 29, 43 U.S.C. 1301). Accordingly, it would appear that necessary accommodation between mineral exploration and exploitation activities and the construction and operation of deepwater port facilities in those areas must be achieved through some process other than that established by this section. The aforementioned "hiatus zone," however, would not affect the Secretary's authority under title I of S. 1751 to regulate deepwater port facilities beyond the three-mile limit.

This Department realizes that the application of the laws of the United States to activities connected with the operation and use of deepwater port facilities as stated in section 111(a) of the bill represents a delicate balance between two competing interests. First, there is a need for positive control over activities connected with the use and operation of such a facility, particularly for the purpose of assuring safety and environmental protection. Second, there is a strong law of the sea concern that the establishment of the necessary jurisdictional base for such control not consist of a unilateral assertion of jurisdiction by the United States over areas of the high seas. No assertion of jurisdiction is made over the water areas immediately adjacent to a deepwater port facility. However, the term "activities connected with the operation and use of such deepwater port facilities", as found in section 111(a) of the bill, is sufficiently broad to apply the laws of the United States not only to any foreign or domestic activity using the facility but also to any foreign or domestic activity in the vicinity of a deepwater port facility which by its nature has a capacity to interfere with or pose a threat to the use and operation of such a facility provided such an application is consistent with international law. In this regard, the implied consent to United States jurisdiction by foreign vessels or persons who use such facilities, found in the second sentence of section 111(a) of the bill, should not be considered to be a limitation on this application.

Finally, the regulatory authorities conferred by the laws of the United States are made applicable to the deepwater port facilities and activities by section 111(a) of the bill. It is presumed that the Secretary's authority to condition the grant of a license under the bill (sec. 107) and to promulgate regulations governing the health and welfare of persons using deepwater port facilities (sec. 111(c)) will be exercised consistently with the regulatory authorities of other agencies.

The Office of Management and Budget has advised that, from the standpoint of the Administration's program, there is no objection to the submission of this report for the consideration of the Committee.

Sincerely,

J. THOMAS TIDD,  
Acting General Counsel.

U.S. ATOMIC ENERGY COMMISSION,  
Washington, D.C. August 15, 1973.

Hon. WARREN G. MAGNUSON,  
Chairman, Committee on Commerce,  
U.S. Senate.

DEAR SENATOR MAGNUSON: This is in response to your request for comments on S. 1751, a bill "To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities."

The bill would, among other things, vest the Secretary of the Interior with licensing authority over the construction and operation of deepwater port facilities, defined as facilities "constructed off the coast of the United States, and beyond three nautical miles from such coast, for the principal purpose of providing for the transshipment of commodities between vessels and the United States" including "all associated equipment and structures beyond three nautical miles from such coast, such as storage facilities, pumping stations, and connections to pipelines," but not including pipelines. The bill sets forth various standards for issuing licenses for construction or operation of deepwater port facilities and various provisions relating to notice and hearings in connection with issuing such licenses. The bill provides that an application for a license under this Act shall constitute an application for all Federal authorizations required for construction and operation of a deepwater port facility. However applications would be required to contain all information required by such other Federal authorizing agencies, and no license could be issued by the Secretary until he has been notified by such other Federal agencies that the application meets the requirements of the laws which they administer. In addition, hearings held pursuant to the Act would be consolidated insofar as practicable with hearings held by other agencies. The provisions of the National Environmental Policy Act of 1959 (NEPA) would not be affected by the bill except that a single detailed statement would be prepared and circulated by the Secretary in connection with each license, and such statement would fulfill the responsibilities of all participating Federal agencies under section 102(2)(C) of NEPA with respect to the proposed facility. In addition the Constitution and laws of the United States would apply to deepwater port facilities licensed under the Act and, insofar as consistent with international law, to activities connected with the operation and use of such deepwater port facilities in the same manner as if the facilities were located in the navigable waters of the United States.

For the reasons set forth below, the AEC has no objection to enactment of the subject bill.

We believe that the public interest would be served by the establishment of a regulatory mechanism for the control over the construction and operation of deepwater port facilities as defined in the bill. We note that the term "deepwater port facility" is broadly defined so that it might include supporting nuclear facilities, such as nuclear power plants used as associated equipment for a deepwater port facility. We also note that the Secretary would be authorized to condition deepwater port facility licenses on matters relating to temporary storage of hazardous substances. The construction and operation of nuclear facilities are subject to regulation by the AEC under the Atomic Energy Act of 1954, as amended, and the storage of nuclear materials is subject to regulation by either the AEC or an agreement State under section 274 of the Atomic Energy Act, depending upon the type of materials. As we understand the bill, these matters would be embraced within proposed section 104(c) to the extent they involved AEC licensing and regulation. Section 104(c), along with section 111(a), would insure that AEC authority over such activities would not be impaired and that such activities could only be carried out consistent with the Atomic Energy Act and AEC implementing regulations. As we understand the bill, the Secretary's role under proposed section 104(c) would in this respect be ministerial rather than substantive.

The Office of Management and Budget has advised that there is no objection to the presentation of this report from the standpoint of the Administration's program.

Sincerely,

L. MANNING MUNTZING,  
LEE V. GOSSICK,  
*Director of Regulation.*

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DEPARTMENT OF THE NAVY,  
OFFICE OF LEGISLATIVE AFFAIRS,  
*Washington, D.C., September 21, 1973.*

HON. WARREN G. MAGNUSON,  
*Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.C.*

DEAR MR. CHAIRMAN: Your request for comment on S. 1751, a bill "To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities," has been assigned to this Department by the Secretary of Defense for the preparation of a report expressing the views of the Department of Defense.

This bill would authorize the Secretary of the Interior to license and regulate the construction and operation of deepwater port facilities beyond the three mile territorial sea.

In his energy message to the Congress in April of this year, the President proposed the development of deepwater ports in answer to the problem of importing, cheaply and with minimum damage to the environment, the large quantities of oil we will be needing in the foreseeable future. In implementation of this portion of his message, there has been transmitted to the Congress by executive communication from the Secretary of the Interior the proposed Deepwater Port Facilities Act of 1973 which has now been introduced as S. 1751. This is a proposal to meet the many problems associated with the regulation and construction of such facilities.

The Department of the Navy, on behalf of the Department of Defense, supports enactment of S. 1751.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee and that enactment of S. 1751 would be in accord with the program of the President.

For the Secretary of the Navy.

Sincerely yours,

E. H. WILLETT,  
*Captain, U.S. Navy,  
Deputy Chief.*

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DEPARTMENT OF STATE,  
*Washington, D.C., October 17, 1973.*

HON. WARREN G. MAGNUSON,  
*Chairman, Committee on Commerce,  
U.S. Senate.*

DEAR MR. CHAIRMAN: The Secretary has asked me to respond to your June 5, 1973 letter requesting comments on S. 1751, the "Deepwater Port Facilities Act of 1973." This bill provides authority to issue licenses and prescribe rules and regulations for the construction and operation of deepwater port facilities. The process established by the bill would provide for strict environmental controls as well as appropriate navigation and safety requirements.

The Department of State supports the enactment of this bill. The licensing and regulatory scheme provided by the bill will ensure that the proper elements of international law and policy are considered in the decision making process. Construction and operation of deepwater port facilities by licensed

U.S. citizens undertaken in accordance with the bill would be a reasonable use of the high seas as recognized in the 1958 Convention on the High Seas. Furthermore, the bill is drafted to ensure that activities under it will not be deemed to affect the legal status of the high seas, the superjacent airspace or the seabed and subsoil, including the continental shelf. In general, we feel the approach taken in this bill recognizes the vitality of international law and is designed to ensure that the development and operation of offshore facilities is undertaken in a manner consistent with accepted maritime practices and general principles of international law. In addition, we feel the bill establishes a rational, effective system for the licensing and regulation of deepwater ports.

The Department has been informed by the Office of Management and Budget that there is no objection to the submission of this report.

Sincerely,

MARSHALL WRIGHT,  
Assistant Secretary,  
for Congressional Relations.

DEPARTMENT OF JUSTICE,  
Washington, D.C., September 20, 1973.

HON. WARREN G. MAGNUSON,  
Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.C.

DEAR SENATOR: This is in response to your request for the views of the Department of Justice on S. 1751, a bill "To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities."

This bill would establish for ports constructed beyond our present territorial sea a comprehensive legal system providing the full gamut of civil and criminal laws for activities on those structures. The bill authorizes the Department of the Interior to license the construction and operation of ports beyond the 3-mile limit and, generally, extends the laws of the United States to those ports, specifically enumerating a number of laws which are deemed to be particularly applicable to such facilities. The bill also extends to the superports as federal law the civil and criminal laws of the adjacent state, where such laws are applicable and not inconsistent with the Act or with other existing or future federal laws and regulations.

Except for the personal jurisdiction which they exercise over their citizens, the states have no authority outside of their territorial limits. At present few federal laws would extend to the construction or operation of a port beyond the 3-mile territorial sea of the United States. The United States has asserted only limited authority beyond such limits primarily with respect to structures related to exploitation of the natural resources of the subsoil and seabed of the outer continental shelf (43 U.S.C. 1332, *et seq.*), with respect to fisheries (16 U.S.C. 1091), and marine pollution (P.L. 92-532, 86 Stat. 1052, P.L. 92-500, 33 U.S.C. 1161). There are, of course, many statutes of the United States, civil and criminal, which apply to individuals as to whom the Federal Government has personal jurisdiction wherever they may be located. Income Tax laws provide an example of both. However, in order to ensure the safe and orderly construction and operation of offshore ports, it is necessary to ensure that there exists a comprehensive legal system to govern that activity. Failure to provide such a legal system for these structures would inevitably result in future piecemeal attempts to stretch and apply state and federal laws which were not intended to apply to this novel situation. We believe S. 1751, with the following minor modifications, establishes such a system.

Section 108 of the bill provides that any licensee who violates any condition of his license or any rule or regulation of the Secretary issued under the Act may be assessed a civil penalty by the Secretary. Section 109 provides that any person who willfully and knowingly violates any provision of the Act or any rule, regulation or condition made or imposed under the Act shall be punished by a fine. The "Criminal Penalties" authorized under section 109 are limited to monetary penalties. Where the penalties imposed are

strictly monetary, we believe that civil penalties such as those imposed under section 108 are preferable to criminal penalties. Civil penalties which are collectable administratively by the agency itself avoid time-consuming prosecutions and decrease congestion in the criminal courts while still providing a deterrent to potential violators. However, if criminal penalties are desirable under the Act, we recommend that they provide for both fines and imprisonment. It is customary in establishing criminal sanctions to provide for both fines and imprisonment. Thus, section 5 of the Outer Continental Shelf Lands Act, 43 U.S.C. 1334, relating to rules and regulations issued by the Secretary of the Interior under that Act, provides for a fine or imprisonment. Moreover, under section 109 of the criminal penalties are made applicable to "any person" willfully and knowingly violating the Act, whereas under the civil penalty provision in section 108, the term used is "any licensee." The bill does not provide any definition of the word "person." Consequently, there is some difficulty in determining precisely to whom the criminal penalty provisions would apply. Finally, while section 108 provides a specific grant of jurisdiction to specific district courts, such a grant of jurisdiction is omitted in section 109.

Section 110 authorizes the Secretary, upon non-compliance by a licensee with any provision of the Act or any rule, regulation, restriction or condition made thereunder, or failure by a licensee to pay any civil penalty assessed under section 108, to file an appropriate action in a federal district court either to suspend operations under the license or, if such a failure is knowing and continues for a period of 30 days after notice to the licensee by the Secretary, to revoke such a license. Although it is understood that the Department of Justice would institute in the federal courts the appropriate action under that provision, it is customary to provide in the relevant legislation a provision that the Secretary request the Attorney General to file the appropriate action.

Section 111 of the bill generally extends the laws of the United States to offshore ports, specifically enumerating nine laws which are deemed to be particularly applicable to such facilities. That section also extends to such ports, as federal law, state civil and criminal laws to the extent such laws are applicable and not inconsistent with the Act or other federal laws. However, section 111, like section 109, fails to provide a specific grant of jurisdiction to the federal courts to entertain actions based upon such laws, whether federal or assimilated state laws. Notably, such a specific grant was provided in similar legislation involving activities on structures erected on the seabed under the Outer Continental Shelf Lands Act, 43 U.S.C. 1333. We believe that such a grant of jurisdiction is necessary. However, we suggest as an alternative to providing individual grants of jurisdiction to the federal courts in three different sections of the bill, i.e., sections 108, 109 and 111, that a single general grant of jurisdiction such as that found in the Outer Continental Shelf Lands Act be incorporated in the bill. This could be accomplished by inserting such a new provision as a separate subsection "(b)" to section 111, redesignating present subsections (b) and (c) as new subsections (c) and (d), and deleting present subsection 108(b). The new subsection 111(b) would read:

The United States district courts shall have original jurisdiction of cases and controversies arising out of or in connection with the construction, operation or use of such facilities; proceedings with respect to any such case or controversy may be instituted in the judicial district in which any defendant may be found or the judicial district nearest the place where the cause of action arose.

We also recommend that the Longshoremen's and Harbor Workers' Compensation Act should be included in the list of federal laws under section 111 applicable to offshore ports. Compensation or death or injury arising out of construction, operation or use of such facilities should not be left to implication from the provision in section 111 that the applicable law is to be the same as if such facilities "were located in the navigable waters of the United States." In this respect, we note that under the Outer Continental Shelf Lands Act the Longshoremen's Act is specifically made applicable to similar structures erected on our adjacent seabed for the purposes of exploring and exploiting the natural resources of our continental shelf, 43 U.S.C. 1333.

Finally, we recommend that the word "construction" be inserted in section

111(a) at page 15, line 13 before "operation and use" to insure that the legal system established by that section applies during the construction of offshore ports as well as during their operation and use.

Section 112 of the bill provides that the pipelines that would otherwise come within the jurisdiction of the states, as under the Submerged Lands Act, 43 U.S.C. 1301, "will be subject to all applicable laws or regulations of such a state or possession." To ensure that this section is not misconstrued as an attempt to expand the jurisdiction which the states otherwise exercise in the adjacent seas and seabed, we suggest that the following sentence be added to section 112 between present lines 11 and 12 on page 18:

Provided that nothing in this section is intended to enlarge or diminish the jurisdiction which the states presently exercise in the adjacent seas and seabed.

Finally, we note that there are three typographical errors in the bill. On page 7, line 7, the last complete word should read "and" while in line 12 "interest" should apparently be "interested." On page 13, line 7, the first "to" should be "or".

The Department of Justice recommends enactment of this legislation amended as suggested above.

The Office of Management and Budget has advised that there is no objection to the submission of this report from the standpoint of the Administration's program.

Cordially,

MIKE McKEVITT.

THE GENERAL COUNSEL OF THE TREASURY,  
Washington, D.C., October 19, 1973.

Hon. WARREN G. MAGNUSON,  
Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.C.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of this Department on S. 1751, "To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities."

The bill would authorize the Secretary of the Interior to issue to citizens of the United States licenses to construct or operate deepwater port facilities if he determines that an applicant is financially responsible, the proposed facility will not unreasonably interfere with international navigation and is consistent with the international obligations of the United States, and that adverse environmental effects will be prevented or minimized. He would be authorized to issue regulations prescribing procedures for issuing licenses. Customs and navigation laws administered by the Bureau of Customs, with certain exceptions, would not apply to facilities; however, customs officials would be granted reasonable access to deepwater port facilities to enforce laws under their jurisdiction.

The bill was included in President Nixon's April 18, 1973, Message to the Congress on Energy Policy and the Department strongly recommends its enactment as a necessary step in meeting the nation's energy challenge.

The Department would recommend minor technical changes to clarify section 113 of the bill with regard to the customs and navigation laws. A Comparative Print showing the suggested changes is enclosed for your convenient reference.

The Department has been advised by the Office of Management and Budget that there is no objection from the standpoint of the Administration's program to the submission of this report to your Committee and that enactment of S. 1751 would be in accord with the program of the President.

Sincerely yours,

EDWARD C. SCHMULTS,  
General Counsel.

Enclosure.

COMPARATIVE PRINT

Changes in section 113 are shown as follows (language proposed to be omitted is enclosed in brackets; new matter is underscored):

Sec. 118. The customs and navigation laws administered by the [Bureau of Customs] *Secretary of the Treasury*, except those navigation laws specified in section 111(b)(7) [herein] of this Act, shall not apply to any deepwater port facility licensed under this Act; but all [materials] *foreign articles to be used in the construction of any such deepwater port facility and connected facilities such as pipelines and cables shall first be made subject to a consumption entry in the United States and [duties deposited thereon] all applicable duties and taxes which would be imposed upon or by reason of their importation if they were imported for consumption in the United States shall be paid thereon in accordance with the laws applicable to merchandise imported into the customs territory of the United States* [However, a] All United States officials, including [customs officials] *officers of the customs as defined in section 101(i), Tariff Act of 1930, as amended, 19 U.S.C. 1401(i)*, shall at all times be accorded reasonable access to deepwater facilities licensed under this Act for the purpose of enforcing laws under their jurisdiction or carrying out their responsibilities.

GENERAL COUNSEL OF THE DEPARTMENT OF COMMERCE,  
*Washington, D.C., October 29, 1973.*

HON. WARREN G. MAGNUSON,  
*Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.C.*

DEAR MR. CHAIRMAN: This is in reply to your request for the views of this Department with respect to S. 1751, a bill—"To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities."

S. 1751 would establish authority in the Department of the Interior for licensing the construction and operation of deepwater port facilities. Under the provisions of S. 1751, licenses would be issued to any U.S. citizen, domestic corporation or State or local government after the Secretary of the Interior determines that the applicant is financially responsible and has demonstrated an ability and willingness to comply with all applicable laws, regulations and conditions; the construction and operation of proposed deepwater port facilities will not unreasonably interfere with international navigation or other reasonable uses of the high seas; and the facility will minimize or prevent any adverse significant environmental effects. Prior to issuing any license, the Secretary is required to consult with the governors of adjacent coastal States to ensure that the facility and its directly related land based activities would be consistent with the States' land use planning programs.

The license required by S. 1751 would be in addition to permits or licenses which may be required under existing legislation from other Federal agencies. However, the proposed bill provides a mechanism whereby all Federal permits or licenses necessary for the construction and operation of the deepwater port facility will be handled through a single application filed with the Interior Department. That Department will ascertain the other Federal agencies which have the responsibility and jurisdiction under existing law for aspects of the construction and operation of such terminals. Interior will not issue a license under the Act until it has been notified by such agencies that the application meets the requirements of the laws which they administer.

The Department of Commerce supports the enactment of S. 1751. Our support stems not only from the long-standing interest of the Maritime Administration in the promotion and development of our ports, but also from the interest of the National Oceanic and Atmospheric Administration in the promotion of a safe marine environment. We believe that the bill would encourage the construction of greatly needed deepwater port facilities in a manner that would ensure adequate regard for and balancing of both on-shore and offshore environmental effects.

Under section 8 of the Merchant Marine Act, 1920, the Maritime Administration is responsible for the promotion of efficiency and lower costs in the transportation of commodities in U.S. foreign commerce, including the im-

portation of petroleum. The issue of deepwater port facilities has therefore received serious examination in the agency, and it continues to be a subject of primary concern. We have determined that significant economies may be derived from the utilization of Very Large Crude Carriers (VLCC's) that would require deepwater port facilities. For example, at world scale rates prevailing in mid-June of this year, it would have cost approximately \$22.53 per ton to bring crude oil from the Persian Gulf to the United States East Coast in a 54,000 DWT tanker, while the transportation cost per ton for carrying crude oil in a 241,000 DWT tanker would have been only \$14.11. Based upon the current price of Persian Gulf crude of \$15.90 at the source, the \$8.42 transportation cost reduction for VLCC's represents a 21.9 percent savings in the landed cost of Persian Gulf crude. Because of these and similar transportation economies, the Maritime Administration has been interested in encouraging the construction of VLCC's since the beginning of this decade.

In December 1969, the Maritime Administration granted Title XI mortgage insurance for the first VLCC to be built in the United States and destined to fly the American flag, a 225,000 DWT tanker under construction at the Seatrain yard in Brooklyn, which was launched on June 30 of this year. On June 30, 1972, construction-differential subsidy was awarded for six VLCC's, including these tankers of 265,000 DWT, the largest ships ever to be built in this country. In June 1973, the Maritime Administration awarded construction-differential subsidy for three additional VLCC's, including two 265,000 DWT vessels which will be owned by Gulf Oil Corporation, the first American-built VLCC's to be purchased by a major United States oil company. The nine VLCC's will cost a total of more than \$615 million and the Government's share of their cost paid as construction-differential subsidy is more than \$260 million. These VLCC's cannot enter any of the Gulf Coast or East Coast harbors. If the United States is to be served by these vessels, deepwater port facilities must be developed.

Levels of domestic energy production and usage fix the measure of required imports. To the extent that substantial imports will be required, given the transportation economies which exist, the issue is simply whether large tankers will unload their oil in the Caribbean or Canada for transshipment of petroleum or refined products to the United States in smaller vessels, or whether they will bring their cargoes directly to this country using deepwater port facilities.

If transshipment of petroleum or refined products from deepwater ports in the Caribbean is elected, then many more visits by smaller tankers to United States ports will be required in order to transport our petroleum imports. This transshipment will result in higher costs for imports of crude oil and refined products. It will also result in a substantial increase in the risk of environmental damage to our ports and waterways from oil spills due to the increase in the number of visits by small vessels to our ports and the increase in port congestion which may result in collisions.

The location of deepwater port facilities in the Caribbean and Canada may also result in the establishment of new refineries and petro-chemical complexes in those countries rather than in the United States. Such a development would result in the export of jobs from the United States and have an adverse effect on our balance-of-payments.

The National Oceanic and Atmospheric Administration of the Department of Commerce would assist the Department of Interior in performing its duties to minimize the environmental hazards that could result from the construction of deepwater port facilities. NOAA can provide scientific information on the ocean environment, fisheries and marine biology. In addition, NOAA components such as the National Ocean Survey and the Environmental Research Laboratories have extensive programs dealing with tides, current, and atmospheric effects on the ocean. Thus, NOAA is able to determine if a site being considered for a deepwater port facility is one where discharge would be carried shoreward. Similarly, the expertise of NOAA in ocean dynamics could aid in siting artificial structures so as to minimize interference with bottom sediment transport, nutrient flow, and the ability of a body or area of water to assimilate pollutants.

Another important role for NOAA in relation to the deepwater port legislation stems from its responsibilities for administering the Coastal Zone

Management Act. The goal of this Act is to promote effective coastal zone planning and management at the state level. Clearly the accomplishment of this goal will be important to the rational development of deepwater port facilities.

Industry has recognized the need for deepwater ports for several years and a number of projects have been initiated by the major oil companies to develop superports at specific sites. The reaction of the coastal states has been mixed, with, for example, Delaware banning an oil transfer facility under its Coastal Zone Act, while the Louisiana Governor appointed a "superport task force" to facilitate efforts to establish a deepwater port facility off the Louisiana coast. While we recognize that responses may vary from state to state, we are hopeful that all citizens will recognize the need for deepwater port facilities and the fact that the import of petroleum through such facilities is preferable, both economically and environmentally, to the import of petroleum in smaller ships using existing conventional port facilities. Without regard to the nature of the state responses to proposed projects, however, industry has been unwilling to act until issues concerning Federal jurisdiction beyond the three-mile limit have been resolved. And, Federal jurisdiction is accordingly a necessity.

S. 1751 makes clear the Government's basic position in that the proposed legislation would establish a uniform, coordinated procedure for licensing and regulating deepwater ports. The Secretary of the Interior would have prime responsibility, and applicants will have only one place in the Federal Government to go for a decision.

Over the past two years, the Department of Commerce has participated in and contributed to interagency economic and environmental studies of deepwater ports. These studies concluded that U.S. deepwater port facilities were environmentally and economically desirable. We have also considered the environmental aspects of deepwater terminals independently and in the recently completed Environmental Impact Statement on the Maritime Administration's tanker program. Our analyses reinforce the basic interagency findings that deepwater ports are economically and environmentally desirable.

The Department of Commerce will continue to work closely with the Department of the Interior and industry to implement S. 1751 after it is enacted.

We have been advised by the Office of Management and Budget that there would be no objection to the submission of our report to the Congress from the standpoint of the Administration's program.

Sincerely,

KARL E. BAKKE,  
General Counsel.

Senator JOHNSTON. Senator Hatfield, did you have a statement you would like to make?

Senator HATFIELD. No.

Senator JOHNSTON. Senator Stevens?

Senator STEVENS. I have no statement.

Senator JOHNSTON. We are very pleased to have as our first witness, Senator Pete Williams from New Jersey. We are very pleased to have you.

#### STATEMENT OF HON. HARRISON A. WILLIAMS, JR., U.S. SENATOR FROM NEW JERSEY

Senator WILLIAMS. Thank you very much, Mr. Chairman.

I am very grateful for the opportunity to testify this morning as you take up the issue of deepwater supertanker ports in general, and the administration bill, S. 1751, in particular.

It impresses me that organizing a joint committee of the affected Senate committees is a wise procedure indeed. It is not usual, but it happens in other areas. The more it happens, it seems to me, the

more efficient our operation is to bring all the committees together. The Committees on Finance and Labor are working together on pension reform legislation and it impresses me maybe we could have saved everybody a lot of time if we had followed the procedure you are embarked upon here.

As you know, Mr. Chairman, major studies have been conducted during the past few years to determine the need for deepwater ports, their feasibility, problems associated with them, and possible locations.

All of the studies have concluded that if such ports are to be built, at least one should be located somewhere off the New Jersey or Delaware coast. The most recent development is the "Interim Report on Atlantic Coast Deep Water Port Facilities" by the U.S. Army Corps of Engineers. The Corps concluded that the most efficient and economic method of accepting supertankers in the North Atlantic region would be to construct a deepwater port in one of two places. One would be 13 miles off the coast of northern New Jersey, and the other in the Delaware Bay off Big Stone Beach, which is closer to Delaware but it is just across from southern New Jersey. However, the Corps did not recommend Federal participation in such a project, largely because of the strong opposition of local inhabitants; and I would say that that conclusion comes after they did comprehensive and intensive studies and had several public hearings on the question in both of these States that I mentioned—Delaware and New Jersey.

Principally as a result of this focus on New Jersey, I have introduced S. 180, the Coastal Environment Protection Act. This bill would require, first of all, that a complete report with respect to any proposed offshore facility be submitted to the Environmental Protection Agency. The Administrator of EPA is then required to forward that report to the Governor of each adjacent coastal State which might in any way be affected by the project. Those Governors would then have 90 days to approve or disapprove the facility. If the Governor does not act, construction of the project may proceed as planned.

Originally, my concern about deepwater terminals centered on the environmental threats to the sea and the shore. We know that oil is highly toxic to all forms of marine life. Current, careless shipping and dumping processes have already degraded too much of our ocean environment. And, it is undeniable that attendant threats such as ship collisions—and there was one just about 4 weeks ago last night which was a major disaster up in our area—and tank or pipeline ruptures, and inadvertent discharges, do exist.

These substantial problems are as of now unresolved. Furthermore, the potential harmful consequences of a deepwater port are greatly compounded by the landside impact of such a facility. I am now convinced that it is on the land where the most severe impact will be experienced. It is there that the enormous storage tank farms must be constructed. And it is these refineries which will spew massive levels of air and water pollution out into the environment.

In the context of this grave landside impact of deepwater ports, I find the administration's bill to be seriously deficient. S. 1751 pro-

vides in section 103(b)(3) that the Secretary of the Interior, in granting a license for a deepwater terminal, shall consider certain of its potentially adverse environmental effects. But, his consideration seems to be limited to the effects such a project might have upon the sea and nearby shorelines.

This inattention to the landside impact of deepwater ports is surprising in light of the Interior Department's month-old draft environmental impact statement on deepwater ports which states:

One of the most important elements in the analysis of onshore facilities related to a deepwater port complex is the potential development of refinery facilities and related industries. This could have a more significant environmental impact than any other component of a deepwater port system over a long period of time.

In January, the Corps made the first honest attempt to describe the environmental landside impact of a deepwater port off the New Jersey coast. The study indicated that if a port was constructed off Cape May, N.J., both Cumberland and Cape May Counties would be subjected to a tenfold increase in industrialization. This would include the addition of refineries, petrochemical plants, and storage facilities. It would mean a fourfold increase in daily demand for water despite a barely adequate current water supply; a fourfold increase in biological oxygen demand; and a fourfold increase in the quantity of air pollutants emitted each day.

In northern New Jersey's Middlesex County, the accompanying landside industrialization would intensify in an area which already has high industrial concentrations.

In S. 1751, reference is made in section 103(e) to insuring that the operation of a deepwater port and its land-based activities would be consistent with the land use program of the affected States. Unfortunately, this seems to be hardly more than cynical lip service to the landside problem associated with deepwater ports. As the members of this committee well know, the administration failed to request any funds for the Coastal Zone Management Act which was enacted last year thanks to the leadership provided by Senator Hollings and the Commerce Committee. This bill was expected to become a land use bill for the coastal zones. Now, the administration is offering to let State land use programs control the landside impacts of deepwater ports. Its simultaneous failure to provide much needed funds for these very programs is, in my judgment, outright hypocrisy.

Similarly, although detailed studies on the landside impact of deepwater ports have been completed for some time, the Council on Environmental Quality has been unresponsive to several congressional requests for the results.

Mr. Chairman and members of the committee, another aspect of S. 1751 which disturbs me greatly is its failure to provide for significant input by the affected States concerning location of deepwater terminals. The bill would merely provide for consultation between the Secretary of Interior and the Governor of a State off whose coast the facility would be located. As I have noted previously, my bill, S. 180, would give the Governors of affected States authority to disapprove the proposed location of a deepwater port.

Unquestionably, landside industrialization would significantly alter the aesthetic, social, and economic complexion of shore communities. For example, despite the presence of a major segment of America's chemical and petrochemical industries, New Jersey also has some of the finest beaches on the east coast. In fact, the steadily expanding resort and travel business, dependent largely on our magnificent shoreline, is our State's largest industry.

Cape May, for example, has long stretches of unspoiled ocean front which are easily accessible to 40 million Americans. The resort business, which has increased appreciably over the years, provides 90 percent of this country's economic base—a cash flow of \$400 million.

In New Jersey at large, tourism generates approximately \$2.6 billion annually. During the peak season, our beaches attract 500,000 people a day. There can be no doubt that the further industrialization which would accompany establishment of a deepwater port off New Jersey's coast would have a severe impact on this industry.

New Jersey has recognized the importance, and fragile nature, of its coastal zone by enactment of the Coastal Facilities Review Act. This law provides for careful regulation by the New Jersey Department of Environmental Protection of all development which might have an adverse environmental impact on the coastal areas. It is my understanding that the State of Delaware has a similar law.

The people of New Jersey and many other States have shown they are determined to participate in the preservation of their natural resources. It is these same people who would be forced to live with the industrialization and environmental degradation attendant to construction of a deepwater terminal. In my judgment, those most directly affected ought to have a direct role in determining the location of a facility which would so significantly affect their lives.

Mr. Chairman, and members of the committee, I want to thank you again for this opportunity to appear. And, I want to urge the committee to act as soon as possible on this issue, which is of such great importance to so many of our people.

Senator JOHNSTON. Thank you very much, Senator Williams.

In the early part of your statement you point out that the studies on the environmental affects of deepwater ports have not yet been completed. In further parts of your statement, you point out that perhaps the principal effect of a superport would be onshore because of the complex petrochemical industries, refineries, etcetra, which would be sure to grow up in the immediate vicinity of the superport.

Am I correct in assuming then that regardless of what the conclusion would be about the safety of the deepwater port, as far as oil spills in the water are concerned, that you believe that your people would be opposed to location of a superport because of the onshore activity?

Senator WILLIAMS. I feel that strongly, Mr. Chairman. New Jersey, at this point is the most densely populated State in the Union, and with the construction of a port of the dimension that is being proposed the additional landside development would be tremendous.

Imposing more refineries and all of the other aspects of the chemical industry on this most densely populated State I think would just be something that people of New Jersey would not appreciate and could not tolerate.

Middlesex County, for example, is within sight of New York. It has a great harbor and it is just solid packed. They are proposing a port very close to Middlesex County as one of the possibilities. Now, Cape May County is, of course, under development, but it still retains most of its natural beauty. That is the way we would like to see it, not only for the people of New Jersey, but again for the millions who visit our beautiful beaches each year for a little respite from the turmoil of city life. This is part of life, too.

Senator JOHNSTON. Well, I take it that it would be fair to say that if S. 80 passed, giving to the Governors of any of the affected adjacent States, the veto power, the veto would most likely be exercised by New Jersey.

Senator WILLIAMS. Well, I can't say for certain. I can't speak for any present or future Governor. I don't believe that a superport would be acceptable to our present Governor, and any future Governor would certainly get the input of the people of New Jersey as the present Governor has. That input has been clear and it has been unequivocal. We just cannot tolerate this new extension of industrialization and still retain a livable environment for people.

Senator JOHNSTON. Well, let's consider, Senator, the tremendous demand of the nation to import Middle Eastern oil, at least on the short term in the next decade, and also the fact that we have got to import this somewhere, probably in superports through deep-water tankers. Suppose the Congress took upon itself the right to license and took the control away from the States—did not give your Governor the right to veto—and we placed a superport, whether in New Jersey or in some other State along the coast, do you think that if we went to that step that we also ought to take some compensatory action? For example, might we not allow the adjacent State to the superport to have more natural gas, and unpolluting natural gas, to offset the pollution demands, or should we give that adjacent State some of the income from the superport to take care of the environmental problems?

Do you think we ought to do that if we went to that kind of licensing?

Senator WILLIAMS. Well, you could never make whole the damage that would be done through that route; but if that unfortunate development should come to pass, certainly every possible means should be explored to reduce the adverse effect. I would state that I have been encouraged to hear references on the floor of the Senate the availability of other sites for a deepwater port. I believe the chairman was involved in one of those discussions on the floor a couple weeks ago.

It would seem to me that New Jersey and Delaware present not the sole alternative in terms of a deepwater port. It may be the straightest run across the Atlantic to the coast of New Jersey or to the coast of Delaware, but I think we have discovered that is not necessarily dispositive of the question on location. The transport of

oil and its products over pipelines is now a familiar part of our technology, and a port might easily be farther away from areas of major population concentration. Those pipelines are very efficient in delivering the product across the land.

If the shipping line were a few miles to the south, I don't think it would be economically unfeasible, and certainly from the environmental standpoint, it would be more desirable, particularly when there are other areas a little farther off the straight shipping line that would welcome the kind of development that would follow the port.

Senator JOHNSTON. Thank you very much, Senator.

Senator Hatfield?

Senator HATFIELD. Thank you very much, Mr. Chairman.

Senator Williams, how long is the State of New Jersey?

Senator WILLIAMS. The north/south coastal line is just about 150 miles.

Senator HATFIELD. I want to commend you on some very excellent testimony, especially as you emphasize the landside impact of deep-water port development. I think too frequently we have, up to this point at least, been thinking primarily in terms of the technology of developing the actual terminal facilities either offshore or what would be required to dredge and to open up harbors for the draft requirements of supertankers, but your testimony this morning certainly broadens that picture and gives us a dimension to consider here that has not been, at least focuses upon, as well as you have done so this morning, and that is the landside auxiliary reception facilities that would be required to meet the deepwater port activity. I just want to commend you on that.

We had three sites studied on the Oregon coast and we found that on two of them at least that the landside requirements were inadequate to meet the needs for the shipping of potential petroleum or oil products. Then, the third one was the mouth of the Columbia River which they would propose to build an island in the actual channel area, and this was again one of the technological problems that finally was manifest in determining what landside area was available for such facilities.

So, from this experience in my own State and listening to your testimony this morning, I think you have made a very fine contribution to the committee's consideration of not just the facilities or the terminal facilities for a port but also what would be the industrialization and correlated activity onshore as it would service the port. With your population density, the rather limited shoreline that you have, the present utilization of that shoreline for other purposes, I think you make an excellent case.

Senator WILLIAMS. Thank you. I certainly appreciate that, Senator Hatfield.

Senator JOHNSTON. Senator Metcalf?

Senator METCALF. Thank you, Mr. Chairman.

I have no questions. Thank you for a very fine statement, senator.

Senator WILLIAMS. Thank you.

Senator JOHNSTON. Senator Stevens?

Senator STEVENS. Senator Williams, I just have a couple questions.

I will get from the Government witnesses as they appear the number of tankers that are coming into these ports today, but I wonder if you have considered the fact that domestic production, even assuming that Alaska oil reaches the market by 1980, will be such that, as the Senator from Louisiana said, we are going to have to import at least 50 percent of our oil.

You have some imports coming in now into the New Jersey area, as I understand it, in small tankers. I wonder if you have considered—

Senator WILLIAMS. Well, until recently, they were called "supers." They are large, but they are not, of course, the new generation.

Senator STEVENS. No, and that new generation, as I understand it, will bring into oil transportation a new function and that is it will be a function of the risk involved because the fewer the tankers the less risk of collision.

Now, I wonder if you have looked at the fact that without regard to what happens with supertankers, just in order to maintain your existing landside industrial base, you are going to have increased importation of oil into your area. The western production is practically gone. It is going down. California itself is deficated. Texas and Louisiana are falling off in terms of their ability to produce, and it is not just an increase in demand that is bringing about the importation; it is the decreasing production of American supplies; and you are going to have to have increased imports just to meet your existing landside base.

Now, my question is, assuming that the Congress would do what you indicate you think would be best for your area—and we respect your judgment—I certainly do—it seems to me there are only two alternatives. One is to do what the Senator from Louisiana suggests, that is, put the deepwater ports somewhere where they are willing to have them and have pipelines from there. That is going to increase the cost of your fuel substantially.

Do you think your people are willing to bear that increased cost of fuel?

Senator WILLIAMS. Well, I don't know what the difference in the cost would be if the port were in South Carolina. One area that looks more favorably on a deepwater port than New Jersey is South Carolina, which has also been studied. Another area is Louisiana, where I gather there is more than a favorable view of it. There is an absolute invitation to greater port facilities.

Senator JOHNSTON. Under proper conditions.

Senator WILLIAMS. And greater refining capacity. I don't know what the economics would be one way or the other. It would seem to me that the construction of a deepwater port is the major expense and I don't quite see that there would be a great differential in the cost of the product, whether they build the port 13 miles off New Jersey or whether they located it in Louisiana or South Carolina. The distances are not that great.

Senator STEVENS. I think we could demonstrate the economics to you rather quickly. If you are going to handle that oil and put it from the tanker into a pipeline, it is going to be at substantial cost to do so and then get it up to your facilities. You are going to have to have storage facilities in South Carolina and storage facilities in

New Jersey, too, if you are going to maintain your existing industrial base.

The next question I was going to ask you, my good friend, if your people are willing to pay an increased price, which is the assumption I have from your comments, then the answer is there. We could increase production if your people are willing to pay the price and you wouldn't have to have imports if we had a higher price. This is one of the complex problems here. I asked the Senators from Oklahoma or Kansas or from Texas or from the Midwest why the production is falling off and it is because they cannot afford to produce and meet the cost of production.

Now, if the people from the great industrial establishment of the East don't want increased imports, then the answer is there in terms of economics, to pay the price that will bring back the marginal production of the Midwest; and I invite your attention to that and I think anyone involved with the oil industry will tell you that if you had \$6 a barrel oil today you would not have a deepwater port problem today.

Senator WILLIAMS. Well, I think this raises a number of questions. It borrows more than I am prepared to answer in this forum. There is a mystery about the pricing of these petroleum products that I hope that the Congress will be part of solving. The present mysteries of shortages and prices, and of course, the action to divide the producers from their commercial outlets is a great big subject. I will say that, it seems to me, we are going to be paying increased prices anyway for gasoline in our automobiles, and in terms of my State, if the EPA is right, we had better darn well cut back on our use of the automobile because New Jersey is approaching Los Angeles in terms of the hazard of emissions from automobiles. Of course, that is one of the major products that has created our pollution problem.

So, Senator Stevens, you presented a worthy question; the answer is most profound; and I am sure that this joint committee will be grappling with this problem as part of its study of deepwater ports.

Senator STEVENS. Well, I appreciate your appearance. I would say, my good friend, it is no mystery to me, if you take off State and Federal taxation, I think you will find that the petroleum products have gone up less in the last 40 years than almost anything, including milk, and I really think it is time that we started looking at this thing from the point of view of efficiency and not from the point of view of who are the bad people, who are wearing the black hats and who are wearing the white hats, in the oil business. And I don't own one single thing in the oil business and I don't have any interest in it, but it seems to me we have got ourselves a punching bag now and that is the oil industry.

My good friend from Delaware might——

Senator BIDEN. I just smiled at the analogy of milk. I just thought we could use apple pie while we're at it. Oil and milk just don't seem to mix.

Senator STEVENS. I just had a little bit of a battle with the people from Minnesota about milk and somehow I am going to find out how the milk gets in the pipeline before I'm through.

Senator JOHNSTON. The Senator from Delaware is recognized for a few friendly questions.

Senator BIDEN. I have no questions. They would all be friendly if I had any, Senator.

Senator JOHNSTON. Senator Beall?

Senator BEALL. I have no questions.

Senator JOHNSTON. Thank you very much, Senator Williams. Your testimony has been very enlightening.

Our next witness is Congressman Young, whom we are very pleased to have. Congressman Young hails from Texas. We are glad to have our neighbor here.

**STATEMENT OF HON. JOHN YOUNG, U.S. REPRESENTATIVE FROM  
THE 14TH CONGRESSIONAL DISTRICT OF TEXAS**

Mr. YOUNG. Mr. Chairman and members of the committees, my name is John Young. I represent the 14th Congressional District of Texas a position which I have had the honor to hold for the past 17 years. I have with me here Mr. Duane Orr, who is the director of port development of the Port of Corpus Christi, which is my home town, and he has a statement which I would like to ask the chairman, if possible that we simply file it for the record.

Senator JOHNSTON. Without objection, we will file that statement.

Mr. YOUNG. Mr. Chairman, I likewise have a statement which I would like to ask be filed for the record and let me just proceed on my own, and I will limit myself to 5 minutes if that is satisfactory with the committee.

Senator JOHNSTON. That is satisfactory. We will give you as much time as you need.

Mr. YOUNG. Mr. Chairman, I come here as a Member of Congress, recognizing the urgency of the energy crisis and supporting every reasonable project to relieve this crisis. Now, that includes onshore ports, offshore ports and monobuoy type ports. I do this with but one proviso, and that is that these projects not hinder or retard, in any manner, the normal development of existing port facilities.

In that connection, I would draw the committee's attention to the fact that there are situations whereby the modification of existing port facilities a great deal can be done cheaply and quickly to alleviate the crisis with regard to the importation of foreign petroleum products. In particular do I want to make reference to the proposal of the Nueces County Navigation District which involves a simple modification of the existing port facilities at Harbor Island, Tex., which is part of the Port of Corpus Christi.

Now, if it please the chairman and the members of the committee, I would like unanimous consent to file a copy of that proposal of the Nueces County Navigation District.

Senator JOHNSTON. Without objection.

PORT OF CORPUS CHRISTI,  
NUECES COUNTY NAVIGATION DISTRICT No. 1,  
Corpus Christi, Tex., July 27, 1973.

SENATE COMMERCE COMMITTEE,  
SENATE PUBLIC WORKS COMMITTEE,  
SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE

GENTLEMEN: Following the appearance of Congressman John Young of the 14th District and the writer before your committee, Mr. Jack Horton, Assistant Secretary of the Interior Department of Land and Water Resources, appeared and made a statement—part of which is attached.

The estimates which he included in his statement regarding Corpus Christi are incorrect. He estimates the distance to be dredged at 39 miles, and removal of 710 million cubic yards of material at a cost of \$710 million.

The necessary modifications to the Corpus Christi ship channel to accommodate VLCC's were presented at the public hearing held by the Corps of Engineers in Galveston, Tex., on April 24, 1972. Modification of the existing channel to accommodate VLCC's of 275,000 to 300,000 DWT's are:

- (1) Extend the existing federal authorized project 5,132 nautical miles seaward to the 72-foot contours, see Dwg. No. P-1-54(1);
- (2) Deepen the existing outbar and jetty channels to 72 feet;
- (3) Dredge a VLCC docking basin in the vicinity of Harbor Island, Tex., and a turning basin in Lydia Ann Channel;
- (4) Relocate the shallow-draft Aransas Pass Tributary Channel;
- (5) Construct a storm-protection levee around three sides of the VLCC docking basin with material removed from the basin by pipeline dredge.

The entire length of the project from the 72-foot contour in the Gulf to the inshore end of the VLCC docking basin is only 9.6 nautical miles (not 39 miles). Material to be removed to accomplish the project is estimated at 62 million cubic yards (not 710 million cubic yards). Furthermore, the estimated cost of dredging is substantially less than the \$1.00/CY shown in Mr. Horton's tabulation. Such cost is estimated to be about \$0.70 per cubic yard.

Mr. Horton states that only two ports in the United States can accommodate 100,000 DWT tankers. These are in the Los Angeles area. He states that Beaumont, Texas is capable of handling 80,000 DWT tankers. Apparently his information is not current because deepening the channel to forty feet to serve the Port of Corpus Christi was completed on October 2, 1965, while deepening of the Beaumont Channel to the head of navigation is not yet completed. Corpus Christi is capable of accommodating vessels with greater draft than Beaumont because the water in the Corpus Christi Ship Channel is full salt water, while that in the Beaumont Channel is fresh or brackish water. This difference in the salinity permits ships to lift substantially more cargo at Corpus Christi.

The Corps of Engineers is presently deepening the out-bar and jetty channels and the inner basin at Harbor Island to 47 feet, and the remaining channels to 45 feet, which will permit some 100,000 DWT vessels to be accommodated at Corpus Christi. No other port in the Gulf, except Corpus Christi, has an authorized depth in excess of 40 feet.

The plan of the Nueces County Navigation District No. 1 to develop a Multipurpose Deep-Draft Inshore Port in the vicinity of Harbor Island, Texas, for which a Corps of Engineers' permit has been requested, is both economically feasible and environmentally sound. The Corpus Christi Project, which is a modification of an existing authorized Project, can be constructed and placed in operation in a minimum length of time. All work required to complete this Project lies within the recognized legal boundaries of Texas. Therefore, this project can be accomplished without any undue delay, since only a U.S. Army Corps of Engineers' permit is needed.

The Navigation District is ready to finance the Project, and proceed with its construction to help alleviate the Nation's energy crises upon receipt of a permit.

In your consideration of S. 1751, please keep in mind that there are some inshore ports in the United States which can be deepened to accommodate the larger vessels at a lesser cost than constructing a monobuoy system. The Port of Corpus Christi is one of those ports.

Yours very truly,

DUANE ORR,  
*Director of Industrial  
Development and Port Planning.*

Enclosure.

[From Daily Traffic World, July 23, 1973]

#### JOINT SENATE COMMITTEE OPENS HEARINGS ON OFFSHORE, DEEPWATER TANKER PORTS

ADMINISTRATION WITNESSES CITE COST SAVING ON OIL IMPORTS AND ENVIRONMENTAL BENEFITS DUE TO LOWER NUMBER OF SHIPS NEEDED AS MAIN REASON FOR PASSAGE OF ADMINISTRATION PROPOSED LEGISLATION

Jack Horton, Assistant Secretary of the Interior Department for Land and Water Resources, told the committee that the "safest and most economical

way" to handle the oil which must be imported to meet the energy shortage is to construct offshore ports that would enable the supertankers to be unloaded in deep water. He noted that in 1970 tankers averaging 30,000 deadweight tons 2.5 million barrels of oil a day to the east coast. By 1980, he said, "we could be importing as much as 6.6 million barrels per day on the east coast" and that even if the average tanker size rose to 50,000 deadweight tons, tanker traffic in the harbors would double.

Speaking of the world's tanker fleet, Mr. Horton said that 90 per cent of the 3,002 vessels currently in the fleet are below 100,000 deadweight tons, accounting for about 60 per cent of the total tanker capacity. Over 200 tankers of the 175,000 deadweight tons or larger were in operation on January 1, 1972, and 330 more were on order. The shift to bigger vessels is clear, he said.

"In less than 20 years the world's largest tanker has increased by a factor of eight from 56,000 deadweight tons in 1956 to 477,000 deadweight tons in 1973," said he. "A tanker of 706,000 deadweight tons is on the drawing board (and) I should also point out that there are nine super tankers (over 200,000 deadweight tons on the ways or on order in U.S. shipyards."

Mr. Horton said that almost all the U.S. ports were in the range capable of handling 30,000 to 55,000 deadweight-ton tankers. The only two ports that can handle 100,000 deadweight-ton tankers are in the Los Angeles area, with Beaumont, Tex., and Portland, Me., the only ones capable of handling 80,000 deadweight-ton tankers.

He noted too, the freight saving in dollars per ton between a 65,000 deadweight-ton and a 500,000 deadweight-ton vessel is \$4.60 per ton on long hauls from the Middle East. "With these kinds of savings, the large tankers will be built and used," said he. "If we do not have the facilities to handle them, the oil we import will undoubtedly be carried by deep water draft tanker to a trans-shipment terminal in the Caribbean or Canada and then shipped to our ports in smaller tankers."

Mr. Horton told the committee that there were in essence three options open: (1) Do nothing; (2) stimulate dredging of some principal ports of entry to accommodate larger vessels or (3) permit the licensing of deepwater terminal facilities. He dismissed the first option as economically unsound and the second as environmentally and economically prohibitive. Mr. Horton gave the following estimated costs of deepening some major U.S. harbors to take the supertankers.

Port	Approximate distance to be dredged (statute miles)	Volume to be dredged (million cubic yards)	Cost <sup>1</sup> (millions of dollars)
Boston.....	12	150	(*)
New York.....	22	220	1520
Philadelphia.....	100	1,550	(†)
Baltimore.....	230	2,900	13,200
Norfolk.....	55	650	900
Charleston.....	43	560	750
Tampa.....	65	1,280	(‡)
Mobile.....	51	470	970
Galveston.....	55	500	500
Corpus Christi.....	39	710	710
Los Angeles.....	5	40	60
San Francisco.....	13	130	150

<sup>1</sup> Costs are to dredge 1,300-foot wide channel 90 feet deep and does not include docks, slips, turning basins, etc.

<sup>2</sup> Bedrock below 60 feet. Estimate \$90 million to dredge to 60 feet (60 million cubic yards).

<sup>3</sup> Bedrock below 35 feet in part costing \$15/cubic yard to remove.

<sup>4</sup> Rock bottom in river and relocation of New Jersey Turnpike bridge would cost billions of dollars.

<sup>5</sup> Relocation of tunnel and bridge not considered but probable.

<sup>6</sup> Relocation of tunnel and bridge not considered but probable.

<sup>7</sup> Hard limestone below 30 feet also bridge interference.

Mr. Horton said the subject of deepwater ports involves energy resource supply; environmental quality; economic viability; navigational safety; national security, and international law, the authority over which is currently dispersed throughout the government. He called on the committee to approve the Administration bill which would place the authority over the ports and relating factors within the Department of Interior.

Mr. YOUNG. In considering this proposal, the committee will see that this is indeed a simple port modification. It calls for a channel of the depth of some 72 feet, which is almost that deep already; a length of 9½ miles, mind you, from 70-foot depths in the gulf to Harbor Island, a port that has been in existence handling major petroleum products for nearly 50 years, a port whose authorization dates back to 1910. So we are not talking about anything new here. We are talking about a very simple, relatively inexpensive, quick of realization port modification.

When I say inexpensive, I am talking about possibly one-tenth of what an offshore port facility would cost. When I talk about speed, I am talking about possibly 30 percent, 18 months of construction under favorable conditions from start to finish. So I am talking about a project, Mr. Chairman, that can be realigned and utilized quickly.

Now, we can't talk about projects without talking about the environmental aspects, and I want to draw the attention of this committee to the fact that this port at Harbor Island has been handling cargos up to more than 80,000 dwt. The tanker Manhattan, that broke the ice up to the North Slope, was one of the ships that has been in there. We have been handling cargos of that character for nearly 50 years without a single incident or a mishap.

The small depths of this port will guarantee that there will be a minimum amount of environmental impact, if any, and the record of excellence shows that at least there is not anything present there of an inherent nature that is incompatible with the environment and the ecology of the area.

Mr. Chairman, in that respect, I would like permission to file an Environmental Impact Statement that was prepared by Dr. Oppenheimer, recently head of the Texas University Marine Research Laboratory at Port Oranges, Tex., right across the channel from Harbor Island.

Senator JOHNSON. Without objection, that will be filed.

Mr. YOUNG. In addition to this, I hope the Senators can see this—this is the gulf here. This is 9½ miles in here to Harbor Island where there are already some 35 or 40 pipelines in place in the vicinity to distribute these petroleum products as they come in. The improved modification would be right in here.

The tankers would be sealed off in their own berths without any possibility of spillage of oil, but in addition to that, there is an abundance of precaution. It lends itself to putting in place booms here, booms here and here, to completely seal off that port in the event that there should be some catastrophe that is, of course, not in contemplation; and, of course, through human error, you could have this happen at any time.

Now, I want to emphasize in closing, if you please, that this project is a modification. It is an intermediate step to this more elaborate offshore project that has been sitting off the Senator's State and off the Texas coast and elsewhere. It does not in any way conflict. It is a simple modification that could be put into effect relatively soon and relatively cheaply, and with that, that concludes my statement.

Senator JOHNSTON. Thank you very much, Congressman Young. How much depth do you have in that channel now?

Mr. YOUNG. We have an authorized depth of 45 feet but the pilots assure me that it is in the neighborhood of 55 feet at Harbor Island shortly off the docks there in Harbor Island, and due to the scouring effect of the water flowing back and forth through the jetties to the gulf that is many spots it is 72 feet right now. So we are talking about just a very minimum amount of effort to do this.

Senator JOHNSTON. And you think you are capable of increasing the channel depth to 72 feet?

Mr. YOUNG. 72 feet, yes, sir; and that would, as the Senator pointed out in his statement, take care of nearly—well, it would take care of 85.6 percent of the projected tanker tonnage for the next 20 years. And bear in mind, Senator, it would take care of dry cargo as well as liquid cargo. It would take care of tonnages from 250,000 to 300,000 dwt ships which, as I say, are projected to be about 85 or 86 percent of the tonnage expected to be the work horse in the next 20 years in this field.

Senator JOHNSTON. Congressman Young, what is your air pollution situation around the Corpus Christi area? Do you have much problem?

Mr. YOUNG. Well, we have the trade winds and so forth that have relieved the problem a great deal. The EPA people are down there holding hearings like they held in Houston and other places. It is my understanding that they are not going to include automobiles in the Corpus Christi area, which would indicate that they don't consider it to be as critical a problem down there as it is elsewhere. I don't think we have near the problem that may exist in some areas like right here in Washington.

Senator JOHNSTON. The reason why I asked is that I am wondering whether it might present any problem for you as frankly I fear for my State, that putting this much more polluting capacity with the onshore facilities focusing that in one area, whether it is in my State or yours, might not create the kind of problem that would inhibit the growth and continuation of industries already located there. Because if you put a refinery and a series of petrochemical complexes in the same area where you already have existing industry, it might for example inhibit the capacity of that existing industry to continue to exist and to expand due to new EPA rules on ambient air quality.

If that is so, if that is a significant danger, shouldn't it grant to the adjacent State of a superport some kind of special consideration. For example, in the allocation of natural gas which of course is a very clean burning fuel, allow them a bit extra natural gas to be used as boiler fuel, for example. Do you think the adjacent State ought to have that kind of consideration?

Mr. YOUNG. Well, Senator, what you are saying is a matter of grave concern to everybody. The authorities in the local area understand that we have to approach very carefully the question of changes and developments that would affect either the air pollution or water pollution. We are very conscious of that.

Of course, down at Corpus Christi, we are just about in the middle

of a 500-mile stretch of Texas coast and the closest State of the Union being Louisiana that has an abundance of gas and so forth. I really haven't given much thought to going beyond what the Federal Power Commission already has done in the allocation and distribution of natural gas. I don't now that I understand precisely what the Senator has in mind.

Senator JOHNSON. The difficulty is that the Federal Power Commission, of course, is cutting back now on the use of gas in industries in the producing States, your State of Texas, my State of Louisiana. Now, if you superimpose upon that cutback new industries it may result in new EPA regulations which in turn make it very difficult for the existing industries to exist. I think we ought to give them some special consideration if we are going to avoid the air quality problems.

Mr. YOUNG. I think there is some merit to that. Natural gas, of course, is becoming so scarce now that we can hardly afford to use it as a fuel, even within the States that produce it. For instance, in steel production, they are planning to use it as a chemical in connection with the catalytic action in connection with the production of steel. It just really is too expensive and too scarce to use. It is an excellent fuel, no question about it. We have presently planned and being built, facilities for the importation of liquefied natural gas and that will have to be distributed along the lines that the Senator says. I think some thought ought to be given to that.

Senator JOHNSON. Thank you very much, Congressman Young. Senator Stevens?

Senator STEVENS. Thank you very much Congressman.

I think you make a good contribution and point out one of the solutions to our situation; that is, to deal with the places that know the oil industry already. I think you have made a very substantial contribution to the hearings. Thank you very much.

Mr. YOUNG. I appreciate that, Senator. I might add, if you will permit me to, that we have introduced in the last Congress a resolution to study this project at Harbor Island. It was passed by the last Congress. This Congress has begun to fund a Federal study and the House put in \$100,000 and the Senate just last week concurred. So we are very hopeful this project will move along.

Senator JOHNSTON. Senator Metcalf?

Senator METCALF. Thank you, Mr. Chairman.

I want to welcome my old friend from the House of Representatives over here. Congressman Young and I have been colleagues in that body. You have given us another alternative that is a very interesting and I think a constructive one, and I am glad to have you tell us that it is going forward in the study project and I think it will be the responsibility of this subcommittee to look into all of these alternative programs as well as the primary program of just the superport or supertankers. Thank you for coming over.

Mr. YOUNG. Thank you.

Senator JOHNSTON. Senator Beall?

Senator BEALL. Congressman Young, I appreciate your appearance here today and the point you are making that we shouldn't

neglect the development of existing port facilities while determining whether or not we should proceed to build new offshore facilities.

I have particular interest in this because in the Port of Baltimore we are anxious to deepen that channel from its present 42 feet to 50 feet and we find that the excuses given is that we shouldn't do this until we decide whether or not we are going to build offshore port facilities, which I find a very invalid reason for not improving existing port facilities because whether or not we have the offshore facilities you are still going to need better capacity in your existing onshore facilities, and I would hope that—I think you make a very good point and I would hope that the Corps of Engineers and the Office of Management and Budget would recognize that the needs of this country are greater than just the consideration of offshore port facilities. They are indeed sufficiently great to mandate that we proceed to develop all of our port facilities so that they can handle the kind of ships that are used in today's international trade as effectively and as economically as possible and to best serve the people of our country

I appreciate your testimony here today.

Mr. Young. I thank the Senator. As you pointed out, there would be multipurpose ports, not just single-type of use.

Senator JOHNSTON. Senator Biden?

Senator BIDEN. I have a number of questions. I will try to be as brief as I can.

You raise a very valid point. It seems to me that, as Senator Beall pointed out, we shouldn't neglect existing possibilities in attempting to meet the needs of oil importation and how we are going to handle that. I would like to ask you a few questions. It may go a little further afield than that.

I would like your opinion because you have obviously been up on and aware of the oil problems of this Nation, coming from the section of the country which you do and you have 17 years of experience. I wonder whether or not you could comment for me on whether you think this Nation, in particular the President's energy message, has really thought about the possible alternatives to a little old question called oil. Have we begun to think about the alternatives to oil, let alone how to import oil? We seem to start off these hearings with the basic premise we are going to rely on oil and that is the only logical source of energy we are going to have in the near future so let's figure out how to accommodate that.

My question goes back further. Do you think we have investigated the alternatives to oil for meeting our energy needs in this Nation?

Mr. Young. Senator, I don't think that we have. I personally was disappointed in the energy statement. Number one, I think that we need a well-balanced energy policy, one that develops an indigenous supply of energy as well as recognizing the need for offshore ports. I say I was disappointed in the energy statement. For instance, it made no mention whatsoever to heavy crude, crude that for the reasons that Senator Stevens mentioned earlier is just uneconomical to produce at this time because of the technological problems and so forth. It is estimated that heavy crude—you know, the

heavy liquid petroleum is too difficult to produce under normal conditions. It has been estimated there is something like 900 billion barrels of it under the North American continent. The Bureau of Mines, in 1967 in a publication, makes the breakdown for the heavy crude that is under the States of the United States, the continental portion of the United States, and it is 464 billion barrels of it and nothing was mentioned whatsoever about it in the energy statement.

It would make a major contribution, in my judgment, to the indigenous balance that we need in our petroleum production.

Also, as the Senator pointed out a moment ago, a little bit of encouragement price-wise would bring in a lot more production, not only in the exploration for new fields but there are many, many oil fields in my home State right now that are virtually untapped because of the economic problems in building these fields up and, of course, when they took away a portion of the depletion allowance it didn't help us a bit. The Senator understands that.

Senator STEVENS. Would the Senator yield?

Senator BIDEN. Certainly.

Senator STEVENS. Many of us tried to point that out to them 2 years ago when we went down from 27.5 percent what would be the result, but today, you know, no one seems to recognize what the change in the depletion allowance meant to the supply of oil and gas in the country.

Mr. YOUNG. There are quite a few members of the House that did that, Senator, and I never miss an opportunity to remind them now that the shortage is here that I hope they will remind their constituents of the speeches they made, particularly when gasoline costs \$1 a gallon when they can get it. I know that they wouldn't want to say to their constituents that it was their forethought that brought this about.

Senator BIDEN. Congressman, do you think that maybe gasoline should cost a dollar a gallon to maybe force people to realize that at one point in time that our desire for creature comforts and convenience have to come on head-on with the environment and we are going to have to start making decisions? Do we want to drive every car we can produce and pollute the hell out of the air or are we going to have to put some limits on the way people have to move around? Are we going to have to decide we are going to say we are going to invest several billions of dollars now in mass transportation; we are going to put curbs on the building of parking facilities, on highways; we are going to force people into the position of having to say, "Look, what do you want? Do you want 14 miles of open beach or do you want another 100,000 air conditioners and 10,000 more automobiles in your little county that eat up so much gas?" Aren't we going to come to that eventually?

Mr. YOUNG. I think we are. I am impressed by the fact that I think the American people right now are slowing down. It seems to me that they are, on the highway. They are conserving gas. I have read the figures. For the first time in many, many months we are producing more gasoline than we are consuming in this country and in that connection I think they claim if you reduce the speed of your car from 60 miles per hour down to 50 you save something

like 11 percent of the gasoline. You might also save your life. You can't tell.

Senator BIDEN. One last question, Congressman. I don't know this for a fact, but I have heard it stated, depending on who is stating it, that we have from 200 to 1,000 years of coal supply to meet the needs of this Nation for the next 200 to 1,000 years, depending on who is giving that estimate; and that the only problem allegedly is that we haven't figured out a way to remove the sulfur content from the coal. I don't know this is true. Senator Stevens, who knows much more about this than I, maybe could comment. But if any or all of that is true, what should we be doing about developing that totally indigenous source which wouldn't require construction of any ports or facilities. It might require digging up the State of Montana or something in order to get it, I don't know—but what do you think we should be doing about that?

Mr. YOUNG. Senator, I think that we should be moving on all these fronts. What you say about coal is very, very true. Some of the coal is easily accessible but it has too high a sulfur content. Some of it out in the North or Midwest I understand there is no sulfur problem but the transportation is a problem. There is a lot of research and development that should be done in coal, just like in heavy crudes, and I think we should move along all these lines. I think we should have a balanced energy program.

Senator BIDEN. I guess what I am saying is how do we move on these lines? We hear proponents of that position state that, well, we should attack the energy problem and the research needed in the energy area the way we did space. We should come up with several billion dollars in congressional appropriation for research in this area.

Is that the way to go about it in your opinion?

Mr. YOUNG. I think research and development is the answer to it.

Senator BIDEN. Government funded research and development?

Mr. YOUNG. Both Government and private industry. The private people are doing a great deal. I also serve on the Joint Committee on Atomic Energy and on the Subcommittee on Energy, and there is a great deal of private interest in research and development in atomic energy, as you undoubtedly know, but it should be in coal and every conceivable source of energy that we can tap.

Senator BIDEN. Thank you very much, Congressman.

Senator JOHNSON. We do have pending, Senator Biden, in the Interior Committee now, and they are having hearings on, a research and development bill. The idea of the bill is to create five quasigovernment corporations to study coal, liquification, gasification, advance power cycles, fastbreeder reaction, geothermal—some of the new energy sources. The testimony is, that while all of these offer great promise for the future, that Government money in massive doses can't totally solve the problem in a quick time frame; that the best we can hope for is a capacity for energy sufficiency sometime in the early 1980's. So the problem we have got is to deal with the problem, at least according to the testimony on that bill, between now and the early 1980's when hopefully the research and development in these new energy sources will pay off in the dividends we need to have that energy self-sufficiency.

Senator BIDEN. I understand that, Mr. Chairman. My concern is that we tend to do—what we tend to do in this country is we will put off—if we solve the initial crisis and decide to meet the crisis with deepwater port facilities or whatever and count on the importation of oil, what we will tend to do—I will lay you 8-to-5, if you and I are here long enough to see it—that 15 years from now when the crisis hits again we will say “My Lord, we’ve got to start research and development. We’ve got to put a massive effort into that area.” When they cut off the supply from the Middle East we have to do something about it.

Mr. YOUNG. You will make a bad mistake if you do that.

Senator BIDEN. I just want something to begin being done now to meet that problem.

Mr. YOUNG. If I might just add, in that connection, Senator, not only do we need the balanced energy program—we need it for energy for ourselves, but also to keep some of our foreign neighbors honest on their pricing and so forth.

Senator BIDEN. Thank you.

Senator JOHNSTON. Senator Scott?

Senator SCOTT. Thank you, Mr. Chairman.

I would merely add my word of welcome and thank the distinguished Congressman for his contribution.

Mr. YOUNG. I thank my former colleague.

Senator JOHNSTON. Senator Buckley?

Senator BUCKLEY. Thank you, Mr. Chairman.

I regret I couldn't be here in time to hear the testimony so I think my questions might not be on target, but I shall read your statement with care.

Mr. YOUNG. Thank you.

Senator JOHNSTON. Congressman Young, we appreciate very much your very excellent testimony. You have given us some new alternatives to consider and we appreciate your appearance very much.

Mr. YOUNG. Thank you, Senator.

[The statements follows:]

STATEMENT OF HON. JOHN YOUNG, U.S. REPRESENTATIVE FROM TEXAS

Mr. Chairman and members of the subcommittee: My name is John Young. I represent the 14th Congressional District of Texas which is located along the middle gulf coast. I wish to thank this joint subcommittee for permitting me to appear here today.

In realization of the urgent problems confronting our nation in the field of energy, I wish to state categorically that I come here as a member of Congress in support of every reasonable program and project designed to alleviate the energy crisis and particularly with reference to the need for the improvement of conventional port facilities. I support the concept of offshore superports, and the improvement of existing port facilities where practicable and feasible. There is but one proviso I would add to my support of these proposed offshore projects and that would be that they in no way constitute a hindrance or impediment to the normal development of existing port facilities.

With regard to the proviso stated and in further recognition of the urgency of this crisis, great special emphasis should be placed on practical and expeditious accomplishment of needed port improvements. In this I have special reference to existing port facilities that can be quickly and economically modified so as to meet this immediate need for improved port facilities.

An example of this would be the proposal of the Nueces County Navigation District for a modification of the existing Corpus Christi Ship Channel at Harbor Island, Texas, for which a survey report was authorized by committee resolution of October 12, 1972 (I ask unanimous consent to introduce a copy of the Nueces County Navigation District proposed Harbor Island project). This proposal, when realized, would provide a practical and efficient intermediate facility that would in no way conflict with any of the proposals contemplated in the offshore superport concept. The project could be accomplished at a fraction of the cost and a fraction of the time needed for a superport offshore. With a depth in the neighborhood of 72 feet, it would accommodate vessels in the 250 thousand to 300 thousand DWT category. This facility would have the added advantage of being a harbor and providing a multi-purpose port with all facilities available at a conventional onshore port. I am advised that there are presently in place some 35 or 40 pipelines of various kinds capable of distributing petroleum to various points of need in the central and southwestern United States.

All projects must fully and carefully take into consideration environmental and ecological situations, and in this the proposed Harbor Island project is no exception (I ask unanimous consent to introduce for the record an environmental impact statement prepared by Dr. Carl H. Oppenheimer). While there has been much speculation as to the relative environmental impact of different types of port facilities, the Harbor Island proposal has the added advantage of a history of excellence in this field. The present facility at Harbor Island has been handling large tankers (up to more than 80 thousand tons) for nearly half a century without a single serious mishap. Through human error, this record could be shattered tomorrow, as it could be at any other port facility, but the many years of successful operation establish as a practical, realistic fact, that there is nothing at Harbor Island inherently in conflict with the ecology and environment. The proposal of the Nueces County Navigation District calls for water depths of 72 feet which does not represent a great increase in depths to those already in existence at this location; and, because of the oceanographic characteristics of the gulf in the vicinity of Harbor Island, the channel length would not exceed more than 8 to 10 miles. Such a short channel permits the most careful control of vessel movement, even to the extent of allowing only one ship in or out at a time, thus eliminating absolutely any chance of collision!

I cannot discuss proposed port improvement projects without making reference to the recent report of the Lower Mississippi Valley division, Corps of Engineers on Gulf Coast deep water port facilities. I particularly refer to the very unique, startling and ridiculous conclusion reached by the Corps of Engineers that the improved port facilities must be made and considered on a "systems" basis, i.e. that they be all onshore dredged channels, artificial islands or monobuoys. With regard to the onshore dredged channel consideration for the Gulf of Mexico, the Corps has selected 5 onshore port locations involving the dredging of something like 300 miles of channel 100 feet deep. Of course, this would be an enormously expensive undertaking and the environmental impact would be necessarily horrendous. But what we are talking about at Harbor Island, Texas, I reemphasize, is a channel merely 9½ miles long and 72 feet deep at little cost, no environmental impact, and capable of quick realization. The fact is, common sense dictates that we put in whatever type of facility (onshore, monobuoy, or offshore artificial island) that best serves the need at that location.

I have introduced H.R. 8614 designed to get the Corps of Engineers moving on the urgent necessity of providing improved port facilities and to authorize the Corps to accept non-federal funds for the urgently needed project. I understand that the Corps of Engineers sometimes cannot meet rigid dates as to planning and advanced engineering and design, but Corps cognizance at Harbor Island dates back to 1910 when the original survey study was authorized and thus much of the needed information for this project is already in hand. In any event, the Corps cannot proceed without funding, but because of the emergency nature of the energy crisis in south Texas and all over the nation I am hopeful and expectant that there will be non-federal funds available to supplement the federal appropriations at all levels of the project—survey study, planning, advanced engineering and design and construction. If, indeed, such a situation should come to pass and the project proves

to be of such high merit and of sufficient national need as we are confident it will be, then I would hope the Appropriations Committee would see fit to reimburse the non-federal funds expended in the realization of the project.

Mr. Chairman and members of the subcommittee, H.R. 8614 emphasizes the urgency of timely action and provides the authority through which this project may be accomplished by the most feasible and expeditious means. The non-federal funding and reimbursement aspects of the bill are permissive in that the authority cannot be carried forward except in consonance with approval by the Appropriations Committee. I most respectfully urge this joint subcommittee's consideration of the Nueces County Navigation District's proposed channel modification at Harbor Island, Texas in considering those steps that can be taken quickly and effectively to bring about a solution to our energy crisis.

#### STATEMENT OF DUANE ORR

Mr. Chairman, my name is Duane Orr, director of industrial development and port planning for Nueces County Navigation District No. 1, Corpus Christi, Tex., otherwise known as the Port of Corpus Christi, and hereinafter referred to as "district."

The district is owner and operator of the public dock facilities within the boundaries of Nueces County Navigation District No. 1 whose boundaries are co-extensive with those of Nueces County, Tex. It also provides items of local cooperation required on all Federal authorized waterway projects.

#### INTRODUCTION

It is a pleasure to appear before you today to present the district's plan for developing a multipurpose deep-draft inshore port in the vicinity of Harbor Island, Tex., similar to the existing inshore port at Rotterdam-Europort. This plan, which was originally presented to the Corps of Engineers at a public hearing on April 24, 1972, represents only a modification of the existing Federal authorized (Public Law 90-483) Corpus Christi Ship Channel. In phase 1 of the plan, the Aransas Pass outer bar and jetty channels will be deepened to a minimum depth of 72 feet, and a VLCC docking basin on and inshore of Harbor Island and a turning basin in Lydia Ann Channel will be dredged to a comparable depth to accommodate vessels of 275,000 to 300,000 DWT capacity. Harbor Island, Tex., and Lydia Ann Channel are situated immediately inshore of the inner end of the existing jetties. In the initial development, a maximum of four docks with necessary surge tankage, piping, and ancillary facilities will be constructed.

The district, on June 20, 1973 (see attached Exhibit A), made application to the Corps of Engineers for a Department of Army permit to develop a deep-draft inshore port as outlined above. The cost of the project will be financed by issuance of revenue bonds by the district, which is a political subdivision of the State of Texas. The bonds will be retired user fees.

This project will be in the public interest since the facilities will be publicly owned, and will be available to all users on equal terms and conditions as provided in the published tariffs of the district. Development of the project will result in a reduction in energy costs to the consumer, and will provide better protection for the environment than any other plan presently being considered.

#### NEED FOR ADDITIONAL ENERGY IN THE U.S.

Each of you is fully aware of the energy crisis, and I will not impose on your valuable time to discuss the necessity to import additional crude oil to meet the Nation's energy needs. The National Petroleum Council recently estimated that U.S. oil consumption will increase from 32 million barrels per day in 1970, to about 26 million barrels per day in 1985.

Oil production is declining in the United States, but it is decreasing much more rapidly in south Texas, which is the area that industries in Corpus Christi presently depend upon for its supply of crude oil. Production of natural gas is also declining, while the demand for both crude oil and natural gas continues to increase at an astonishing rate. The present rate of growth in demand is estimated at 4.1 percent annually. Synthetic oil and gas production is expected to increase rapidly, but neither will become a

significant factor in reducing the energy crisis until after 1980. In the meantime, crude oil must be imported from foreign sources to fulfill U.S. energy requirements. By 1976, a substantial percentage of the crude oil requirements for south Texas energy-producing industries must be imported to replace rapidly declining domestic production. By the end of 1976, it is estimated, based on written statements, that local energy-producing industries will require about 1,200,000 barrels of crude oil per day.

#### STATUS OF PRESENTLY AUTHORIZED CORPUS CHRISTI SHIP CHANNEL

A government hopper dredge is presently working on the Aransas Pass Bar deepening the channel to a minimum depth of 47 feet below mean low tide. Pipeline dredges under contract to the Corps of Engineers are presently deepening the inner basin at Harbor Island to 47 feet, and deepening  $8\frac{1}{2}$  miles of the channel across Corpus Christi Bay to 45 feet and widening it from a width of 400 feet to a minimum width of 500 feet. The enlarged channel, when completed, will accommodate fully-loaded tankers of 80,000 to 90,000 DWT capacity. When the present improvements are completed, the port of Corpus Christi will be the deepest waterway on the gulf coast; however, such depth will not be adequate to accommodate the newer and larger tankers presently in service, being constructed, or being planned.

#### PLAN FOR DEVELOPING A MULTIPURPOSE DEEP-DRAFT INSHORE PORT

Because the presently authorized channel will not accommodate these larger tankers, the district plans to deepen the Aransas Pass outer bar and jetty channels from 47 feet to 72 feet, and dredge a VLCC docking basin on and inshore of Harbor Island, and a turning basin in Lydia Ann Channel. The length of the channel from the 72-foot contour to the inshore end of the VLCC docking basin will be only 0.5 nautical miles. The approach to the bar from the 72-foot contour to the inner end of the jetty channel will be straight. Only after reaching the inner end of the jetties will a  $12\frac{1}{2}^\circ$  starboard turn be required for tankers to approach alongside the docks in the VLCC docking basin. The docking basin will be 1,800 feet wide and 3,350 feet long. Application has been made for a permit to construct a maximum of four public oil docks along either side of the basin.

When the deep-draft inshore port is completed, it is estimated that ocean transportation costs to the Corpus Christi Bay area will be reduced to less than 45 percent of the present cost of transporting crude oil in 30,000 DWT tankers from the Middle East.

A channel depth of 72 feet for the project was selected because studies made by the district indicate that about 86.1 percent of the tankers expected to be in crude oil service will not exceed 275,000 to 300,000 DWT capacity. However, in the final design, provisions will be made for future deepening of the channels and basins should this become necessary.

#### ADVANTAGES OF A MULTIPURPOSE DEEP-DRAFT INSHORE PORT

The more significant advantages of a multipurpose deep-draft inshore port, sometimes referred to as the project, are:

1. Due to the nearness of deep water to shore at the Aransas Pass Bar, an inshore port can be developed by deepening the existing authorized channel from 47 feet to 72 feet at less cost than any other plan which is being considered on the gulf coast. However, this is not necessarily true at other sites along the gulf coast.

2. An inshore port, such as the one planned by the district, is also capable of economically transshipping dry bulk cargo, which is not true of an offshore monobuoy system that can only handle liquid cargo. The plan of the district also contemplates providing public facilities for handling dry bulk cargo in the future; however, the initial emphasis will be directed toward providing those facilities needed by local energy-producing industries to receive imported crude oil. It is estimated by the end of 1976, the date scheduled for the Harbor Island Deep-Draft Inshore Port to be in operation, that it will require the equivalent of one VLCC tanker every other day to supply the crude oil needed by those industries presently located, or who have announced plans to locate in the Corpus Christi Bay area. However, the project will be planned so that it may be easily enlarged to meet future needs.

3. Early construction of the project is possible because of its simplicity and the fact that no major technical problems must be solved before work can commence.

4. The inshore facilities are capable of being operated 365 days a year without shutdown or delays due to heavy seas, which is not possible with any offshore plan.

5. An inshore port is less vulnerable to destruction by unfriendly forces. The Nation's security demands that such facilities provide maximum security should a national emergency arise. The Harbor Island Deep-Draft Inshore Port fulfills these requisites.

6. The economical advantages of a landlocked, inshore port situated inside the Aransas Pass Bar far offset any possible ecological or environmental damage that might occur to the Corpus Christi Bay area.

7. Vessels using the inshore port will enjoy cost savings and convenience of ship servicing at landside facilities without the necessity of making waterborne deliveries and transfer of personnel at sea.

8. Ships will be capable of carrying full cargoes, since the saline water in the VLCC Docking Basin will assure no loss of buoyancy.

9. Development of the inshore port on Harbor Island will not create any navigational hazards in the Gulf.

10. The inshore port will not interfere with, or create any hazards for, the fishing industry, since no pipelines, anchors, or other underwater installations will be located in the trawling areas in the Gulf.

11. The project is suited for stage development should the necessity arise to deepen and/or enlarge it in the future.

12. The project, during construction, will have very little effect on the environment.

13. The Harbor Island inshore port will be located in an area which has previously been committed to, and continues to be used for industrial, navigation, and cargo transfer operations. Harbor Island and the adjacent area, on which additional docks, tankage, and ancillary facilities will be constructed, have been used for such purposes since 1911. A channel to, and turning basin adjacent to, Harbor Island were originally authorized as a Federal project by the Rivers and Harbors Act of March 4, 1913 (H.D. 1125/62/8).

14. The project will provide maximum protection for the environment. Berths for VLCC tankers will be located in calm waters, in a basin landlocked on three sides, with a spill boom maintained across the entrance to the Docking Basin during cargo transfer operations, thus avoiding the high risk of a spill which is inherent in any open-ocean rough-water cargo transfer. A spill, should one occur in the VLCC Docking Basin, can be easily contained and removed by the active Corpus Christi Area Oil Spill Association, of which the district is a member.

15. Minimum navigational hazards will exist for vessels approaching the inshore port situated inside the Aransas Pass Bar. The channel approach to the bar from the 72-foot contour in the Gulf to the inshore end of the jetties will be straight. After reaching the inshore end of the jetties, only one 12½ degree starboard turn will be required for tankers to approach alongside the docks in the Docking Basin.

16. Active community support exists for the project in Corpus Christi. In a questionnaire mailed recently to members of the Chamber of Commerce, over 95 percent of those replying supported the District's plan to develop a multipurpose deep-draft inshore port in the vicinity of Harbor Island, Tex. Furthermore, most of those replying agreed to assist in promoting the project.

#### ENDORSEMENT OF PROJECT

Excerpts from a joint concurring resolution (H.C.R. 174) which the Texas House and Senate passed during the recent session of the State legislature endorsing the project reads as follows:

*"Now, THEREFORE, be it resolved by the House of Representatives of the sixty-third legislature, the Senate concurring, that the legislature of the State of Texas finds that a 72 foot, deep-water port facility at Harbor Island is desirable and beneficial for the State of Texas, and Nueces County Navigation District No. 1 is encouraged to work towards implementation of the*

project and the Federal Government is urged to give this project top priority to assist in alleviating the shortage in much needed shipping facilities."

The project has also been endorsed by the council for south Texas economic progress which includes 40 counties and some 46,745 square miles (equivalent in size to either New York State or Michigan State) in Texas. This council represents the Gulf Coast from Brownsville to Port Lavaca, Tex., a distance of 198.7 miles, which is over 50 percent of the Texas coastline. This resolution provides:

"Now, THEREFORE, *Be it resolved* that the council for south Texas economic progress approve the plan for development of a multipurpose deep-draft inshore port to accommodate large cargo carrying vessels at Harbor Island and Ingleside, Tex., as presented by Nueces County Navigation District No. 1 to the Corps of Engineers, U.S. Army, and to the Congress of the United States that the plan be implemented at the earliest practicable opportunity."

The Coastal Bend Council of Governments, by resolution No. 126, dated June 30, 1972, endorsed the project and changed its regional land use and transportation plan to reflect the need for such facilities. The resolution reads as follows:

"Now, THEREFORE, *Be it resolved*, that the Coastal Bend Council of Governments endorses the plan for development of large cargo-carrying facilities at Harbor Island and Ingleside, Texas, as presented to the Corps of Engineers, U.S. Army, by Nueces County Navigation District No. 1 at a public hearing on April 24, 1972.

*Be it further resolved*, that the Coastal Bend Council of Governments agrees to change its regional land use and transportation plans to reflect the need for such facilities."

The Corpus Christi City Council endorsed the Deep-Draft Inshore Port on Harbor Island, Tex., by Resolution No. 11539, dated June 1973.

Likewise, the City Council of Port Aransas, which city is located directly across the Corpus Christi Ship Channel from the Deep-Draft Inshore Port, endorsed it on November 22, 1972.

The City Council of Aransas Pass, Tex., has also advised the Corps of Engineers by letter of its support of the project.

For several months, a committee of the Corpus Christi Chamber of Commerce has been studying the district's plan. Upon a favorable report from this committee, the Chamber of Commerce Directors unanimously approved the project by resolution dated June 18, 1973, and encouraged the district to proceed promptly with the filing of an application with the Corps of Engineers for a Department of Army permit.

The district has received letters-of-intent from local industries supporting the project, and agreeing to guarantee payment of revenue bonds which the district expects to issue to construct the project. Revenue bonds issued will be retired by fees from dockage charges assessed ships berthing at the docks, and wharfage charges assessed against the cargo moving across the district's public docks.

#### REVIEW REPORT RESOLUTION

The House Public Works Committee, recognizing the importance of the project, adopted on September 19, 1972 the following resolution:

*"Resolved by the Committee on Public Works of the House of Representatives, United States, That the Board of Engineers for Rivers and Harbors is hereby requested to review the report on the Corpus Christi Ship Channel, Tex., submitted in Senate Document 99, 90th Congress, 2d Session, and previous reports, with a view to determining whether the existing project should be modified at this time, with particular reference to providing increased depths and widths in the entrance channels from the Gulf of Mexico to a deeper-draft inshore port in the vicinity of Harbor Island, Tex."*

This resolution authorized the Corps of Engineers to study the feasibility of a multipurpose deep-draft inshore port as a modification of the Corpus Christi Ship Channel, which project was last modified by Public Law 90-483.

Following adoption of this resolution, two members of the House Public Works Committee visited the Harbor Island site, and held a hearing at Port Aransas, Tex., on August 29, 1972, to obtain additional information about the project. Favorable comments were voiced by the Congressmen on the merits of the plan for a multipurpose deep-draft inshore port.

On June 25, 1973, the House Committee on Appropriations approved \$100,000

for the Corps of Engineers to proceed with its study of the Harbor Island project under the provisions of the above resolution.

#### STATUS OF THE PLANNING FOR THE INSHORE PORT

Preliminary planning of the project has continued since the Corps of Engineers' public hearing in April 1972. An initial environmental impact study on the effect that the project will have on Harbor Island and the adjacent bays has been completed.

The district has authorized \$100,000 for further engineering studies, particularly those studies required to determine the throughput cost necessary to retire the revenue bonds which the district contemplates issuing to construct this project. Industry is also contributing \$100,000 toward the cost of the Study.

An engineering study committee has prepared a scope of work for phase I of the feasibility study, and has interviewed nationally recognized consulting engineering firms. Upon recommendation of this committee, Bechtel, Inc., of San Francisco, has been selected by the Navigation Commission to develop additional information and data for use in determining the economic feasibility of the project.

In order to expedite the study, several private companies who are interested in the project have agreed to make proprietary studies and information available to the committee and consultants.

On June 20, 1973, the Navigation Commission authorized the filing of an application with the Galveston office of the Corps of Engineers for a Department of Army permit to deepen the Aransas Pass Outer Bar and Jetty Channels to 72 feet; dredge the Lydia Ann Turning Basin and VLCC Docking Basin to the same depth, and construct a maximum of four oil docks and other ancillary facilities necessary to develop a fully-integrated deep-draft inshore port on Harbor Island to accommodate large tankers. The permit application was forwarded to the Corps on the same day.

#### ECONOMIC IMPACT

The development of a deep-draft inshore port on Harbor Island will have a significant impact, not only on the Coastal Bend area, but on the State and the Nation.

Development of this project will assure the present petroleum refining and petrochemical industries, and other energy industries, continuing operations in the Coastal Bend area. Unless a deep-draft port is provided, these industries cannot remain competitive with similar industries which have access to cargoes received in VLCC tankers. Thus, without access to a deep-draft inshore port, it is only a matter of time until the economy of the Corpus Christi Bay area will decline, because local industries will either be forced to close or relocate in more favorable areas.

Development of an inshore port will result in some industrial growth in south Texas because of available sites and lack of major pollution problems. However, the extent which new industry will locate in this or any other area depends on many factors. Such growth appears more likely to occur in the Corpus Christi Bay area than in those Gulf Coast regions that presently have a high concentration of industry. Because south Texas is so sparsely populated, it is capable of sustaining substantial industrial growth without materially affecting the environment.

The cost of petroleum products will undoubtedly rise because of the short supply and additional transportation costs involved in importing foreign oil; however, the deep-draft inshore port will help to minimize this cost by reducing the overall transportation costs. Lower energy costs will not only affect each individual citizen directly, but it will also affect the industries that provide the jobs for the people. Unless existing industry is supplied with the lowest-cost energy possible, many companies may not survive. Should this occur, the economy of the Nation will be adversely affected.

According to all reliable authorities, there is no short-term solution to the energy crisis other than to import large volumes of crude oil. The land requirements for the deep-water inshore port, tankage, and ancillary facilities, including pipeline right-of-ways, etc., are minimal. To the extent that development is desirable, the inshore port will act as a catalyst to attract new industry, and assure the continued economic growth of the United States,

Texas, and the Corpus Christi Bay area. Since any such development will be subject to applicable State and Federal laws, it should not adversely affect the environment. Opportunity exists for growth, not only in the Coastal Bend area, but also in many inland areas which can be economically supplied with energy through this deep-draft port and existing or new pipeline systems. Inland users will benefit from this port, the same as industries in the immediate area, because the increased throughput will lower the transportation costs to all users.

#### ENVIRONMENTAL IMPACT

Having the capability to accommodate the very large crude tankers will drastically reduce the number of vessels operating in Corpus Christi Bay and the port of Corpus Christi. Since the likelihood of a collision is related to the number of vessel movements, a reduction in traffic will correspondingly reduce this possibility. To further reduce this possibility, the movement of deep-sea vessels will be limited to one-way traffic for about 4 miles of the Jetty and outer bar channels. However, such a restriction does not present a problem, since the bar pilots never pass two deep-sea vessels in this reach of the channel now. Such restrictions will not apply to small boats, such as shrimp boats and pleasure craft operating in the Jetty channel.

Three deep-sea oil docks, two barge docks, and two tank farms are presently situated on Harbor Island. One deep-sea dock fronts on the inner basin, and one barge dock is located on the Aransas Pass Channel. Two deep-sea docks and one barge dock are located along the Corpus Christi ship channel. Harbor Island has been used for industrial, navigation, and cargo handling operations, and as an oil transshipment terminal since as early as 1911. The Rivers and Harbors Act of 1913 authorized a deep-water channel from the gulf to Harbor Island, and basins in the Aransas Pass and Lydia Ann channels. For over 60 years, the terminals on Harbor Island, which is located directly across the Corpus Christi ship channel from the city of Port Aransas, Tex., have handled crude oil and similar products, while Port Aransas has been known worldwide as a recreational and fishing resort. During this long history, the industrial and recreational activities, respectively, have never conflicted with each other.

Far better environmental protection of the bays, estuaries, and gulf will result if the district's plan is adopted. Presently, there is no provision for permanent containment of spills at the existing docks; whereas the new docks located inside the VLCC docking basin will be landlocked on three sides, and a spill boom maintained across the entrance to the basin during cargo transfer operations. Thus, should a spill occur, it can be adequately controlled in the landlocked VLCC basin without danger to the bays, estuaries, or gulf until it can be removed from the water. Corpus Christi has an active, well-equipped, and manned, area oil spill association which is capable of coping with such situations. The district is a member of this association, as are most companies who will use the Harbor Island project.

The preliminary plan presented by the Corps of Engineers proposes a monobuoy system for the Corpus Christi Bay area. The monobuoy would be located in the gulf about 10 miles offshore, and directly downwind from the Padre Island National Seashore and Mustang Island State parks. Technology does not presently exist to contain a spill from an unloading operation in the open gulf so near shore. Thus, any oil spill which occurs would contaminate many miles of beautiful seashore beaches within a few hours because of the strong onshore winds that prevail in the Corpus Christi Bay area.

Every public oil dock constructed by the district during the last 14 years has had a concrete platform with a curb around the perimeter, and a sump near the center, with the sump connected by pipeline to shoreside ballast tanks. Thus, any spill which occurs on the platform flows to shore installations without causing any damage to the environment. It is contemplated that new docks constructed in the VLCC basin will provide even better protection for the environment. In addition to the environmental protection described above, it is planned to provide specially designed devices that will divert any spill which may occur between the tanker and dock onto the dock platform, and thence to shore.

Certain areas on, and adjacent to, Harbor Island, which have limited commercial and ecological value will be dredged away. On other similar areas,

the elevation of the land will be raised with the material dredged from the basin to provide storm protection for the VLCC docking basin, and land upon which all necessary tankage and ancillary facilities required for port operations can be constructed. Ecological damage, if any, will be minimized by containment of the dredged material within levees having appropriate spillways.

Any changes in the currents, caused by man's activities, between Harbor Island and Aransas Pass have occurred over a period of many years without any apparent ecological damage to the area. Initially, the Morris and Cummins Cut was dredged to connect Aransas and Corpus Christi bays for navigational purposes. Later, Harbor Island was bisected with a channel connecting Aransas Pass through Redfish Bay with the gulf. Material dredged from the latter channel was used to construct a railroad embankment dividing Redfish Bay into north and south areas. Later, the State highway department constructed Highway No. 361 by dredging another borrow channel, and depositing the dredged material alongside the existing railroad embankment.

In developing the multipurpose deep-draft inshore port, the areas that will be dredged away and filled, respectively, generally lie alongside, and parallel to, the existing highway and railroad embankments. Material removed from the VLCC docking basin will be deposited in such a manner as not to impede the present exchange of water between adjacent bays and estuaries. The only bridge opening the highway that may be affected lies on the inshore side of Harbor Island about midway of the length of the VLCC basin. Under normal conditions, there is no tidal exchange of water underneath this bridge. Originally, there was no bridge at this location; however, after Hurricane Beulah washed out the roadway at this point, the highway department added a bridge during reconstruction to provide an opening for exchange of water in case of unusually high tides. The effect of this bridge opening will be considered in planning this project. As additional protection for the environment and the ecology of the bays and estuaries, it is planned to relocate the Aransas Pass tributary channel around the VLCC docking basin.

To construct the project with a 72-foot depth will require dredging the outer bar channel only an additional 5.1 nautical miles seaward of the 47-foot contour where the Corps is presently authorized by Congress to maintain. The necessary dredging in this depth of water will have little, if any, ecological effect on the Gulf of Mexico.

To further evaluate the effects that this project may have on the ecosystem of the bays, the biotopes in Corpus Christi, Nueces, and Redfish Bays and the southerly reach of Aransas Bay were identified, and the acreage of each determined. Also, the area of each biotope in relation to the total area of these bays was calculated. It was determined that the dredged material used to raise the elevation of the land adjacent to the VLCC docking basin in phase I of the project will affect only 1.05 percent of the area in the above bays. Only another 0.42 percent of the bay area will be affected by the VLCC docking basin, part of which will be deepened in the development of this initial phase of the project. Thus, the bay area committed to phase I of this project represents only 1.47 percent of the total area of the above bays.

The plan provides for adding additional docks, if required in the future. If all docks planned were constructed, only an additional 1.49 percent of the above bays will be affected by disposal of dredged material to provide more land for improvements, and enlarging the VLCC Docking Basin.

Information collected, to date, indicates that the ecological and environmental damage to the Bay area will be minimal. Therefore, the Project is justifiable in order that the citizens of Texas and the Nation will have the energy which will be needed now and in the future.

#### CONCLUSION

The district has concluded from its study to date, that the multipurpose deep-draft inshore port is a feasible and viable project which will be beneficial to the Nation in relieving the energy shortage, and will provide a capability for accommodating dry bulk cargoes in vessels that cannot now enter any gulf port. Furthermore, the district is ready to proceed immediately with construction of the project upon receipt of the necessary permit. Since the project is situated entirely within Texas territorial waters, it is the district's opinion that only a Corps of Engineers' permit is needed to commence construction. Based upon this conclusion, an application for such a permit was filed with the Corps of Engineers on June 20, 1973.

## REQUEST

The district, in order to expedite the completion of this project at the earliest practicable date, respectfully requests the endorsement of its plan by the respective committees represented here today. Furthermore, it requests your cooperation and assistance in obtaining the necessary construction permit.

Senator JOHNSTON. Our next witness will be the Hon. Russell E. Train, who is Chairman of the Council on Environmental Quality and whose testimony promises to be particularly pertinent to this inquiry. Thank you very much, Mr. Train, for appearing before us, you may proceed.

**STATEMENT OF HON. RUSSELL E. TRAIN, CHAIRMAN, COUNCIL ON ENVIRONMENTAL QUALITY**

Mr. TRAIN. Thank you, Mr. Chairman. I have an extensive prepared statement which I would ask to have placed in the record in its entirety and then I have a shorter summary which I will proceed to read with the committee's permission.

Mr. Chairman and members of the Subcommittee:

I appreciate the opportunity to appear before you on behalf of the Council on Environmental Quality to discuss S. 1751, The Deep-water Port Facilities Act of 1973.

Mr. Chairman, the administration supports the need for new legislation providing for the establishment and regulation of deep-water ports and other offshore facilities. Furthermore, we recognize that these facilities must be located, constructed, and operated in a manner which would minimize or avoid adverse environmental impacts.

**NEED FOR LEGISLATION**

The need for such legislation is the result of the recent confluence of two major trends. First, of course, is the trend toward greater oil imports. A second major trend is the shift in oil transport to very large vessels called supertankers.

The draft of these supertankers can range, for example, from 67 feet for a 250 thousand dead weight ton tanker to 94 feet for a 540 thousand deadweight ton version. Yet the deepest channel to a conventional port on the east and gulf coast presently is only 45 feet. Deep inshore locations which could handle the deepest draft supertankers, exist naturally at several places in Maine. Elsewhere on the east and gulf coasts, inshore deepwater port facilities would have to be created by dredging existing harbors and channels. One west coast port, Seattle, can accommodate very deep drafts but Los Angeles/Long Beach, is only deep enough to handle tankers in the 100-150,000 deadweight ton range and San Francisco is even less deep. Thus, at the present time almost no U.S. harbor has the capacity to receive and unload the larger supertankers. The attention of industry, Government, and citizen environmentalists has turned, therefore, to the question of how to create facilities to bring the needed oil into the U.S. while, at the same time, protecting against the hazard of oil spills and controlling other environmental impacts of port development.

## DEEPWATER PORT FACILITIES ACT OF 1973

The administration's Deepwater Port Facilities Act of 1973, proposed in the President's energy message of April 18 addresses this question. It recognizes that today there exists no comprehensive institutional or legal framework for dealing with the many issues and problems involved in deepwater port development. The administration's proposal would provide such a comprehensive system.

The administration bill would authorize the Secretary of the Interior to license and regulate the construction and operation of deepwater port facilities beyond the 3-mile territorial sea. The bill prohibits the construction and operation of such a facility without such a license. Applicants for a deepwater port license must demonstrate that the port will not interfere with international navigation or other reasonable uses of the high seas. The Secretary cannot issue such a license until he determines that the siting and building of the port, and its subsequent operation, will minimize or prevent significant adverse environmental effects. S. 1751 recognizes the impact that port location would have on shoreside development and requires the Secretary to consult with Governors of potentially affected States to insure that port induced activities are consistent with State land use programs.

S. 1751 would establish a uniform, coordinated procedure for licensing and regulating deepwater ports. The Secretary of the Interior will have prime responsibility and applicants will have only one place in the Federal Government to go for a decision. As you know, authority for such a decision is currently fragmented among several Federal agencies. In his coordinating role, the Secretary will consult with every interested agency on specific applications, as well as on the development of regulations for the licensing program.

S. 1751 would require the Secretary to prescribe conditions for operating under the license—including conditions to prevent or minimize pollution of the surrounding waters—and establishes stiff civil and criminal penalties for violation of the conditions of the license. The administration bill also provides for revocation or suspension of a deepwater port facility license, including suspension forthwith in the case of a serious threat to the environment.

In determining that the proposed deepwater port facility will be located, constructed, or operated so as to prevent significant adverse environmental effects, the Secretary is also required by S. 1751 to consider the effects of the pipelines that would bring oil ashore.

I want to emphasize that the administration bill does not modify or reverse existing law covering the safety of navigation or the protection of the marine environment. On the contrary, the bill specifically extends important existing U.S. laws, such as the Federal Water Pollution Control Act, as amended in 1972, and the Ports and Waterways Safety Act of 1972, to the deepwater port facility just as if that facility were located in U.S. navigable waters. A NEPA statement would precede any decision on a license application.

**ENVIRONMENTAL IMPACTS**

Mr. Chairman, as you may know the Council has been conducting a major interagency study of these environmental impacts of deep-water ports. Parts of this study are complete and available to the public.<sup>1</sup> The remainder of our study should be available by summer's end. And I would like to comment on Senator Williams' testimony that the Council had been unresponsive with respect to requests for information on these studies. I am not aware of any lack of responsiveness. We started these studies a year ago last January at a time when it seemed to the Council—and this was our initiative—that deepwater ports and supertankers were a likely new technology that should be assessed well in advance and, as I say, the Council took the initiative for getting these studies underway.

Last December, the marine effects aspects of these studies were completed. They were very extensive. They have been made available to all interested committees and any Members of Congress that have desired them. A list is appended on the last page, Appendix C, of my full statement, and an indication of how these can be procured.

The second part of the study—an assessment of the landside environmental implications of deepwater port development, which has been undertaken for the Council by Arthur D. Little and Co. is not yet complete. We received a draft summary from A. D. Little only this past Friday. I have barely myself had a chance to glance over it. There is absolutely no intention to be unresponsive but we cannot make available something that does not yet exist.

I have used some of the data from the preliminary report in my statement and we would, of course, be happy to discuss with any Member of Congress or committee any of the preliminary materials, but I would not want to publish a draft report which we have not yet had a chance to examine ourselves.

The environmental effects of deepwater port development can be divided into two broad categories: the primary effects of the construction of the port and of oil spills once the port becomes operational, and the secondary effects of industrialization and development on the shore which would be induced by the location of a deep-water port.

**PRIMARY EFFECTS**

One of the major environmental risks associated with marine oil transportation is the potential for oil spills resulting from tanker accidents and operations. Other risks stem from the effects of port construction and maintenance, particularly if significant dredging is necessary.

Potential environmental impacts from these activities are a function of several factors: the probability of damage occurring in the first place (for example, the need to dredge or the likelihood of an oil spill); the effectiveness of measures to prevent or control the damage; and the vulnerability of any specific port location to whatever damage may occur. The overall risk of environmental damage

<sup>1</sup> See attachment C.

will in large measure be related to the type of deepwater port facility and its location with respect to critical coastal environmental features.

#### EFFECTS FROM CONSTRUCTION

The impacts of port construction on the environment are closely related to the amount of dredging or other disturbance of the sea bottom that takes place. For example, creation of a deepwater port in the Raritan Bay or northern New Jersey, would require dredging 8 miles of channel, 90 feet deep and 1,000 feet wide, and another 2 mi<sup>2</sup> of berthing and maneuvering area. Dredge spoil would total 321 million yd.<sup>3</sup> The environmental effects of such dredging could include destruction of sea bottom habitat, damage to estuarine marine life caused by increases in turbidity and salinity, and intrusion of seawater into freshwater aquifers. Disposal of dredge spoil would present another environmental problem, particularly if the spoils are polluted. Further, once dredged, deep channels must be periodically cleared of silt and sand by redredging, a process which is likely to repeat many of the environmental damages just described.

The construction of large artificial islands or breakwaters would also require some dredging. By interfering with normal wave and current patterns, these structures could cause shore erosion under certain conditions, particularly in estuarine or other near shore locations. Miles out at sea, however, the force such facilities might impose on ocean movements should not influence shoreline processes significantly, if at all.

The construction effects of far offshore type facilities—such as single point moorings or single anchor leg moorings—are likely to be negligible. Pipelines from such facilities—particularly if buried to protect against breaks—will require some dredging that would disturb the sea bottom and coastal areas where the pipelines come ashore. The amount of this dredging would be insignificant compared with dredging deep channels to existing ports.

#### OIL SPILL EFFECTS

Oil spills can be caused by casualties such as collisions, groundings, and rammings, by operational mishaps (often due to human failure) during the transfer of oil from tankers to port facilities, and by pipeline breaks or leaks.

Regardless of the source and size of an oil spill, several biological effects can occur: organisms can be killed outright by toxic components of the oil; they can die or be harmed by direct coating with oil; oil concentrations in the water can inhibit normal feeding or reproductive behavior; certain oil components, especially those suspected of causing cancer, can be incorporated into the food chain; and the covering of rocks, marshes, and similar areas with oil can destroy habitats.

The actual effect of any particular spill will depend upon a series of other factors, including the chemical composition and amount of oil, winds and currents in the region of the spill, the type of marine life in the region of the spill, the season of the year, and previous exposure to oil.

Furthermore time is an overriding factor in predicting and assessing biological impacts. Over time, as a result of wind and current movement, spilled oil "weathers"—that is, the toxic fractions will dissipate. A dynamic interaction of the wind, currents, and tides, in conjunction with biological and chemical degradation, determines where the oil will go and what effects it will have enroute and when it arrives.

Estuaries and nearshore coastal wetlands are the most biologically productive areas of the marine ecosystem and also the most sensitive to damage from either construction or oil spill effects. At shallow nearshore sites, such damage would be unavoidable. At far offshore locations, however, the probability that spilled oil will enter sensitive estuarine areas is much reduced. In addition, should a spill occur far offshore and should wind and current move it toward coastal areas, "weathering" of the oil enroute will tend to remove its most immediately toxic and lethal fractions. Not only will it take the oil longer to reach sensitive wetland and estuarine areas and recreational beaches, but, under certain wind and current conditions, the oil could move out to sea and never reach the shore as a slick.

#### PREVENTIVE MEASURES

There are a number of ways to prevent oil spills or to minimize their damage. I have already mentioned the different characteristics of different types of port facilities.

Ports that must be carved out of shallow estuaries or nearshore areas which require tankers to thread their way through narrow channels—often in waters congested with other ships—present risks of collision or grounding. Mandatory radar-guided vessel traffic controls could reduce those risks. Single point moorings permit the construction of ports far offshore in very deep water without expensive dredging or breakwaters. Such facilities can be located away from congested ports, harbor entranceways, and coastal shipping lanes, thus significantly limiting the probability that collisions will occur. In naturally deep water the probability of groundings is also reduced. If supertankers are constructed with double-bottoms (thus providing a void between the outside hull and cargo tanks) the amount of oil spilled should a grounding occur is significantly reduced. Finally, the use of pipelines—as opposed to barges or smaller tankers—to transship oil to shore, cuts the number of handling operations and the potential for accidents.

The major environmental disadvantage of single point mooring type facilities as opposed to fixed berth facilities is that, with present technology, little can be done to contain spills during unloading operations. In a fixed berth a floating apron can be installed around the stationary tanker to contain any oil that might be spilled. Since tankers are constantly in motion around single point moorings, aprons are not feasible. Further development and experience with single-point mooring technologies will be necessary to alleviate this problem before these facilities come into general use in the United States.

## SECONDARY EFFECTS

In the United States, the location of a superport will tend to induce new industries, particularly refineries and petrochemical complexes in the immediate area serving the port and in the surrounding region.

The creation of new petroleum-related industries would induce associated commercial and economic activities. An overall increase in economic development will cause population concentration and needs for new housing and added public services such as sewage treatment, transportation, schools, electric power, and recreational facilities. Each of the activities in turn will result in a range of environmental impacts beyond what would normally be expected without a deepwater port. The impacts include demands for land and water supply; increased air and water pollution; and a burden on public services. Depending upon the nature of a given area, induced effects could cause it to change from undeveloped to industrialized or from developed to highly industrialized.

A framework of existing Federal legislation can help in planning and controlling superport-related development. Under the Federal air and water pollution laws, new industrial development generated by increases in petroleum refining and processing will be subject to stringent standards, reflecting the best available pollution control technology, covering the emission and discharge of pollutants to the air and water. In addition, these laws require that new facilities be compatible with ambient air and water quality standards. These ambient standards may, in some cases, require more stringent emission and effluent controls than the basic best available technology requirements. This framework of controls should assure that deepwater port related industrial development will occur within the limits of environmental acceptability.

The recently enacted Coastal Zone Management Act and the pending National Land Use Policy Act also provide a framework within which States can control the effects of industrial development upon land use. Two basic objectives of the President's National Land Use Policy Act are to encourage State control of large scale development of more than local significance, and to protect areas of critical environmental concern, such as coastal wetlands. The Coastal Zone Management Act, which encourages States to plan and control land use in the coastal zone, is especially applicable because secondary development associated with superports will affect coastal areas in every case.

## CONCLUSION

Given the favorable economics of deepwater ports, continuing to receive oil direct from overseas sources in smaller tankers is economically unrealistic. For example, it costs approximately \$9 per ton to bring crude oil direct to the U.S. east coast in 50,000- to 70,000 deadweight ton tanker. That same ton would cost only \$6.55 if carried direct in a 250,000-deadweight ton supertanker.

Therefore, the United States is faced with two basic alternatives. Either it can develop its own deepwater ports or it can transship

oil from non-U.S. Western Hemisphere deepwater ports in the Caribbean or in the Canadian Maritime Provinces. From an economic point of view, the choice lies between the cost of \$6.55 per ton, for example, if the oil is delivered to the United States by supertankers directly, and from \$7.05 to \$7.25 per ton if the supertanker delivers its cargo to neighboring foreign points for transshipment to the United States in smaller tankers.

In making this choice, the environmental implications are as important as the economic ones. Based on studies conducted for the Council by the U.S. Coast Guard, it appears that creating superports in the United States carries a lesser risk of oil spill damage than does transshipping oil from foreign ports.

For example, over a 20-year period, at an import level of 2 million barrels per day we can statistically project approximately 37 vessel casualties resulting in spillage of over 29,000 tons of oil, assuming small tankers averaging 50,000 deadweight tons transshipped oil from Canadian or Caribbean terminals to conventional U.S. ports. On the other hand, if the same oil were transported direct to U.S. offshore terminals in supertankers averaging 250,000 deadweight tons, we can project about four casualties totaling only 2,500 tons of oil spilled.<sup>2</sup> The supertanker example assumes that transshipment to shore would be via pipelines. Transshipment via small tankers or barges would, of course, increase the casualty potential and tend to negate the advantage of the superport over conventional systems.

In sum, then, the United States is going to need increasing amounts of imported oil. This oil will be imported in small ships—at greater risk of oil spills—if deepwater ports are not available to serve supertankers. The environmental impacts associated with port construction and oil spills can be significantly reduced by the development of far-offshore deepwater ports which will be served by supertankers at locations distant from congested harbors and coastal areas. The environmental impacts associated with the development of petroleum refining and processing industries would occur to some extent if the same amounts of oil were imported in conventional tankers. To the extent that these impacts might be focused on areas served by deepwater ports, State and local governments can plan for and control them using their traditional powers within a framework of current and pending Federal pollution abatement and land use management laws.

S. 1751 would provide a comprehensive and effective legislative mechanism to assure that both primary and secondary environmental effects are fully considered in the Federal decisionmaking process.

Thank you, Mr. Chairman, I will be happy to answer your questions.

[The attachments follow:]

<sup>2</sup> See attachment A for a more detailed presentation; attachment B describes the general spill probability methodology.

## ATTACHMENT A

COMPARATIVE TANKER CASUALTIES OVER 20 YEARS<sup>1</sup>

## Assumptions:

Throughput of 2 million barrels per day in both cases.

Case 1 = Oil transported to conventional ports in tankers averaging 50,000 deadweight tons (DWT)

Case 2 = Oil transported to offshore terminals in supertankers averaging 250,000 deadweight tons; transshipment to shore via pipelines.

Range of spills (in long tons)	Number of incidents		Number of tons of oil spilled	
	Case 1	Case 2	Case 1	Case 2
1 to 150.....	24.0	3.0	1,680.0	186.0
151 to 500.....	8.5	.65	3,306.5	250.3
501 to 3,000.....	3.8	.44	4,674.0	514.8
3,001 to 14,000.....	1.4	.21	11,144.0	1,577.1
14,000+.....	.17		8,364.0	
Total.....	37.87	4.3	29,168.5	2,528.2

<sup>1</sup> Derived from table 3 and figures 1 and 6 of attachment B, "Tanker Oil Spill Probabilities."

## ATTACHMENT B

## TANKER OIL SPILL PROBABILITIES

## INTRODUCTION

This paper presents a detailed methodology by which to project the frequency and magnitude of oil spills from tanker casualties. It was prepared for the Council on Environmental Quality by the U.S. Coast Guard.

## TANKER CASUALTY SPILLS

Before a tanker casualty was considered in this analysis, the following criteria had to be met:

The oil spill had to be a direct result of a rupture in a tank; and

It had to be known positively that oil escaped into the water.

A list was compiled from various sources that gave details of tanker casualties world-wide during 1969 and 1970.<sup>1</sup> In those instances where the spilled oil could not be quantified, a magnitude equal to the average magnitude for similar spills of less than 500 tons was assigned; i.e., no catastrophic casualties were assumed to have taken place in these cases. Instances where the casualty occurred at sea more than 50 miles from shore were excluded from the list as not being applicable in a study of supertanker facilities, which will be located less than 50 miles from shore.

Spill data for a supertanker facility alternative at a given port location are presented in terms of frequency and magnitude. The magnitudes are not given as discrete values but rather in five ranges; specifically:

To 150 long tons;

151 to 500 long tons;

501 to 3000 long tons;

3001 to 14,000 long tons; and,

Greater than 14,000 long tons.

The ranges were selected by plotting the number of incidents within a selected range versus the midpoint outflow magnitude of the range. The ranges were adjusted until their plot yielded a straight line on a log-log graph. (The straight line or hyperbolic function would indicate a fair distribution of the data and a statistically valid selection of ranges). For presentation purposes the ranges were rounded off to the nearest 50 long tons. The data are presented in Table 1.

<sup>1</sup> "An Analysis of Oil Outflows Due to Tanker Accidents—A Note by the U.S.A. to the Intergovernmental Maritime Consultative Organization," November 1972, U.S. Coast Guard; and, "Tankers and the Ecology," Forricelli, et al, *Transactions*, Vol. 79, 1971, The Society of Naval Architects and Marine Engineers.

TABLE 1

Range	Incidents			Percent of total oil outflow
	No.	Percent	Oil outflow	
To 150 tons .....	139	63.47	9,685	5.75
151 to 500 tons .....	49	22.37	19,050	11.29
501 to 3,000 tons .....	22	10.05	27,120	16.07
3,001 to 14,000 tons .....	8	3.65	63,690	37.74
Greater than 14,000 tons .....	1	.46	49,200	29.15
Total .....	219	100.00	168,755	100.00

The data illustrate that the majority of the incidents (188 or 85.84%) are less than 500 long tons and contribute only 17.04% of the total pollution; whereas in a higher range (3001-14000 tons) the 8 incidents constitute 3.65% of the total incidents but 37.74% of the total pollution.

The frequency of occurrence for a spill within one of the ranges is a direct function of the number of such incidents which occurred during the 1969-1970 sampling period. The detailed two-year spill data base was further compared to data compiled by the International Chamber of Shipping (ICS) and the Secretariat General a la Marine Marchande of the Ministère des Transports, France, for the period 1960-1970. While these data were not detailed enough to incorporate in the data base, they clearly reaffirmed the 1969-1970 data; and it therefore can be said that the two-year period is representative of a ten-year period. By extrapolating these figures by statistical inference to a 20-year period, all data are presented as spills of a given range occurring within a number of ship years.

The midpoint of the 1969-1970 sampling period represented 12,206 ship years of tanker traffic.<sup>2</sup> Thus, the expected time for an incident within a given magnitude range to occur can be computed directly from the data.

Ship years can be converted to calendar years for any given entry location by knowing: (1) the number of tankers transiting its coastal, entrance way, and harbor (CEH) zones and (2) the average number of days that tankers require to make any CEH zone transit. This also requires the knowledge of the average number of days per year that all tankers spend in CEH zone transits. This number is relatively simple to compute once one knows:

The average number of round trips that tankers make each year; and

The average number of days that a tanker spends in transit upon arrival or exit from a port.

In the 1969-1970 period there were 6,103 tankers, according to Lloyd's Register of Shipping, with 497 of these tankers greater than 80,000 deadweight tons. Assuming that each vessel on the average spends 2 days on each end of a round trip in CEH zone transit, one can equate the following:

A tanker is in the CEH transit mode 39 days per year; or,

Thirty-nine days per year equals one ship year of tanker transits.

The projected spill estimations in terms of magnitude and frequency are plotted for each port facility alternative on a log-log scale as the number of incidents within one of the given outflow ranges versus ship years of operations.

An analysis was conducted comparing polluting incident frequency and attendant oil outflow magnitudes. In conducting this analysis tankers were broken into two general deadweight categories, namely:

Those less than 80,000 deadweight tons; and

Those 80,000 deadweight tons and greater.

The intent here was to show whether a relationship does in fact exist between tanker polluting incidents and tanker size. Table 2 depicts the results of this analysis.

These data say that in consideration of the frequency of all types of casualties, as a function of number of tankers, the larger vessels, as presently operating, have a higher probability of being involved. They also say that oil outflow magnitudes are independent of tanker size. One must point out that the data does not contain a single catastrophic accident with a

<sup>2</sup> Source: Lloyd's Register of Shipping, Statistical Tables, 1969 and 1970.

loaded tanker greater than 80,000 deadweight tons. One such incident would seriously alter that result.

TABLE 2

	Percent of total incidents (A)	Percent of world tank fleet (B)	Percent of world tanker tonnage (C)	Percent of total outflow (D)
<b>TANKERS 80,000 DEADWEIGHT TONS AND GREATER<sup>1</sup></b>				
All polluting incidents.....	7.79	6.04	30.3	6.38
All polluting incidents less explosions..	6.37	6.04	30.3	2.94
	A/B	A/C	D/B	D/C
With explosions.....	1.30	0.26	1.06	0.21
Without explosions.....	1.06	0.21	0.48	0.097
	} Tankers 80,000 deadweight tons and greater.			
	Percent of total incidents (A)	Percent of world tank fleet (B)	Percent of world tanker tonnage (C)	Percent of total outflow (D)
<b>TANKERS LESS THAN 80,000 DEADWEIGHT TONS<sup>1</sup></b>				
All polluting incidents.....	92.11	93.96	69.7	93.62
All polluting incidents less explosions..	93.63	93.96	69.7	97.06
	A/B	A/C	D/B	D/C
With explosions.....	0.98	1.32	0.99	1.32
Without explosions.....	0.99	1.34	1.03	1.39
	} Tankers less than 80,000 deadweight tons.			

<sup>1</sup> Tankers 80,000 deadweight tons and greater had 21 polluting incidents, including 5 explosions, during the 1969-70 reporting period with an associated oil outflow of 27,465 long tons. Tankers less than 80,000 deadweight tons had 245 polluting incidents, including 10 explosions, during the same reporting period with an associated oil outflow of 403,254 long tons.

It should also be noted that the case with tanker explosions, discounted significantly changes the results. Here, frequency probabilities are also independent of tanker size; i.e., the incident rate is the same for both large and small tankers. It is interesting to note the marked drop in oil outflow magnitudes with an increase in size. Again, however, the cautionary remark concerning the effect of one large laden tanker's involvement in a catastrophic incident will apply.

The reason the data have been presented with explosions segregated is to show their effect on the supertanker frequency and magnitude oil spill spectrum and how the case may be made either way for or against supertankers as has been done in the past. It is also noteworthy that primary explosions occur in two modes of tanker operation:

While the tanker is in ballast and probably tank cleaning at sea; and, While transferring cargo and more often during the unloading phase.

Another approach compared incident frequency and outflow to the total amount of deadweight tons in the two categories above and below 80,000 tons deadweight. Due to the greater proportion of deadweight (30.7%) in the supertanker category as opposed to the actual number of vessels (6.04%) the results are significantly altered; i.e., the supertanker shows smaller oil outflows in proportion to its representative deadweight.

The baseline port facility alternatives can then be modified for:

Improved tanker construction technology, i.e., double bottoms;

Implementation of traffic control; and,

The use of an offshore terminal.

Data showing the effectiveness of any of these three modifications are either sparse or non-existent. However, reasonable estimates can be made for them; the effectiveness of double bottoms in terms of grounding protection was estimated to be 75 percent; the effectiveness of a traffic control system was estimated to reduce all grounding and collision polluting incidents which could occur in harbors and harbor entranceways by 50%; the effectiveness of an offshore terminal has been qualitatively taken to reduce in two cases, 40 and 90 percent of all casualties which would occur within the harbors and entranceways—40 percent for a deep water terminal but not necessarily far offshore or out of the heavy traffic density, 90 percent for a true deep water offshore terminal without the traffic density and proximity of the shoreline.

Double-bottom construction is just what it sounds like. It uses an outer wall for the hull structure of a vessel and an inner wall for the structure of the oil storage tanks. The resulting space between the two provides additional insurance against oil spillage because it permits damage to the outer hull without necessarily affecting the oil storage systems. In this analysis, we assume a double bottom height on the order of 0.08 percent of the tanker's molded beam and a segregated ballast capacity sufficient to attain 45 percent of the tanker's full load displacement.

Various sources have placed the effectiveness of double bottoms in terms of grounding protection between 61 and 92 percent. A grounding study conducted by the International Maritime Consultative Organization (IMCO) Maritime Safety Committee on Ship Design and Equipment stated that effectiveness is on the order of 73 percent.<sup>2</sup> In this study, an effectiveness of 75

Traffic controls in this analysis are defined as mandatory, radar-guided, computer assisted systems for positive control and coordination of shipping movements at superport facility locations. The effectiveness of such a traffic control system is estimated to reduce by 50 percent all groundings and collisions which cause oil spills and which could occur in harbors and harbor entranceways. This figure is considered more qualitative than quantitative because no real data exists on a maritime traffic control system. Some data do exist regarding traffic separation routes, which are strictly advisory and not fully comparable to positive traffic control systems. For example, the average accident rate in the Straits of Dover for the 3 years after traffic routing was established improved by 21 percent over the 4 years prior to routing, despite an increase in traffic and despite the fact that only 75 percent of the vessels transiting the Straits of Dover comply with the routes.<sup>4</sup> Harbor advisory systems such as the one in Teesport,<sup>5</sup> have also shown considerably lower accident rates. In the port of Rotterdam, where more ship tonnage is handled than in any other port in the world, there has not been a single major accident since a harbor control system was instituted several years ago. Thus, the 50 percent effectiveness value used here for traffic control systems, though unquantified, is considered minimal.

The location of a superport can greatly affect the probability of casualties and consequently the magnitude of oil spills. One of the key variables is distance from shore. As distance increases, traffic congestion and therefore casualties from collision are reduced. Far offshore facilities are also in deeper water—reducing the probabilities of groundings. The effectiveness in terms of reduced vessel casualties is not readily quantifiable. However, a detailed casualty analysis by the Coast Guard indicated that approximately 40% of the polluting incidents occur within harbors and entranceways. Of the incidents occurring within harbors and entranceways, approximately 80% are due to collisions and groundings. Two values of effectiveness are used. For offshore locations between 5 and 15 miles from shore, but still exposed to shallow water and to coastal traffic, a 40% reduction of collisions and groundings is assumed. If the site is far offshore, beyond 15 miles, a 90% reduction is estimated.

It is important to realize the limitations of the results; especially when one considers the absence of quantitative data regarding the effectiveness of double bottom, traffic control systems, etc., and perhaps more important the sensitivity of the results to the assigned values of effectiveness. A sensitivity analysis was conducted by varying the value of the effectiveness of the three parameters by 10 percent. The effect of varying this value by 10 percent can change the quantity of oil outflow from 0.1 to a maximum of 10 percent. This same 10 percent variation will alter the frequency of occurrence from 1 to a maximum of 10 percent. These results say that the oil outflow magnitude-frequency spectrum will vary in direct proportion with the effectiveness of the super-imposed parameters.

<sup>2</sup> D. M. Bovet, "Groundings: A Brief Analysis," U.S. Coast Guard, Office of Research and Development, December 1970. percent is used.

<sup>4</sup> J. M. Beattie, "Safer, Safer Seaways," U.S. Naval Institution proceedings, December 1970.

<sup>5</sup> "Improving Safety of Navigation in the Oil Ports," Europe and Oil, Ferranti Ltd., May 1970.

TABLE 3.—CONVERSION OF SHIP YEARS TO CALENDAR YEARS FOR FIGURES 1-6<sup>1</sup>

A	B	C	A	B	C
Percent of throughput transhipped	Incoming tanker 250,000 deadweight ton ship year/ (U.S. superport) 20 calendar years	Incoming tankers 50,000 deadweight ton ship year/ (no U.S. superport) 20 calendar years	Percent of throughput transhipped	Incoming tankers 250,000 deadweight ton ship year/ (U.S. superport) 20 calendar years	Incoming tankers 50,000 deadweight ton ship year/ (no U.S. superport) 20 calendar years
0	208	1,043	55	926	
5	273		60	991	
10	339		65	1,056	
15	404		70	1,121	
20	469		75	1,187	
25	534		80	1,252	
30	600		85	1,317	
35	665		90	1,382	
40	730		95	1,447	
45	795		100	1,513	
50	860				

<sup>1</sup> For throughputs other than 1 million barrels per day, multiply the value in either columns B or C by the ratio of actual throughput to 1 million.

Any value in column B is the number of ship years accumulated in twenty calendar years as a function of 250,000 DWT incoming supertankers, the amount of the incoming throughput which is then transhipped in 40,000 DWT tankers (shown as a percent of the total throughput), and a 1,000,000 barrels per day throughput.

Column C is the number of ship years accumulated in 20 calendar years as a function of 50,000 DWT incoming regular tankers, assuming a 1,000,000 BPD throughput and no further transshipment.

#### EXAMPLES FOR USING TABLE 3 AND FIGURES 1 THROUGH 6

##### 1. Case with transshipment

###### (a) Given:

Throughput = 1,900,000 Bbl/day

Incoming tanker = 250,000 DWT

65 percent transhipped in 40,000 DWT tankers

Double bottom and traffic control

###### (b) From Column B, Table 3—1056 ship years/20 calendar years: Multiply by 1.9 to adjust for throughput = 2006.4 ship yr/20 cal yr

###### (c) From Figure 4 find 2006.4 yr along horizontal axis and read from various outflow ranges as follows:

0.6 incidents at 3,001-14,000 tons

1.7 incidents at 501-3,000 tons

2.2 incidents at 151-500 tons

15 incidents at less than 150 tons

###### (d) Compute total outflow by multiplying number of incidents times average spill figure in box:

0.6 x 8,260 = 4,956

1.7 x 1,240 = 2,108

2.2 x 374 = 823

15 x 69 = 1,035

8,922 tons/20 cal yrs.

= 66,915 Bbls/20 cal yrs. (7.5 Bbls/ton)

= 3,345 Bbls/cal yr.

##### 2. Same case with no transshipment

###### (a) From column B, Table 3—208 ship yr/20 cal yr—208 x 1.9 = 395 ship yr/20 cal yrs.

###### (b) Incidents at various outflow ranges from Figure 4:

0.12 incidents at 3,001-14,000 tons

0.34 incidents at 501-3,000 tons

0.41 incidents at 151-500 tons

3.0 incidents at less than 150 tons

###### (c) Compute total outflow:

0.12 x 8,260 = 991

0.34 x 1,240 = 422

0.41 x 374 = 153

3 x 69 = 207

1,773 tons/20 cal yrs.

= 13,297 Bbls/20 cal yrs.

= 665 Bbls/cal yr.

Figure 1

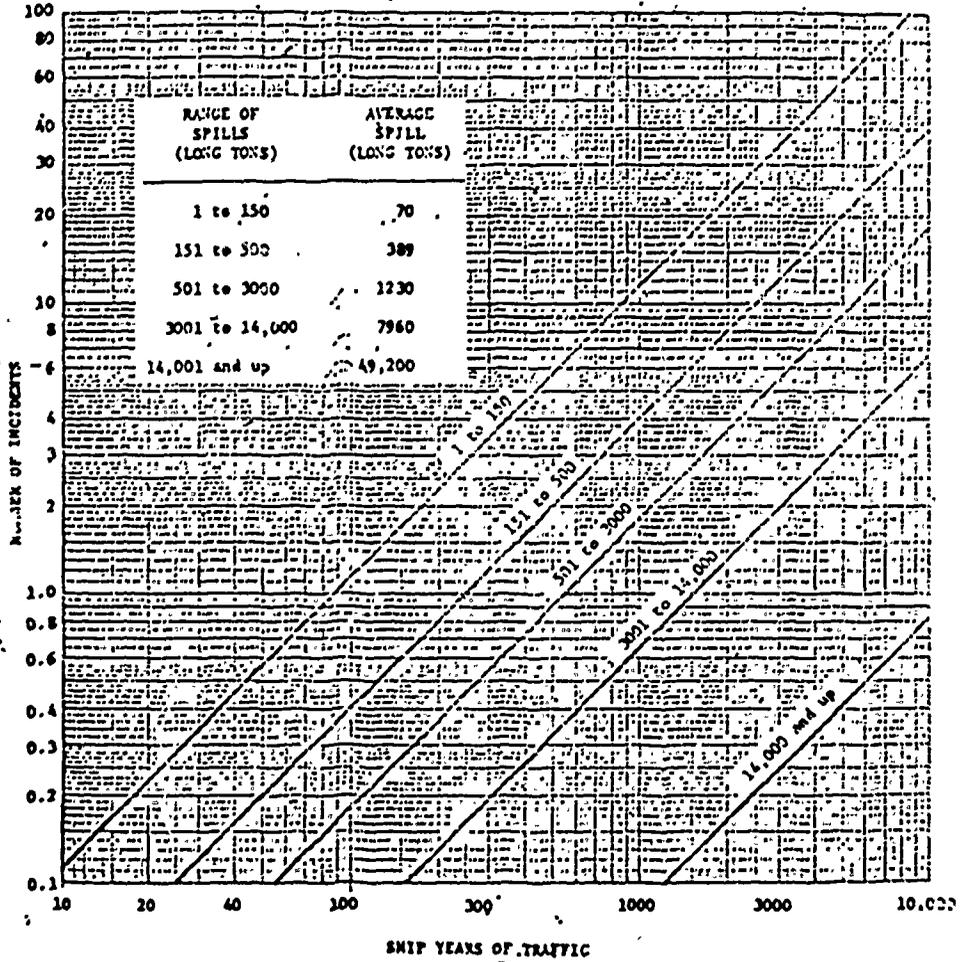


Figure 2

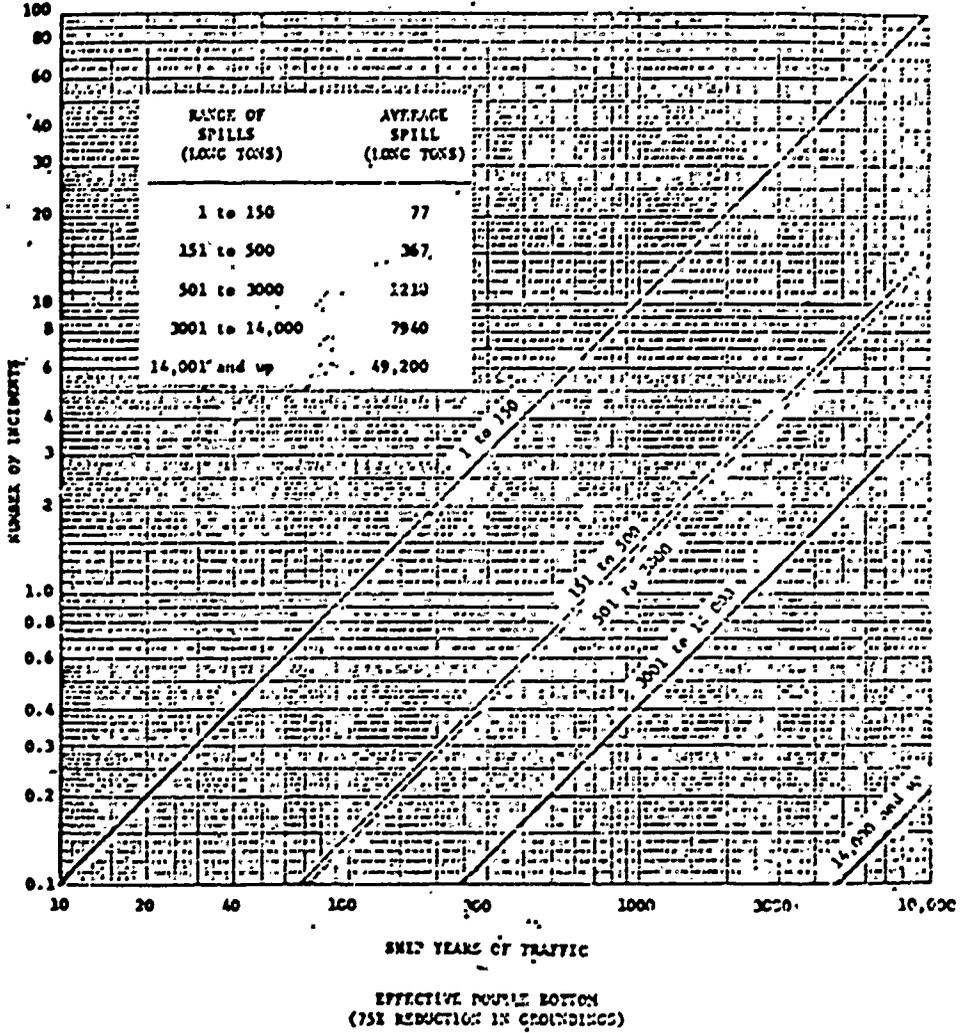
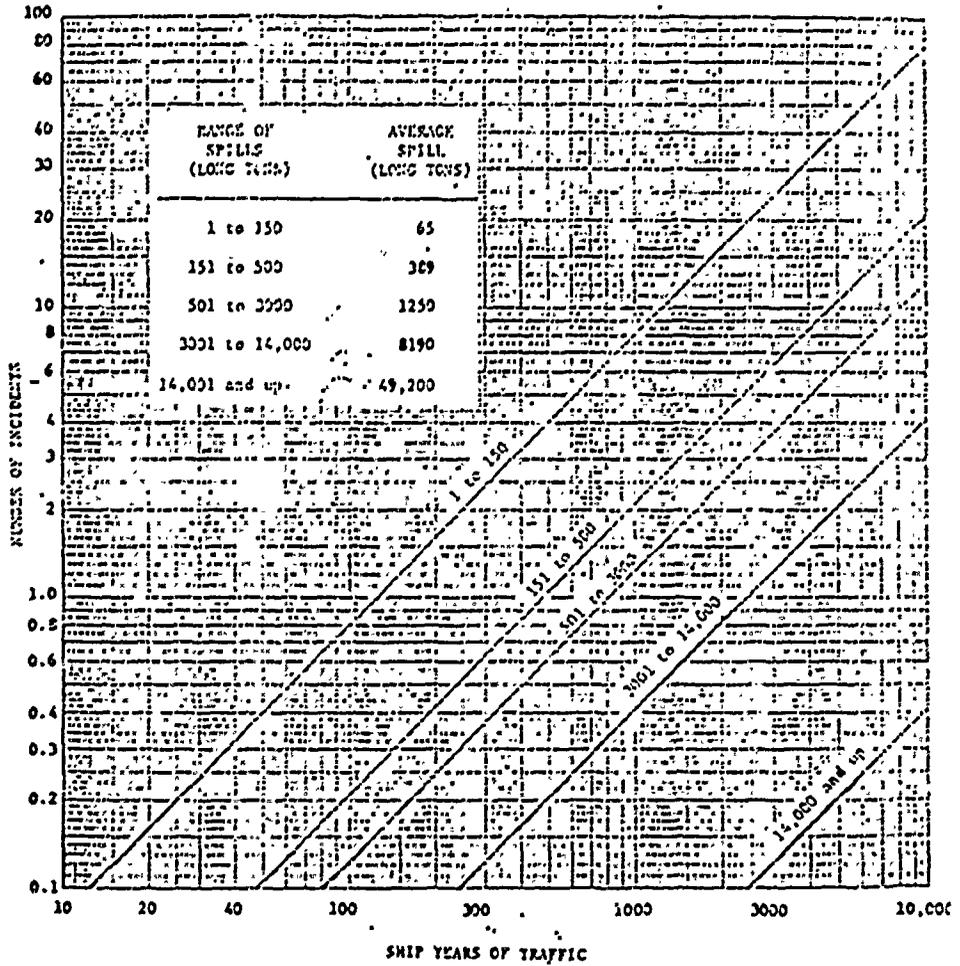


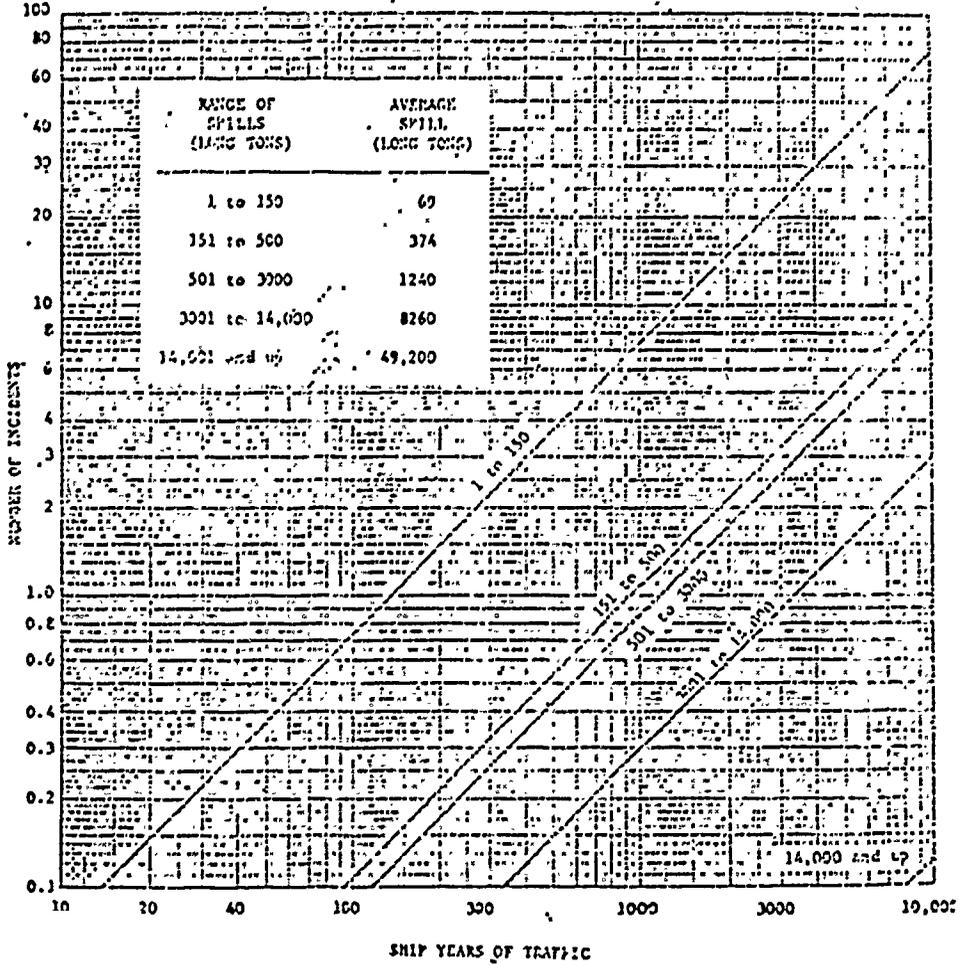
Figure 3



IMPROVED TRAFFIC CONTROL  
(50% REDUCTION IN GROUNDINGS & COLLISIONS)

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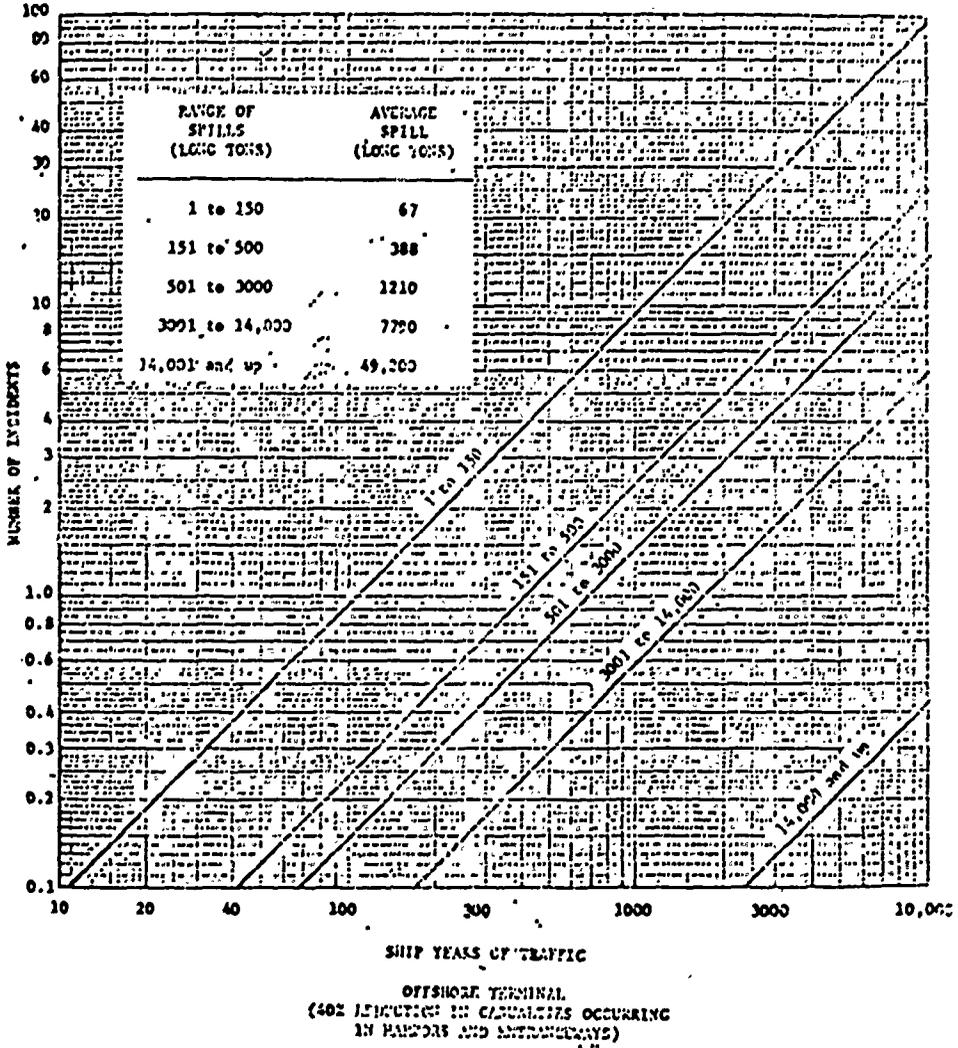
Figure 4



DOUBLE BOTTOM & IMPROVED TRAFFIC CONTROL  
(85% REDUCTION IN GROUNDSING & 50% REDUCTION IN COLLISIONS)

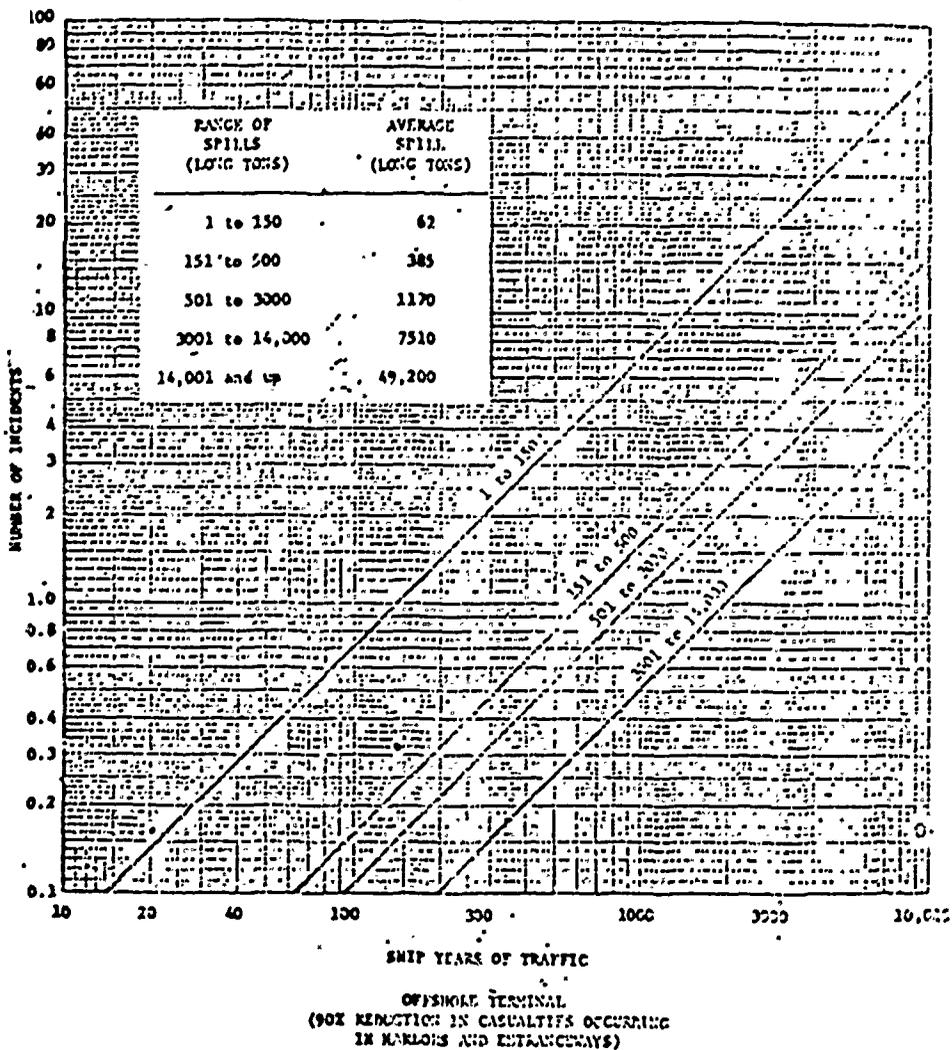
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Figure 5



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Figure 4



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## ATTACHMENT C

## STUDIES OF THE EFFECTS ON THE MARINE ENVIRONMENT OF DEEP-WATER PORT DEVELOPMENT

Copies of the reports listed below may be obtained by writing the National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, Virginia 22151.

	NTIS	Prices	
	Order No.	Paper copy	Microfiche
1. Environmental vulnerability of the Delaware Bay area to supertanker accommodation; prepared by the University of Delaware.			
Volume I: Summary.....	PB-219 801	\$4.85	\$0.95
Volume II: Biology.....	PB-219 802	9.00	.95
Volume III: Chemistry, Engineering, Geology, and Physical Oceanography.	PB-219 803	9.00	.95
Volume IV: Biology Appendix.....	PB-219 804	10.60	.95
Volumes I-IV.....	PB-219 800	29.70	
2. Possible effects of construction and operation of a supertanker terminal on the marine environment in the New York bight; prepared by the State University of New York at Stony Brook.	PB-219 649	3.00	.95
3. Preliminary assessment of the environmental impact of a superport on the southeastern coastal area of Louisiana, Louisiana superport studies; prepared by Louisiana State University.	COM-73-10544	6.00	.95
4. A preliminary assessment of the environmental vulnerability of Machias Bay, Maine, to oil supertankers; prepared by the Massachusetts Institute of Technology.	COM-73-10564	3.00	.95
5. Environmental aspects of a supertanker port on the Texas Gulf Coast; prepared by Texas A&M University.	PB-220 051	10.60	.95

Senator JOHNSTON. Thank you very much, Mr. Train.

You allude in the early part of your statement to one of the central questions that this committee will have to resolve, and that is the role of the adjacent States in licensing deepwater ports. There are a number of different ways it can be done. In the bill under consideration, the role of the States is one of consultation with the Federal Government playing the predominant role. Other ways it could be done are such as that suggested by Senator Williams, where he would give to the Governor of any adjacent State which could be affected by the deepwater port a veto over the location of that.

Another method would be to have the Federal Government actually give the license to the State under a procedure by which they would be required to implement the building of a port but have complete control of it.

Can you give us any comment on this latter method whereby you might grant that license to the State where they would have it for a fixed period of time and be able to keep it and license the port facility, and if they didn't do anything leading toward the building of the superport they could lose that license? Do you have any comment on that kind of approach?

Mr. TRAIN. It seems to me this is essentially a non-environmental question as to whether or not you should give the operation of a commercial facility of this sort to a State to undertake. This basically is an economic question which I probably am not totally familiar with all the implications of.

The administration has opposed giving the States a legal veto over the location and licensing of deepwater ports beyond the 3-mile limit off a State's shore. It has been the administration's posi-

tion that jurisdiction beyond the 3-mile limit belongs in the Federal Government and not to a State and that to inject a State into the licensing and regulation of activities either in the contiguous zone or on the high seas beyond the 12-mile limit would be establishing a very unfortunate precedent; and it has been the conviction of the administration that in every practical sense the States would have such a veto through the requirement of consultation by the Secretary with the State, by the State's own power to regulate activities within the 3-mile limit, including pipelines, including the transshipment from the pipeline to shore facilities, and through land use controls of facilities developed on the shore.

I might also say that I can't conceive, personally, that the Secretary would ever license a port off a State which was clearly opposed to such a development.

Senator SCOTT. Mr. Chairman, would you yield just a moment?

Senator JOHNSTON. Certainly.

Senator SCOTT. Mr. Chairman I was interested in Mr. Train's comments that this is an economic rather than an environmental question, and I just wonder if he wouldn't agree that in all that we are attempting to undertake that we have to have an interplay of the economic as well as the environmental and adopt some rule of reason with regard to both of them.

Mr. TRAIN. I entirely agree, Senator, and I think as you read my statement, particularly the full statement, as well as the underlying studies on which these statements are based, you will find that there probably is as much attention given to the fact of economic considerations as to environmental, and the interplay between these two.

This is very much our business in all respects and I did not mean to suggest that the Council, in developing a position on these matters, was ignoring economic factors at all.

Senator SCOTT. Mr. Chairman, if you would yield further, certainly, I had no intention of criticizing our distinguished witness, but I am very much concerned about maintaining a healthy environment and at the same time maintaining our American standard of living. Thank you, Mr. Chairman.

Senator JOHNSTON. Mr. Train, you point out in your statement that the onshore development caused by a deepwater port offshore is going to bring on a great deal more air pollution because of the refineries that are sure to grow up—the petrochemical complex.

Now, this being so, isn't that going to have an inhibiting effect not only on new industries that might come into the area but on those already existing there in terms of what they are going to have to spend to clean up their air emissions?

Mr. TRAIN. I am not positive I understand the question. Are you suggesting that the location of a deepwater port off a State will induce additional industrial development which necessarily will have some pollution implications?

Senator JOHNSTON. Yes. As you point out, you say these ambient standards may in some cases require more stringent emission and effluent controls than the basic "best available technology" requirements. In other words, because of the deepwater ports you are going to make your emissions standards more stringent. Isn't that an expectable thing?

Mr. TRAIN. As you know, the Clean Air Act requires that all new facilities must install best available technology as of now. As I point out here, it may be that even the use of best available technology as defined by EPA may not be adequate to meet ambient air quality standards under some circumstances; in such circumstances more stringent technology requirements would have to be imposed.

Senator JOHNSTON. I am particularly concerned with my State which already has an air pollution problem down in south Louisiana. Superimposed on that air pollution problem is the curtailment of the use of natural gas. As you know, the vast majority of industries down there use natural gas and were encouraged to do so through the years because of the plentiful supply, and now that is being taken away. And yet, on top of that, you may put this superport.

Now, in view of that, shouldn't a State in that kind of situation receive some consideration by legislation to grant an extra portion of natural gas to cope with that problem of air pollution?

Mr. TRAIN. Well, I think the general direction in which we must be moving is to get away as much as we can from the use of natural gas for industrial purposes as well as for power generation. I think it has been pretty clearly demonstrated that the most efficient and the most desirable use of natural gas is in residential and related commercial uses.

So I would hesitate for those reasons to suggest that such an allocation be made.

Senator JOHNSTON. Well, it's fine to say you are not going to get any additional allocation of natural gas, but what you are going to do—you have only got so much capacity to absorb the pollutants in the air, and if you are going to give this to the refineries and the petrochemical industries that are going to come in as part of your deepwater port, then you are going to prevent other industries which would be more labor-intensive—prevent those other industries from being able to come in or to expand.

What I am saying is that if the State is going to pay the price by having these capital-intensive industries, highly automated industries like refineries or petrochemicals, shouldn't they be given some additional consideration and be given a little more of that natural gas if they are willing to take the hazards of locating that superport off their shores?

Mr. TRAIN. I would rather assume, Senator, that the application of best available technology and the application of the Clean Air Act generally, and land use controls regulation by the State, could avoid that kind of alternative.

Senator JOHNSTON. I hope you are correct in that, Mr. Train.

Senator Stevens?

Senator STEVENS. Mr. Train. I have read a portion of your full statement concerning the analysis of the tanker problem, and I wonder a little bit about where we are going. We had an oil import program to stimulate domestic exploration and it was stimulated. We got discoveries in Alaska and we also firmed up a considerable amount of our domestic energy supplies in terms of oil shale and coal, and so forth.

Now, it seems to me we have reversed the oil import program and we are preparing to import vast amounts and cost is immaterial—the cost of these superports, the cost of the supertankers, the cost of the oil—apparently.

My question is: From an environmental point of view, isn't there also a balance here in terms of trying to solve the other problems, the oil shale problem, the stripping problem for the strip mines for coal, and the siting problem for nuclear powerplants? Couldn't we reduce the necessity for these superports by doing things onshore that we are capable of doing now if we could just take on the environmental problem?

Mr. TRAIN. I don't think you would reduce the necessity for the superports, but you could well reduce the volumes of oil that would be imported through such superports by the kinds of comprehensive energy measures that you have described.

I think this is the heart of the President's energy program. He has called for rapid development of the Alaska oil reserves, of the shale deposits, as soon as the environmental studies have been completed, and has called for substantially increased research and development expenditures with respect to other alternative energy sources such as coal, gasification and liquification, magnetohydrodynamics, the breeder reactor, geothermal energy, solar energy, and fusion—in other words, a wide variety of potential future sources.

Likewise, the President has pointed out, and I think this is generally recognized, that we will be using increasing amounts of coal in the future and it is desirable to utilize these domestic energy reserves to the extent we can without undue damage to the environment.

This calls for further research and development and commercial proving of sulfur removal technology. It also calls for formal stringent regulation of surface mining in order to minimize the environmental effects and primarily to require very stringent reclamation in cases of surface mining.

So of all these things I think must go hand in hand as part of a comprehensive national energy effort. None of these, as you have pointed out—or has been pointed out here this morning—will avoid the necessity as we see it of vastly increased or substantially increased imports of crude from abroad in the foreseeable future.

Senator STEVENS. Well, my only feeling is that the Government as a whole, both the Congress and the Executive, have failed to bite the bullet in terms of price; that if we would tell our American people that if the price went up sufficiently we would have substitution—as the price of oil goes up people are going to substitute to coal; that as the price of gas goes up they are going to substitute to nuclear; and that we are letting the Arabs set the pricing mechanism for this country by virtue of the Middle Eastern price of oil and it's just a matter of time until they raise the price. But if we would raise the price, even if the President would take the price of oil and gas out from under the current pricing controls, I think it would have a significant impact on what the industry could do to meet this challenge and to bring about the substitution of other fuels for this oil and gas which you say we should not be consuming,

my good friend, in industrial uses; we should reserve it for residential use of gas.

I think you have made a substantial contribution and I am delighted that a man in your position with the environmental background that you have that you are being so farsighted about the necessity for balancing the economic and environmental consequences as far as the country is concerned.

Thank you very much.

Mr. TRAIN. Thank you, Senator.

Senator JOHNSTON. Mr. Train, would you make the secondary growth studies, even those that are in the draft form—would you make those available to the committee?

Mr. TRAIN. If the committee wishes. I would prefer not to have them published at the present time. I think we are getting to the point, hopefully within the next week or two, that we will send back our comments to the contractor so that we can then proceed to have the report published in a final form; and I think it would be misleading to the public to have a draft published. I would be perfectly willing to make it available for examination if that would be of assistance.

Senator JOHNSTON. Well, if we could have that just for the staff to review and available to the Senators themselves, without objection of the committee, we will not publish that in the committee hearings; but I think in this crucial time of our consideration of the bill it would be very helpful to have what you have now to guide us in our thinking and, of course, made available to us.

Mr. TRAIN. I agree, Senator. I think it would be, and one of my reasons is that I believe some of the data that is being used by other witnesses is based on an even earlier draft of this study. So that if we can at least update the misinformation I think it would be helpful.

Senator JOHNSTON. Senator Biden?

Senator BIDEN. Thank you, Mr. Chairman.

Mr. Train, I have several questions. Has your study or any other study that you know about been conducted with active participation of State and local governments?

Mr. TRAIN. They have been done by outside contractors. In the case of the marine environment studies they have been done by MIT, the University of New York at Stony Brook, the University of Delaware, the University of Louisiana or Louisiana State—I can't recall which—and Texas A. & M. I am not sure but I feel quite positive that each of those has consulted with relevant state authorities such as fish and game departments.

Senator BIDEN. Well, the reason I asked that, last year in C.E.Q.'s testimony before Interior, Mr. McDonald indicated that it was a matter of concern to all levels that that would be one of the intents. Being familiar with the study done by the University of Delaware, I question how much participation took place there at the local level. I think it would be likely to be more there than other places because of the intense concern, and it is a small State and the only university of any size where every official in the State is very concerned about it.

But maybe you could, for the record, at a later date, submit an answer to that when you have had a chance to check with your staff to determine whether or not there has been significant or any participation.

Mr. TRAIN. I would be glad to do that, Senator. I notice in the draft I have of the executive summary of the land effects portion of the study, that an acknowledgement is given to various counties and regional planning authorities, among a great number of others, port authorities and so forth, in the preparation of the studies. So in that case at least, I am assured that this kind of consideration has been given to State and local authorities.

Senator BIDEN. Mr. Train, do you believe that S. 1751 is sufficiently explicit about the environmental concerns to be considered by the Secretary of the Interior and conditions under which he is authorized to authorize deepwater ports? I am particularly referring to—if you have the bill in front of you—section 103(b)(3), which states: “The facility will be located, constructed and operated in the manner which will minimize or prevent any significant environmental effects.”

I always am a little leery about those kinds of sentences. Can you define for me what “minimize” means and what “significant” means?

Mr. TRAIN. Obviously, Senator, those are words that involve value judgments. They are somewhat subjective, as any lawyer knows, and they cannot really be defined. We have attempted here, beyond the sentence which you read, to indicate some of the areas to which the Secretary’s consideration must extend—the effects on marine organisms, effects on water quality, ocean currents and wave patterns on nearby shorelines and beaches, effects on alternative use of the oceans such as fishing, agriculture and scientific research, susceptibility to damage from storms and other natural phenomena, and effects on aesthetic and recreational values. There is no sort of arbitrary measurement that is possible in any of these cases.

One ends up with the necessity of making a judgment, and it is a policy judgment in the final analysis.

Senator BIDEN. The reason why I raise the question, it seems as though legislation which we have passed in the past month has made the Secretary of the Department of the Interior one of the most powerful men in the nation. As a matter of fact, we have made him a very powerful fellow, or lady—woman, whomever it may be at a future time.

--Senator JOHNSTON. Person.

Senator BIDEN. Person. It seems to me pretty open-ended and I—you stated that lawyers know those words are hard to define. In the law, we do have some terms of art which are, although not specifically defined, very well narrowed; and it seems to me awfully open ended and I thought maybe there was something I was missing there. But apparently we are giving him as much power as it in fact reads, that he is going to determine what constitutes significant and he is going to determine what constitutes minimize and—well, that is interesting anyway.

Mr. TRAIN. Senator, let me respond somewhat further because I think there are safeguards within the legislative framework. One,

the Secretary is authorized to thrash out the rather general criteria by regulations, and I can assure you that our Council is going to be taking a very close and continuing interest in this whole matter and will be working very closely with the Department of Interior to insure that good, tough environmental protective regulations are prescribed.

There are provisions for public hearing which can be triggered by application by any interested party, and I think the legislation states this. There is also, as I testified, the fact that any action on the license application must be subject to the National Environmental Policy Act and environmental impact analysis under section 102, which again must be provided to not only all Federal agencies for comment but to all State agencies with an interest in the subject matter, full public disclosure in advance; and I think these are the kinds of practical constraints that can best assure adequate protection of the environment and probably do so far more effectively than trying to spell out in a statute quantitative measurements of some sort which I suspect would be very hard to arrive at.

SENATOR BIDEN. Mr. Train, you mention the environmental impact statement. You pointed out that was necessary. In the absence of this act—let me rephrase that. It seems to me I recall reading in the act that you are limited to one environmental impact statement. There is a statement in there that—I am not sure—I can't find it right now, but is there a provision in this act which speaks to or alters the usual course of environmental impact statements as has been carried out to date by NEPA, recognizing there have been none on deepwater ports now or specifically any licensing?

MR. TRAIN. I am not sure that this is any sort of a variation of the National Environmental Policy Act. The provision you are referring to is on page 8, section 104(d). It states that the provision of this act shall in no way alter or otherwise affect the jurisdiction of the Council on Environmental Quality or the requirements of the National Environmental Policy Act of 1969; that a single, detailed environmental impact statement shall be prepared in connection with each license by the Secretary and circulated in compliance with the guidelines of the Council on Environmental Policy. Such statements shall fulfill the responsibility of all participating Federal agencies under section 102(c) of that act with respect to the proposed facility.

I think that is really a matter of trying to—certainly not limit the application of the act, but to provide a manageable document when we have a number of agencies involved and each agency that has a responsibility under the act would necessarily have to be involved in the preparation of an environmental impact statement.

But I know we in the Council would want, with respect to an application for a deepwater port license, one environmental impact statement. We don't want 15 or 17 that we somehow have to fit together. I think, as a practical matter, this provides a much more effective procedure under the act than if you had a proliferation of statements by different agencies. In fact, under our existing guidelines, where you have several agencies involved in a project, we provide that one be the lead agency for the purpose of bringing

together the environmental impact analysis for all of the agencies. So I think essentially what the statute is saying here is what we provide through our guidelines.

Senator BIDEN. Mr. Chairman, I have a number of questions and I don't know whether you have set time limits, but I would be happy to come back to these questions but I think they are important. I have at least 10 to 12 additional questions, some very specific, some more broad, of Mr. Train, and I don't want to impose upon the time of my colleagues.

Senator JOHNSTON. I think this witness is very important. Why don't we let the other Senators have a first crack and then we will come back and give you another chance.

Senator BIDEN. Can I ask one more question?

Senator JOHNSTON. Certainly.

Senator BIDEN. Mr. Train, you indicated that one of the reasons why there should be a diminished concern—that may be stated in a prejudicial manner—one of the reasons why you think the States are more protected now than they were before as a consequence of possible construction of deepwater facilities is that we have new legislation on the books now, particularly the Coastal Zone Management Act—

Mr. TRAIN. And the National Land-Use Policy Act potentially.

Senator BIDEN. Correct. And in your statement you say—and I quote—"The recently enacted Coastal Zone Management Act and the pending National Land-Use Policy Act also provides a framework within which the states can control the effects of industrial development upon the land use."

One of the things that a young fellow like me worries about, not knowing all the intricacies of Federal Government, and the relationships between the executive and the legislative branch of the Government, and also in determining whether or not the Senate has a function in these things, is we pass laws that sometimes some Presidents, including our present President, doesn't always see the merit of. You cited an act which as I understand it, the Coastal Zone Management Act, which the administration is taking the position—and correct me if I am wrong—that they are not nearly as keen on funding that as we are here in the Senate or the Congress.

I wonder if you could comment on that.

Mr. TRAIN. Certainly, Senator. The administration considers that the Coastal Zone Management Act and the National Land-Use Policy Act should be implemented together; that the obvious interrelationships between these two acts should be taken into account in the implementation and that they should be—the levels of funding for both should be determined at the same time; and we are confronted with the fact that the coastal zone management legislation was passed by the Congress prior to the time the National Land-Use Act—which has not yet passed—would pass.

The administration, it is my belief, is prepared to fund these proposals in the next fiscal year. The administration has provided through reprogramming some \$350,000 for the Coastal Zone Management Act implementation in this fiscal year to essentially get the initial planning underway. The guidelines for the submission of

state grant applications have actually been developed now and promulgated.

So I would hope that as rapidly as Congress enacts the National Land-Use Policy Act that we will see funding of this total package.

Senator BIDEN. I guess my question really comes down to that the administration has made the decision that they should go hand in hand in terms of funding. The strange thing, as far as I'm concerned, is that the Congress didn't necessarily make that determination, and in the wisdom of the Executive he decides that they should go hand in hand; and just like I am very cautious about and very skeptical about giving the Secretary of Interior this much power as this act does, I do so only because we have numerous examples in both Democratic and Republican administrations—but most blatantly this time around because this is the first time I have sat here—where the Executive decides whether or not what Congress did was wise and whether or not we should implement congressional action if and when the Congress says it should be implemented. That is why I am very leery. That is why I am going to yield the floor.

Senator JOHNSTON. Senator Scott?

Senator SCOTT. Mr. Chairman, let me just preface my remarks by saying that reasonable men and women sometimes can differ. I am very violently opposed to a national land-use policy. I am very hopeful that the President will veto this bill. To my knowledge, there is no zoning rights given to the Federal Government in our Constitution. I think this is a State and local matter. And so, my distinguished colleague and I may be poles apart when we get to talking about things of this nature and I repeat, I would hope that the President will see fit to veto this proposal.

Mr. Chairman, I would like to compliment our witness for being here and for the comments that he has made. I am very pleased that he is here and is sharing his expertise in this important field.

Now, without going into any particulars, I wonder perhaps, Mr. Train, if you would generalize a bit, how many deepwater ports are we talking about roughly? And I realize that you won't be able to give that precise answer. Are we talking about one on the east coast, one on the west coast, one on the gulf coast; What are we talking about roughly in numbers here?

Mr. TRAIN. Well, first, let me say I am not certain that my information on the west coast—I really would prefer not to speak to the west coast. I am not too familiar with the situation. I believe there are some deepwater port facilities off the west coast at the present time. One off the coast of California I think has been in operation for some years already.

But with respect to the gulf and the Atlantic—and frankly, this is pure speculation on my part—I would think that perhaps two or three in the gulf—I emphasize “perhaps”—

Senator SCOTT. That's why I was asking you to generalize.

Mr. TRAIN. And I think those would probably come first. It is my understanding that these are furthest along in planning. We have had reference I believe already to the LOOP project off the State of Louisiana, the Sea Dock project off of Freeport in Texas, and the Ameraport project off Alabama and Mississippi.

Now, deepwater port development on the Atlantic coast, I suspect, would come along later. How many of these there would be I am really not sure. In due course, I would think, one. How many others I am not sure.

As you know, there have been several proposals which we have gone into in our own studies in quite considerable detail off Maine, as well as several sites along the middle Atlantic coast, and then again, along the southern Atlantic coast.

Senator SCOTT. Just generalizing, would you conceive that possibly there might be one up in the general New England area, Maine, the Middle States, and then maybe one toward the South? Are we talking about geographically we would not have two ports within a few miles of each other? There would be some distance between, one to the northern part and one to the southern part of the east coast?

Mr. TRAIN. Well, stating a personal view, I would think that that kind of location would provide greater dispersion of the crude deliveries and greater dispersion of the associated industrial development, and that this would be a good result.

Senator SCOTT. Well, I won't press you further.

Mr. TRAIN. Let me just make one other point. There is also well along in the planning and I believe the initial development phases a deepwater port in the Bahamas which I believe would be ready to start taking shipments as early as 1975. So this probably also is going to be a reality fairly early. I am not predicting anything, but this is my information and this, of course, is also part of the picture, and oil from such a location would have to be transported not by pipeline to the U.S. shore but by smaller tankers to various oil receiving ports.

Senator SCOTT. Mr. Train, I was interested in your comments with regard to oil spill. I am sure we all share a concern about any oil spill at any time, but in reading your prepared statement, I notice the suggestion that oil spills, regardless of the source and size of an oil spill, several biological effects can occur, and among those is certain oil components, especially those suspected of causing cancer.

Now, I am a layman as far as something of this nature is concerned, but I wonder if we are not using sort of a scare tactic or if we are not being a little bit excessive when we talk about "especially those suspected of causing cancer can be incorporated within the food chain," and I assume you are talking about where a fish could get some of that into its body and then people eating fish could obtain cancer.

Isn't that a very much speculative and isn't that really carrying this to a far distance? I know people even use mineral oil for therapeutic purposes and we sometimes have these things taken into our bodies on purpose and we are still talking about oil.

Now, will you comment on that?

Mr. TRAIN. Well, we are talking here about particular fractions of oil and their chemical names I am not familiar with, but I will be glad to provide them for the record. I think this has been quite well researched and—

Senator SCOTT. Mr. Train, if I might just interrupt briefly and

then urge you to go ahead in any manner that you see fit, so often we hear suppositions of possibilities and the things get so extreme that it concerns me that it does affect us going ahead. I remember our former Federal Highway Administrator saying we would put ourselves in such a strait-jacket we couldn't build roads any more in this country, and I just saw this possibility that "could cause cancer" and I wonder, do we have any concrete evidence that this does cause cancer?

Mr. TRAIN. Yes.

Senator SCOTT. Could you furnish that for the record?

Mr. TRAIN. I will be glad to.

Senator SCOTT. Because I would like to see it.

Mr. TRAIN. I would be glad to do that.<sup>1</sup>

Senator SCOTT. All right, sir. Do you care to comment further on this?

Mr. TRAIN. No, Senator, this is information which has been set out in reports given to us as hearsay as far as I am concerned, being a lawyer. I am not really competent to comment further to you on the particular evidence, but I will be glad to provide you the evidence for the record.

Senator SCOTT. Well, I don't know. I don't want to dwell on mineral oil here unduly, but I remember Squibb's advertised that priceless ingredient, the integrity of the manufacturer, and they put out a product that they are very, very proud of apparently, and this is a derivative of the oil that we are talking about that spills into the ocean; and I just can't—frankly, I just don't believe it causes cancer—and again, I am speaking as someone who doesn't have any expertise in this field. I think it is an excessive thing and I think it is statements like this that are really handicapping our country and its development, and I feel we should be very careful about using phrases like that and I will be interested to see the statement that you do produce for the record.

Now, Mr. Chairman, I wonder if Mr. Train could tell us whether or not the development of these superports, in his opinion, will have any effect in any way on offshore drilling for oil or are these two separate things? The drilling of oil off of our shores, is that in any way connected with these superports; and if so, in what way?

Mr. TRAIN. Well, of course, they are all related to the need to meet our energy demands. Offshore drilling and development of our OCS oil resources has been one of the measures which the President has strongly urged to assist the country in meeting its energy needs. He has called for quadrupling, as I recall, of our OCS production by 1978 or 1980—I forget exactly which—and the council has been directed by the President to undertake a 1-year study of offshore oil and gas development on the Atlantic OCS and in the Gulf of Alaska. We are presently engaged in that study.

In terms of satisfying the Nation's demand for oil, we undoubtedly are going to need the imports which will be facilitated by environmentally sound deepwater ports and supertankers, in addition to environmentally sound OCS development.

<sup>1</sup> See p. 115.

**Senator SCOTT.** Now, these superports that we are talking about, they would be unloading the oil from overseas. It would be imported oil and not oil that would be obtained off our own shores. Would that be a fair statement?

**Mr. TRAIN.** That is generally correct, sir. Oil that is produced by wells on our own outer-continental shelf—particularly at large volumes—would in every likelihood be transported by pipeline from the development site to the shore.

**Senator SCOTT.** Thank you, sir.

Now, in your direct testimony, Mr. Train, you talked about the new industries that might be developed in the area of the superports resulting in an influx of people. I think this is sort of a normal and a natural thing that would happen. Any time there is any new industry, any time there is a new project, this would just logically result from that, wouldn't you say; and I am just wondering, are you suggesting that the location of this—that the Federal Government get further into the planning field in determining where these ports would be located; that this would be a major factor that would be considered whether new plants would locate near a particular place, whether it was desirable for this particular State or this particular area to have the new facilities located there? Is this part of the overall suggestion for the location of these various superports?

**Mr. TRAIN.** Well, as I pointed out in my statement, it is quite plain that one of the most significant environmental impacts of deepwater port location is going to be the associated landside petrochemical and other industrial development which will follow from that, and these are environmental impacts. They will produce air and water pollution, greater demand on water resources, and demand on other public services. These are factors that should be taken into account in determining the desirability of given superport locations.

The Federal Government, in developing an environmental impact analysis in the case of any application for a deepwater port, would necessarily have to analyze these effects.

Now, this is not to say that the Federal Government would decide one way or the other as to the location, but it should take into account and consider these impacts.

**Senator SCOTT.** Mr. Train, again, I very much appreciate you being here and the candor of your remarks and I speak as one who is concerned about the overemphasis that we placed in recent years over the protection of our environment and one who is concerned about maintaining our standard of living. I think we have gone too far. I even think—and I certainly am not talking about the present witness in any respect—but I think we are letting a lot of kooks run the Government in this respect and it is something that concerns me very much. And, Mr. Chairman, I yield back.

**Mr. TRAIN.** I must be one of the kooks in this respect.

**Senator SCOTT.** That was not intended, and I hope it is not true.

**Senator BIDEN.** Congratulations.

**Senator JOHNSTON.** Senator Buckley?

**Senator BUCKLEY.** Thank you, Mr. Chairman.

**Mr. TRAIN.** Senator, I look forward to discussing some of these questions with you.

**Senator SCOTT.** I would be glad to.

**Senator BUCKLEY.** First of all, I think, quite properly, Mr. Train, your statement emphasized the need to take into consideration economics as well as the environmental factors. We have to, in all of these decisions, bring into focus the total spectrum of human concerns.

But setting economics aside for the moment, in considering purely the environmental aspects of the deep sea ports, do I gather from your testimony that, given the need to import  $x$  millions of barrels a day, the development of facilities for supertankers located at some distance from shore, taking into consideration related facilities, oil pipelines, and so on, is a positively environmentally preferable solution?

**Mr. TRAIN.** Setting aside the question of landside impacts, the answer to that question is "Yes."

**Senator BUCKLEY.** Okay.

**Mr. TRAIN.** From the standpoint of pollution of the seas, the marine environment from oil spills, I don't think that there's any question but that there will be less risk to the environment if oil is brought to the United States—a given amount of oil, as you said, through deepwater ports and supertankers and then by pipeline, than if smaller tankers continue to bring the same quantities of oil to shoreside port locations, no question about it.

**Senator BUCKLEY.** In your biological studies, and speaking of mysterious ingredients of petroleum that may or may not cause cancer, is there a distinction between the relative biological hazards of crude oil spills versus the spills of the various products?

**Mr. TRAIN.** Some of the fractions of oil represented by products are substantially more toxic, as I understand it, to the marine environment than is crude. This does vary in the different kinds of crude.

**Senator BUCKLEY.** So that, as a generality, it is preferable biologically to import crude oil than to import refined products offshore?

**Mr. TRAIN.** As a general rule, that is true.

**Senator BUCKLEY.** Thank you. As you recognized, Mr. Train, on the east coast we are very much concerned over the possibilities of irreparable damage to some of our estuarine and wetland areas. We have got too few of them left after years of development. Is there evidence that in time these wetlands will recover from large spills or is there the hazard that some might for significant periods of time, or forever, be taken out of the productive marine life system?

**Mr. TRAIN.** Well, I think forever probably is too long a period, but there is—

**Senator BUCKLEY.** Our lifetime and our children's lifetime?

**Mr. TRAIN.** There is evidence based upon fairly limited experience and analysis that the effects in an estuarine area of an oil spill can last, insofar as the impact on the marine biota are concerned, for very substantial lengths of time. By that, I mean 1, 2, years, and perhaps more. Apparently—and again, this is based upon fairly

limited research and experience—there is a settling of oil to the ocean bottom where it gets mixed with the sediments and it does not necessarily degrade and break down. In fairly shallow areas when the sea subsequently gets roiled up by stormy conditions and so forth, portions of this oil get back into the water column and you have a recurrence of deleterious effects. It can be just as if a fresh spill occurred. This has been the finding of the Woods Hole research team that examined and has been monitoring the effects of the West Falmouth oil spill of several years ago.

Senator BUCKLEY. You mentioned earlier that, statistically, more oil will be spilled as a result of accidents and the small tankers than with large tankers. On the other hand, is it reasonable to expect that when you do have an accident with a large tanker that more oil is apt to be spilled in a concentrated geographic location?

Mr. TRAIN. Maybe. If you had a catastrophic accident, clearly, yes; but the supertankers, of course, are compartmentalized and so when you are talking about an accident you presumably are not talking about a discharge of the entire load of oil from a supertanker.

Senator BUCKLEY. Was the *Torrey Canyon* compartmented?

Mr. TRAIN. About four times as much oil, as I recall, is discharged as a result of groundings than occur from actual collisions or other accidents, and I think it is quite plain that in a usual case a grounding would only rupture a portion of the tanks of any vessel so that you would have a considerably smaller amount of oil discharged than if the whole ship fell apart in some fashion.

Senator BUCKLEY. Mr. Train, one of the problems I think we face in dealing with issues about which people can feel emotionally—and think this is one—is that people would choose not to believe the analyses made by people who are attached to the various arms of the Government. The CEQ is a part of the executive branch. Do you have any plans for bringing the NAS or some other such body into a position of evaluating the data that you are now collecting and presenting so that the public at large may be assured that the conclusions are the most objectively valid conclusions that can be arrived at?

Mr. TRAIN. I think it is right to say that we have had no such plans with respect to the deepwater port studies. We are, as you know, developing such a review by the National Academy in the case of our work on OCS development which will involve very much of the same kinds of analysis of marine effects from oil discharges. We have not, I am quite certain, made any such plans with respect to the deepwater port study.

Senator BUCKLEY. Do you think it would be advisable to bring the two projects together and to make sure that we do have this imprimatur?

Mr. TRAIN. I think I would suggest this: All of the analyses developed by the various universities with respect to marine environment effects and the report of Arthur D. Little on the land use effects will be made available to the National Academy for its consideration. I think that these issues are very relevant to the Outer Continental Shelf study and we would be happy to have the Na-

tional Academy take a look at the support studies in that connection.

Senator BUCKLEY. If you should, I would be very happy.

Mr. TRAIN. It would take some little while to get any feedback from that.

Senator BUCKLEY. I appreciate that. One other question, if I may. Is the Secretary of the Interior the appropriate man to be making this decision among all the different departments in this Government? Thus far, he doesn't have jurisdiction over the waters, over commerce, and although I suppose his immediate authority is to authorize a license, there must certainly, in the natural course of events, be certain oversight responsibilities that go with that. As I say, do you think that there is the competence in the Department of Interior to handle this as well as might be held in some other department?

Mr. TRAIN. There are, as you know, several agencies with very significant interests in this whole matter: Interior, the Department of Commerce because of NOAA, the DOT, because of the Coast Guard, the EPA, among others. There may be others that don't occur to me readily. So a choice really has to be made. There is no ideal choice to be made. It is a decision of the administration that the Department of the Interior is the best choice under present circumstances and under likely or hoped for future circumstances.

The Department of the Interior does have jurisdiction and management authority over the Outer Continental Shelf where presumably the port would be located. The Department has general responsibility over oil, other mineral matters, and increasingly over energy matters generally. The Department has a research capability with respect to fish and wildlife service, the impacts of oil in the aquatic environment.

Under the proposed legislative reorganization submitted by the President to the Congress, a Department of Energy and Natural Resources, built on the existing Department of Interior, would also include NOAA and, to that extent, would become an even more logical repository for this overall responsibility than at the present time.

For all of these reasons, it is the administration's position that the Department of Interior is the proper place.

Senator BUCKLEY. One last question.

Mr. TRAIN. Again emphasizing that the Secretary must consult with all other interested federal agencies.

Senator BUCKLEY. Consultation is one thing, and taking advice is something else, and I share some of the concerns expressed about the relationship with the States. You did mention, Mr. Train, that the most important environmental impacts of these projects will be on the landside, and you stated that S. 1751 does not modify or affect existing water pollution control laws and so on. But there is a specific failure in the act to mention section 401 of the Federal Water Pollution Control Act, and that section provides that a State shall certify any activity declaring a Federal license.

Should one conclude that S. 1751 is specifically intended to exclude this kind of authority in vesting this kind of authority in a State?

Mr. TRAIN. I had better take a look at that and answer that for the record, Senator. I am not exactly sure of the end relationship of that section with this statute. Doesn't section 401 apply to a certification with respect to impact of a proposed Federal action licensing action on water quality within the State's jurisdiction? Here we are talking about water quality beyond the 3-mile limit. So I suspect that section 401 would not apply.

Senator BUCKLEY. That is a legal reason for the distinction, but in terms of policy, ought that distinction to be made if 3 miles and 2 inches beyond the shore you set up conditions which are apt to cause oil to trespass on a State's territorial water?

Mr. TRAIN. Well, I think we would certainly urge that the Secretary in his regulations governing licensing applications in consulting with the States consult specifically also with the water quality aspects of the proposed application. Again, I do not think that you would wish to legally require an application of section 401 because I think it is outside of the Federal Water Pollution Control Act.

Senator JOHNSTON. Excuse me. We have a vote now, Mr. Train. I am wondering whether it would be convenient for you to come back at 2 p.m. We are at a good breaking point. Or if that is inconvenient we can come back after the vote and finish it before lunch. I will leave it to you.

Mr. TRAIN. Well, I have got a lunch waiting for me and I have got somebody waiting for me at 2 p.m. I would say I would rather come back at 2 p.m.

Senator JOHNSTON. The committee will be in recess until 2 p.m.

#### AFTERNOON SESSION

Senator JOHNSTON. While we are waiting for Senator Biden to come back and resume questioning, Mr. Train, I want to pursue this question of natural gas consumption a little bit, with you, and your statement. In your statement you alluded to the fact that it is the prevailing opinion that the use of natural gas as boiler fuel is not the highest and best use of that fuel.

To the contrary, you might say that it is the worst and poorest use of the fuel. This has a certain surface appeal, but I wonder if there is any data anywhere, any study that has ever been done on the use of natural gas on a relative efficiency of natural gas from the well head to the burner tip that has ever been done to test relative efficiency of the use of that fuel as boiler fuel as opposed to using it in homes?

Mr. TRAIN. We have a study, Mr. Chairman, which should be published within a matter of 2 to 3 weeks, hopefully, which endeavors to analyze the comparative benefits and costs of different electric energy systems, and in so far as the use of natural gas for the production of electricity is concerned, I feel quite sure that we do have some comparative data.

I do not have that at hand. I would be very glad to take a look and see what we do have and submit it to you.

Senator JOHNSTON. I wish you would, particularly with reference to the ability to convert to an alternate source of energy.

[The following information was supplied:]

EXECUTIVE OFFICE OF THE PRESIDENT,  
COUNCIL ON ENVIRONMENTAL QUALITY,  
Washington, D.C., September 26, 1973.

Mr. WILLIAM J. VAN NESS,  
Chief Counsel, Committee on Interior and Insular Affairs,  
U.S. Senate, Washington, D.C.

DEAR BILL: This is a belated follow-up to Russell Train's testimony before the joint Subcommittee on Deepwater Port Development last July. Below are answers to the questions raised during the hearing by various Senators. I have also attached our response to the formal questions which accompanied the request to testify.

1. On page 66 of the transcript, Senator Johnston asked if CEQ would make the draft secondary effects studies available to the Committee. Early in August, Suzanne Reed of the Committee staff visited our office, read the draft executive summary of the Arthur D. Little report on secondary impacts, and was given copies of several tables from the summary presenting a variety of data on economic and environmental impacts. The final ADL report will be released next week, and we will get a copy to you right away.

2. On page 67-68 of the testimony, Senator Biden asked whether CEQ's study of deepwater port development was conducted with the active participation of state and local governments. Our response is as follows: CEQ's studies of the primary and secondary effects of deepwater port development were carried out in large part by state universities or outside contractors. The primary effects studies were conducted by the Massachusetts Institute of Technology for sites in Maine, the State University of New York at Stony Brook for sites in Raritan Bay and off northern New Jersey, the University of Delaware for sites inside and off the Delaware Bay, the Louisiana State University for sites off Louisiana, and Texas A&M University for sites off Texas. These studies were scientific assessments of the vulnerability of various port locations to environmental damage. Within the time and budget allowed no new basic scientific research was done. Rather, the studies drew their conclusions strictly on the basis of detailed comprehensive reviews of the latest scientific literature on the subject. To our knowledge, State or local government officials were not formally consulted with by the scientists conducting the studies.

The secondary effects studies conducted by our contractor, the Arthur D. Little Co., focused on the onshore development implications of deepwater port location. In the course of developing data and conclusions, the contractors consulted extensively with state, local, county, and regional officials.

3. On page 90-91, Senator Buckley asked Mr. Train if S. 1751 is specifically intended to exclude authority in Section 401 of the FWPCA that gives the state certifying power over Federally licensed activities. After some discussion, Mr. Train concluded that Section 401 would not apply to a superport outside the three-mile limit, but that the Secretary of the Interior would consult with states with respect to the water quality aspects of the port as well as the land use aspects. We would like to augment that response as follows: With respect to the specific certification requirements of Sec. 401(a)(1) for discharges within navigable waters, there is a provision for the Administrator to make such a certification in cases where the state has no authority. Discharges from a superport in international waters would fall within that provision, and the Sec. 401 certification would be made by the Administrator in such cases.

4. On page 93, Senator Johnston asks for data comparing the efficiency of the use of natural gas with other fuels. Mr. Train promised to provide him with comparative data and we have attached for that purpose a copy of our study "Energy and the Environment: Electric Power."

5. On page 112 Senator Johnston asks a number of questions concerning compensation for fishermen for losses occurred in oil spills. His questions are very well taken. Because these issues are so complex and fraught with law-of-the-sea and other international legal implications, we are now in the process of coordinating a response with the Department of State and other Federal agencies. We hope to be back to you on this as soon as possible.

Sincerely,

STEVEN D. JELLINEK,  
Acting Staff Director.

Senator JOHNSTON. I might say that I have some serious doubt in many situations whether or not the use of natural gas is not a good use, particularly in one of these areas where an artificially high pollution rate is brought about by, say, a superport and by all the attendant industries.

We have a rather ambivalent feeling about a superport in Louisiana, and/or should I say, I do. We want the jobs and the development that it will certainly bring on. On the other hand, we are concerned about the effects on the environment and the effects on some of the other industries there.

It would seem to me that to alleviate the problem not only in my State but in other States, you ought to be allowed to use a greater relative proportion of a clean burning fuel to avoid these problems that are sure to be brought on by superports.

Mr. TRAIN. Mr. Chairman, I have one thing I wanted to introduce for the record before going on to other questions. You recall this morning Senator Scott raised some questions about the reference in my prepared statement to cancer-causing fractions of oil, and I have put together some material from the report of the Massachusetts Institute of Technology to our council, one of our marine environmental effects studies, which covers quite extensively this aspect of my testimony. I would like to submit that for the record at this time.

Senator JOHNSTON. Very well, without objection that will be admitted into the record.

[The information follows:]

#### CANCER AND POLYCYCLIC AROMATIC HYDROCARBON COMPOUNDS

Polycyclic Aromatic Hydrocarbons (PAH) are multi-ring aromatic compounds. The most carcinogenically active compounds are found in substituted tri (3) and tetra (4) cyclic aromatic hydrocarbons. Some penta (5), hexa (6), and higher cyclic compounds are also included. PAH were identified as the active carcinogens in petroleum and coal products and residues, e.g. petroleum asphalt, coal, tar, soot, lubricating oils, which caused increased incidents of skin cancer in exposed workpeople. It was found that oil containing more than 0.03% polycyclic aromatic hydrocarbon (PAH) with 4 or more rings caused cancer. (Gerarde, 1960)

The carcinogenic properties of polycyclic aromatic hydrocarbons are attributed in part to the presence of certain chemical structures in the compound. The mode of action appears to be chemical rather than physical and may relate to the properties of hydroxylized metabolites (compounds formed from the original compound) or mutagenic (mutation-causing ability) properties of carcinogens or their metabolites to disrupt cellular growth. Given the specific properties needed for carcinogenic activity, it is important to ascertain whether these compounds are changed in the food chain, and if they are, into what products.

PAH carcinogens occur naturally in a variety of plants, and are distributed throughout the food chain. Fresh water algae have been found to synthesize a variety of PAH carcinogenic compounds. Algae *Chlorella vulgaris*, which synthesizes several PAH's, was found to contain 10-50 ug/kg (dry weight) of PAH compounds. Apparently PAH carcinogens are growth stimulants in plants, and their carcinogenic potency appears to be related to their growth stimulating power. PAH have been found to increase 10-100 fold after germination in higher plants. In phytoplankton, production of aliphatic and aromatic hydrocarbons including carcinogenic PAH's, may be as much as three tons per year per square kilometer. Anaerobic bacteria synthesize appreciable quantities of hydrocarbons including 3, 4-benzopyrene, 1, 2-benzathrene, 3, 4- and 10-benzofluoranthene. Specifically the bacteria *Clos-*

*tridium patride* assimilates lipids of dead plankton and forms 120 to 800 ug benzpyrene (BP) per kilogram of plankton material (dry weight). Thus a large number of "natural" sources of carcinogenic compounds exist, confusing the distinction between "natural" or contaminated areas.

TABLE 6-11. QUANTITIES OF 3, 4-BENZPYRENE DETECTED IN MARINE ANIMALS AND IN BOTTOM DEPOSITS. (ZOBELL, 1971)

Kind of animals	Geographic location	BaP, $\mu\text{g}/\text{kg}$
Oysters.....	Norfolk, Va.....	10 to 20.
Do.....	French coast.....	1 to 70.
Mussels.....	Toulon Roads, France.....	2 to 30.
Holothurians.....	Villefranche Bay, France.....	Up to 2,000.
Do.....	West coast of Greenland.....	Nil.
Codfish and shellfish.....	do.....	16 to 60.
Fish and shellfish.....	Saint-Malo Bay, France.....	3 to 125.
Fish and crustaceans.....	Villefranche Bay, France.....	Nil to 400.
Crustaceans.....	Arctic Ocean.....	Nil to 230.
Isopod crustaceans.....	Clipperton Lagoon.....	Up to 530.
Various fishes.....	Adriatic Coast, Italy.....	Nil to 900.
Invertebrates.....	do.....	Nil to 2,200.

Material	Geographic location	BaP, $\mu\text{g}/\text{kg}$
Mud (42 stations).....	Tyrrhenian Sea.....	1 to 3,000.
Mud from oyster beds.....	French coast.....	90 to 2,840.
Mud (17 stations).....	Mediterranean coast.....	Up to 1,800.
Mud (8 stations).....	Villefranche Bay, France.....	16 to 5,000.
Mud (12 stations).....	French coast.....	Nil to 1,700.
Mud and sand.....	Villefranche Bay, France.....	Nil to 1,700.
Calcareous deposits.....	French coast.....	8 to 59.
Surface mud.....	Italian coast.....	Nil to 2,500.
Mud (21# samples).....	Adriatic coast.....	Nil to 3,400.

The wide distribution resulting from natural and man-made sources is illustrated by benzpyrene (BP), an extensively studied carcinogen (Zobell (1971)). BP has been found in marine sediments, fish, shellfish, and plankton in both contaminated (Europe and American) and uncontaminated (Greenland) areas. Blumer found 40-1300 ug/kg BP in soil that he considered uncontaminated. Table 6-11 shows the range of concentrations of BP for a variety of marine animals, plants and sediments, and other categories. The uncontaminated general level of food is put at 10-20 ug of BP per kilogram (dry weight). Although most concentrations of BP in the environment are low, contamination of sediment can reach 5ppm, and in marine animals about 1/10 that level. From Table 6-11 the presence of BP in the sediment and marine flora and fauna in the same area is indicated, thus demonstrating that contamination of the sediment may lead to contamination of marine organisms. However, significant concentrations are also found in organisms from uncontaminated areas such as the coast of Greenland. In discussing the distribution of BP in the environment, it should be remembered that it constitutes only a variable portion of the total PAH present, perhaps 1-20%. Therefore, low concentrations of BP are deceptive if they are interpreted to indicate low accumulations of PAH without other confirming analysis.

There are a number of general sources of PAH hydrocarbons including oil spills, coal tar, petroleum asphalt, and cooking oil. Crude petroleum has been found to contain a number of carcinogenic PAH compounds including 1, 2-benzathrene, chrysene, triphenylene, 1, 2-benzphenanthrene, phenanthrene, and dibenzthiophene. Various crudes have been analyzed for their content of BP and a range of values from less than 0.1 ppm to more than 1 ppm has been found. Naphthenic and asphalt-based petroleum contain more quantities of carcinogenic PAH's than paraffin-based crudes because the greatest proportion of those crudes are made up of high molecular weight hydrocarbons. It should be noted that the relative proportion of carcinogens per kilogram of crude will increase after weathering removes low boiling fractions. Zobell (1971) estimates that a spill of 10,000 tons of oil could contain 100-200 lbs. of carcinogenic material.

PAH compounds are very insoluble. Their solubility is increased by the

presence of detergents or non-colloidal hydrocarbons (purines, acetone) but the concentrations of the detergents needed to achieve these increases are unrealistic especially in marine environment. Therefore the primary mode of distribution of PAH hydrocarbons is adsorption (adherence) onto particulate matter.

The clearest evidence for the absorption of PAH compounds is from a study by Lee et al. (1972). They found that the marine mussel *Mytilus edulis* incorporated a number of hydrocarbons including 3, 4-benzpyrene. However, most of the compounds remained in the gut, indicating a lack of absorption in the body. BP is excreted, but some remains even after removal from the source of contamination. Apparently, unlike mammals and bacteria, no substantial degradation of PAH compounds takes place in mussels, copepods and fish once absorbed into the tissue. This poses the problem of accumulation of PAH carcinogens even if little is absorbed at one time through the digestive system. Thus crude petroleum spilled into the environment, even if only slightly soluble, or carried on particulate matter, might accumulate in edible fish and shell fish. However, Lee, et al. (1972) indicates that there may be a maximum accumulation concentration in mussels.

The oxidation of BP and other PAH carcinogens occurs in the presence of sunlight. However, degradation is slower in oil than in aqueous solution. Therefore much of the PAH compounds will be protected from easy oxidation, and this process is likely to be comparatively slow. Another route is degradation by bacteria from water and soil. The lack of nutrients, especially phosphorous and nitrogen compounds, may reduce the extent of degradation. Finally, some animals metabolize carcinogenic hydrocarbons, but marine organisms in general do not seem to possess this ability.

The clearest indication of the length of time necessary for effective degradation comes from the work of Blumer et al. (1972), on stranded crude oil. The reduction of various types of compounds in oil over a period of years was examined. Only slight degradation of PAH compounds occurred. Though theoretically it is possible to oxidize and microbially degrade the PAH compounds in crude oil, two factors cause the half-life of the compounds to be in years. First is the preference of bacteria to degrade n-paraffins, branched paraffins, and cycloparaffins before they attack PAH compounds. The second is that despite the considerable ability of bacteria to rapidly degrade these compounds, optimum environmental conditions rarely exist to allow these rates to be attained.

In summary, PAH carcinogens tend to remain in the environment capable of being adsorbed on particulate matter or absorbed by burrowing animals, and thus provide routes to enter the food chain. Edible fish and shellfish can partially absorb these compounds through their gut tract. Marine animals do not appear to metabolize them to a significant degree when they enter their tissues. Potentially slow accumulation can occur; moreover, ample evidence is available to show this process does indeed occur for a number of fish and shellfish.

Although man does not absorb PAH to any substantial extent through the gastrointestinal tract (Gerarde, 1960), even a small absorption of these compounds into the body or incorporation in the gastrointestinal tract presents a danger of inducing cancer, especially in light of the medical judgement that prolonged low level exposure to carcinogens can be the most effective way of producing cancer. Although the human body does metabolize these compounds, initially by hydroxylation, it is still uncertain whether the metabolites are themselves carcinogenic. Thus an increase in exposure would constitute an increased health danger.

Senator JOHNSTON. Senator Biden, I believe you were in the midst of questioning, and Mr. Train must leave by 2:30.

Senator BIDEN. Thank you, Mr. Chairman.

My 8 minute delay in getting here was not lack of interest. I was presiding in the Senate, and they didn't let me off until 2 o'clock.

I really appreciate your coming back for these questions. I would like to pick up with where the chairman left off with an idea that I think is implicit in what he was saying. In determining whether or not Louisiana, assuming there is a deepwater port,

should be indirectly compensated by being able to use natural gas to run, or to provide the energy needs for the onshore related industry which will be induced as a consequence of the superport.

I assume implicit in all that is really a basic question, and that is that the basic premise, first of all, being that States adjacent to deepwater facilities are going to suffer at least some minimal environmental degradation. They are not going to be enhanced, their environment is not going to be enhanced by the construction of a superport.

I guess the second premise is sort of shaky syllogism that I am trying to put together here is that if they are going to be doing that, they are ostensibly doing that for the benefit of either the area or the Nation as a whole.

It is not just a parochial interest.

I guess what I am asking is, do we draw the conclusion from that that if they are going to suffer some environmental degradation, as slight as it may be, or as catastrophic as it may be, depending on to whom you are speaking, and it is not for them alone, should they in some way be compensated for the effect on their environment, and in that regard, I wonder whether or not your outfit has given any thought to that dilemma, which is one which I constantly hear in my home state of Delaware?

That is really a broad, general question, but I would appreciate any comment you would have, or if you would rather comment on it later, that would be fine.

Mr. TRAIN. I would be happy to comment on it. I don't believe we have given any specific consideration to the possibility of compensation in the kinds of cases you have described. First, as I have indicated, properly managed, it seems to us that deepwater ports well offshore should involve what you call really minimal environmental damages, and possibly even improvement, an improvement, over the existing oil spill situation, or an improvement over the oil spill situation if in the future much larger quantities of oil brought to shoreside ports in smaller tankers.

There is in the Federal water pollution legislation liability provisions dealing with, and setting up a fund for compensation to pay the cost of cleaning up in the event of oil spills. So that kind of thing is already in the law. As I have indicated, I think in my testimony, I think the most serious environmental impacts that we see come from land use implications of deepwater ports, and the associated environmental impacts; air, and water pollution, and so forth.

I think it is exceedingly hard to quantify these. I don't know how you go about arriving at a measure of compensation. I think it would be highly speculative. Also, on the other side of the coin, as you recognize, there are definite economic benefits to the area in question in terms of higher levels of employment, higher income levels, per capita income levels, and these are shown by our studies.

Presumably there will be increased revenues to the State as a result. So that I am not sure that a case really can be made for compensation, but again I say we have not looked into this, and these are merely off-the-cuff reactions.

Senator JOHNSTON. If the Senator would yield, it is true there are compensations and that motivates a great many people in my State to want one of these, but one of the things you mentioned is high levels of employment.

On the other hand, that employment will not last forever, because hopefully we are going to conquer this energy crisis by the early 1980's and won't have to be importing 50 or 60 percent of our oil, and when that happens, you have all the dislocations produced by no longer running these vast quantities of oil through your superports. So it is a very mixed blessing that we are talking about.

Senator BIDEN. Mr. Chairman, you put your finger right on the point which makes me again skeptical about making massive investments if we have an alternative, to the deepwater facilities.

I don't want to be in your spot nor my own when 20 years later after we became very enlightened and have found a way not having to rely on that Mideast oil, we no longer have the needs for the oil aspect, anyway, of the superport, and at that time—that point in time we have probably not taken precautions to provide for job displacement, and then, that union comes to you and the chamber of commerce in your State comes to you and says, "Tell you what, you are going to vote for all that coal down in Jennings Randolph's State and we are going to put you out of office, boy, because you are putting us out of jobs if you decide we don't need oil anymore." This is the kind of thing we face here to get back on the track.

Mr. TRAIN. Before you do, just let me say something. In response to the chairman's point, he indicated that by 1980 we presumably would have sources of energy which would permit us to avoid these large amounts of oil imports.

I think the record should make clear that it is long after 1980 before we would be in such a happy situation. The necessity to import large quantities of oil is going to go on far beyond 1980. So we are still talking in the long-term situation. I would also assume that much of the industrial development that would follow a deep-water port location would continue to be viable industrial operations even with alternative energy sources.

So I am not sure that this is a very significant concern, although it certainly is one to have in mind. But I am not trying to make a case for or against the industrial development aspects, and I really made these points in relation to suggestions about compensation by the Chairman and Senator Biden.

Senator BIDEN. We don't really have to worry about the unions now in terms of the number of jobs created. With regard to industrial development, land site development of such a facility, another concern is raised in my mind, and that is that in your statement on page 13 you stated, "a framework of existing federal legislation can help in planning and controlling superport related development. Under the Federal air and water pollution laws, new industrial development generated by an increase in petroleum refining and processing will be subject to the stringent standards reflecting the best pollution control technology," and so forth.

You cite our present tough regulations as the basis for an argument that whatever land site environmental degradation will occur

will be mitigated by our tough stance. I am sure you are aware on the Subcommittee on Air and Water Pollution of Public Works that we are now being told that in the national interests, in the name of the consumer, in the name of national defense, and in the name of God, we have got to considerably diminish the controls, at least lower the standards for both clean air and clean water—well, I haven't heard much about clean water, but clean air.

When we raise questions, I get responses from the utility companies like "Well, Senator Biden, if you want to be responsible for the blackouts in the operating rooms this year, you go ahead and continue to hold fast to the standards we now have."

There is one gentleman who said to me, and I am very serious:

Well, Senator Biden, in light of your attitude toward these subjects, I just hope you don't get in an accident on the way home and the ambulance not have enough gasoline to come and get you.

I am not sure he really meant that, but he said it.

Very seriously, now, I raise these questions and I am not trying to be facetious. We now have the crunch on, you know, the public relations move is on. I have never seen the oil companies so magnanimous before. They have stopped running ads about the cows drinking the water from the discharge from their plants. They are not going to advertise. They tell us to slow down, that they don't want to make any more money, and they go on and on about this.

Maybe they are 100 percent on target, but the point is that the vast amount of pressure being brought to bear in this Congress now and in the near future, I suspect, is going to be to reduce these standards which you point to as a possible protection for the adverse effects of land development adjacent to these facilities. I am not even sure I am asking a question, except that I have really no faith that local officials are going to stand up to pressures that will be brought to bear on increased development in their State, nor are we going to be able to withstand the arguments that we have to, in the national interest, lower our standards whether or not they are justifiable at this point in time.

I guess I raise that as a caveat and ask you to comment on it generally.

Mr. TRAIN. I think it is an exceedingly important caveat and a very timely one. I think it behooves the Congress and all of us to be very careful that we do not get panicked into relaxations of standards because of seeming problems or real energy problems, unless we are fairly certain in an absolutely air tight case that the current standards are not justifiable.

I wouldn't want to say that some changes might not be in order. I think this has indicated—your own subcommittee has indicated it wants to take the opportunity of reviewing this—but I share with you the concern that very real energy problems may be used as an argument for relaxing standards.

Senator BIDEN. Putting it another way, do you believe, as I, that in this case the burden of proof, and you are an attorney, you said earlier, as the term is used in the court, the burden of proof should be on those who are moving to change the standards?

Mr. TRAIN. I think as a generalization it would express my opinion, yes, and I think the Clean Air Act is a sound act and we are making good progress under it. If there are problems that need or suggest adjustment in the statute, then I think a case should be made very clearly before we move to make those changes.

Senator BIDEN. I would like to ask very specific questions, and those you feel you would rather answer in writing, that is fine with me. A report by the Corps in the North Atlantic contained the following comments dealing with oil spills and that report says that containment and clean up techniques are used to control spills and to prevent them from spreading beyond the immediate spill area.

These devices are generally employed at berth, although they have been used at sea primarily for large spills. With the exception of the newest boom development for the Coast Guard, no presently available boom is effective in containing oil in other than relatively calm seas and very low surface currents.

It goes on at pages 43 and 44 of that same report to say that "However, this is an area of ongoing research and better containment devices are likely to be developed."

What is your assessment of the state of technology for dealing with oil spills of the kinds that we are talking about?

Mr. TRAIN. I think the statement made by the corps which you quote is generally correct. Speaking of the use of offshore single point mooring, for example, it would be exceedingly difficult, if not impractical, to develop a boom and an apron kind of device for the containment of possible oil spills.

As you know, the vessel may be up to 1,200 feet long. The spinning at some distance from the mooring, it has to be able to swing in all quarters of the compass. Since the vessel would not be stationary, a boom would be inefficient, unlikely to be successful in any kind of high water, wave action, or high wind situation.

I do think that improved technology probably will come along in this respect, and I know that there is considerable research under way, supported both by the Government and by private sources, but I would say that no real answer to this seems to be in sight at the present time.

Now there is improved technology available for the minimizing of spills at single point moorings in the first instance, rather than in terms of containment after the fact.

This would involve, for example, fitting hoses at the bow of the ship rather than at the more conventional midships location, to permit the vessel to swing with the wind and currents without riding over a hose and causing breaks. It is one of the fairly rudimentary but possible new techniques which would minimize spills.

Likewise, fail-safe devices on the mooring, or at the mooring, to cut off pumping in the case of a spill, thus minimizing the amount of oil going into the water, and also to cut off pumping in the event seas reach a certain level or wind reaches a certain velocity. Things of this sort are all within the realm of the present state of the art.

**Senator JOHNSON.** Senator Biden, I promised Senator Stevens a couple of minutes before the 2:30 deadline, and before I turn it to Senator Stevens, I would like to get your comments in writing, if I could, Mr. Train, on the question of how you would compensate a fisherman who does not always fish in the same area, when you have an oil spill and the next year he doesn't catch much.

How are you going to compensate him, what kind of formula, and what kind of structure or rule would you have to deal with that kind of situation? I would like your comments in writing.

**Senator Stevens?**

**Senator BIDEN.** Mr. Chairman, I have a number of other questions. I would like to submit them in writing to you.

**Mr. TRAIN.** I would like to get them. I am sorry my answers were so long.

**Senator BIDEN.** My questions were so long.

**Senator STEVENS.** In answer to the chairman's question. I introduced a bill 2 years ago to do that. I have two questions. One, I am disturbed that there are not enough people to keep their eyes on international law. It is my understanding that we can't discriminate against international shipping, the international maritime law. These tankers are either going to come to a superport or they are going to come right into our ports.

Isn't that one of the major problems? They are going to come in and offload on barges, or other jerryrigged types of apparatus put in the center of something like that port in Delaware or New Jersey or Boston or Texas.

They are going to offload if their destination is the United States. Isn't that right? We can't close our ports to them, as I understand it.

**Mr. TRAIN.** There certainly are limitations on the right of any coastal State to bar the free movement of shipping, but it seems to me that coming into the territorial waters of the United States for the purpose of offload we are not talking about free passage or the right of transit, but we are talking about entering port and offloading. The United States would have the ability to regulate that.

I may not be the best person to answer that.

**Senator STEVENS.** I invite you to get your people to look at this. My understanding is that we can set standards for the equipment, but if their destination is the United States, we must permit them to offload.

**Mr. TRAIN.** I think it may be a practical question as well. You wonder how practical it would be if an international system of oil deliveries to the United States could be based upon some sort of barge transshipment, unlicensed, off the coast of the United States.

We are talking about very large amounts of oil, very large investment, major companies, and it seems to me most unlikely that that kind of regulated activity would come about.

Senator STEVENS. A substantial amount of European oil is lightered to shore. That is because they lay more than 3 miles off shore and discharge it on to barges. I think this is something our friends who are questioning superports ought to think about. Isn't this the very area where the local governments and the States have the primary control, that is, through zoning, through the other aspects of local control of industrial development?

Mr. TRAIN. Yes.

Senator STEVENS. If they oppose this, they are the ones who are going to have absolute control there.

Mr. TRAIN. Yes.

Senator STEVENS. Can you imagine any place in the United States today under NEPA, even if we don't go for the idea of having a veto by the onshore State, can you imagine any area where substantial opposition with the provisions of NEPA where a superport would be built without their approval? I have learned a lesson in my trans-Alaska pipeline, and that is not even a majority opposition. There was a substantial delay. Can you imagine until someone is willing to take the cause up and try to get the Congress to approve it notwithstanding NEPA, there is not going to be any superport development, is there?

Mr. TRAIN. Practically speaking, I think it is highly unlikely.

Senator STEVENS. I agree. I think on the alternative question, when you have places that want the ports, that there is no place that is going to have to swallow a superport if they don't want it as long as NEPA is not in some way bypassed.

Senator JOHNSTON. Mr. Train, I promised to let you go at 2:30. It is a few minutes later than that. We appreciate very much your testimony. You have been very enlightening to the committee. I am sure we will look forward to getting responses to the written questions. We will resume right after the vote, which will be in about 5 minutes.

[Recess.]

Senator JOHNSTON. The committee will come to order.

This afternoon, we are pleased to have a panel of three very highly qualified witnesses. Hon. Jack Horton, Undersecretary of the Department of Interior. He is accompanied by Jared Carter, Deputy Undersecretary of Interior, together with Dr. William Johnson, Energy Advisor to the Deputy Secretary of the Treasury.

We also heard from Mr. Johnson, and we are pleased to hear from you.

I understand you would each like to present your statements in brief and then have the questioning to the panel as a whole at the completion of all the statements.

So with this, you may proceed.

**STATEMENT OF HON. JACK HORTON, ASSISTANT SECRETARY FOR LAND AND WATER RESOURCES, DEPARTMENT OF THE INTERIOR; ACCOMPANIED BY JARED G. CARTER, DEPUTY UNDER-SECRETARY; AND DR. WILLIAM JOHNSON, ENERGY ADVISOR TO THE DEPUTY SECRETARY**

Mr. HORTON. Thank you, Mr. Chairman.

That is correct. We appreciate the opportunity to testify before you on the subject of deep water ports.

The President's energy messages of April 18 and June 29 laid the groundwork for what the Federal Government is doing and, in partnership with the Congress, should be doing to address the energy challenge.

The message of April 18 identified seven pieces of legislation sent to the Congress, including authority to permit the building of the Alaska pipeline, deregulation of natural gas and the legislation we are here to discuss today. The President also emphasized that as we work to reduce our energy demand, we must also undertake an intensive effort to expand our energy supplies.

To achieve the goals of conservation and increased supply, the President reported on certain organizational changes in the executive branch designed to enhance the formulation of energy policy. On the R. & D. side, the President proposed a \$10 billion, 5-year effort with \$100 million in fiscal year 1974 to be devoted to energy conversion systems, environmental control, et cetera.

On the issue of energy conservation, the President directed the Federal Government, which is the largest consumer of energy in the United States to reduce energy consumption by 7 percent during the next 12 months. The President also directed all departments and agencies to work with the Interior Department to develop long-term energy conservation plans for application both in the private and the public sector.

The administration regards conservation as an indispensable goal. We in the Interior Department are promoting it at every opportunity. My testimony today, however, will focus on three facts.

First, success in reducing energy use does not mitigate the urgent need for more energy fuels than we are now producing;

Second, much of the oil to fill the supply demand gap will be imported from Africa and the Middle East in tankers too large to enter U.S. ports;

Finally, the safest and most economical way to handle this imported oil is to construct facilities which will enable us to offload these large tankers in deep water. In many places, water of the required depth lies beyond the 3-mile territorial limit. This legislation is necessary to authorize the construction of deepwater ports in international waters.

The experts in our department state that our gross energy demands, even with maximum effort to reduce waste, will be 80 quadrillion Btu's by 1975, 96 quadrillion by 1985, 117 quadrillion Btu's by 2000. They then take our present domestic fuel supply—coal,

gas, nuclear, petroleum and water—and add to it the additional energy we expect to result from the intensified research efforts. Subtracting domestic supply from demand leaves a gap of 15 million barrels of oil per day by 1985. Waterborne imports are expected to account for 13 million barrels per day.

This unsatisfied energy demand will have to be met by imports of oil. There is no other short term alternative. Moreover, to the extent that we fail to bring nuclear power plants on-stream as scheduled, we will have to augment oil imports. To the extent that we restrict the use of coal, we have to use imported oil. To the extent that we continue to rigidly control natural gas prices for new reserves, we must import more oil.

In short, oil is the swing fuel. Our domestic petroleum production this year can only account for 70 percent of the oil we need, and it will take time to increase our domestic supply sources. Tables 1 and 2 depict U.S. petroleum demand-supply balance and demand by districts.

Mr. Chairman, I would draw your attention and the committee's attention to the appendices which are accompanying our statement, and you may desire to follow these along table by table.

TABLE 1.—U.S. PETROLEUM DEMAND BY PAD DISTRICTS

[In thousands of barrels per day]

	1970	1975	1980	1985
District I (east coast).....	5,894	7,535	9,240	10,812
District II (mid-west).....	4,110	4,890	6,087	7,037
District III (gulf coast).....	2,369	2,910	3,628	4,364
District IV (Rocky Mountain).....	397	470	610	720
District V (west coast).....	1,952	2,595	3,225	3,952
Total.....	14,722	18,400	22,790	26,885

TABLE 2.—U.S. PETROLEUM SUPPLY-DEMAND AND SOURCE OF OIL IMPORTS

[In thousands of barrels per day]

	1970	1975	1980	1985
Domestic demand.....	14,722	18,400	22,790	26,885
U.S. production.....	11,328	10,800	10,500	9,725
North Slope crude.....			1,500	2,000
Total imports.....	3,418	7,600	10,790	15,160
Source of imports:				
From Canada (pipeline).....	766	1,300	1,800	2,200
Total waterborne imports.....	2,652	6,300	8,990	12,960
From Western Hemisphere.....	2,091	3,200	3,280	4,106
From Europe.....	177	200	300	400
Total in small tanker.....	2,268	3,400	3,580	4,506
From Middle East.....	185	2,325	4,610	7,354
From Southeast Asia.....	72	175	100	100
From Africa.....	127	400	700	1,000
Possible for large tankers.....	384	2,900	5,410	8,454

Given an expansion of oil imports, the major question now is how and under what circumstances will the oil be brought in. In 1970, tankers averaging 30,000 dwt brought 2.5 million barrels of oil per day to the east coast.

By 1980, we could be importing to the east coast as much as 6.6 million barrels a day. Even if the average tanker size calling at our ports rose to 50,000 dwt, tanker traffic in our harbors would double. By 1980, gulf coast imports could reach 14 million barrels per day.

On the delivery side of the coin, there are developments which will have a substantial effect on how crude oil is transported and delivered to the consumers in this country. Tables 3 and 4 profile the world tanker fleet.

TABLE 3.—WORLD TANKER FLEET

Year	Vessel size in thousands of deadweight tons							Total	
	10-60	60-80	80-100	100-150	150-200	200-500	Over 250	Number of vessels	Dead-weight tons (million)
1963.....	2,608	23	15	4				2,650	75
1964.....	2,588	38	26	4				2,656	81.6
1965.....	2,574	77	44	5				2,704	90.1
1966.....	2,567	136	65	14				2,792	99.4
1967.....	2,544	198	86	34	1	1		2,864	107.9
1968.....	2,510	229	110	59	8	2		2,918	119.5
1969.....	2,479	244	142	83	16	16	2	2,982	135.2
1970.....	2,426	243	157	96	31	54	9	3,016	155.7
1971.....	2,406	245	163	112	35	113	18	3,092	175.3

TABLE 4

Name	Deadweight	Built	Launched
World Record Tanker			
Sinclair.....	56,089	Japan	1956
Universe Leader.....	85,515	do	1957
Universe Appollo.....	104,520	do	1959
Nissho Maru.....	130,250	do	1962
Tokyo Maru.....	157,200	do	1966
Idemitsu Maru.....	206,000	do	1966
Universe Ireland.....	326,000	do	1698
Nisseki Maru.....	372,700	do	1971
Globtik Tokyo.....	477,000	do	1973
Corporate name	Deadweight	Being built at	Delivery date
Super Tankers on order in United States			
Langitt Ship Co.....	225,000	Brooklyn, N.Y.	Aug. 1973.
Tyler Tanker Corp.....	225,000	do	May 1974.
Polk Tanker Co.....	225,000	do	Jan. 1975.
Filmore Tanker Corp.....	225,000	do	July 1976
Joint ownership <sup>1</sup> .....	265,000	Sparrows Point, Md.	Mar. 1975.
Joint ownership.....	265,000	do	Aug. 1975.
Do.....	265,000	do	Jan. 1976
Gulf Oil Co.....	265,000	do	Oct. 1976.
Do.....	265,000	do	Apr. 1977.

<sup>1</sup> Maritime Fruit Co., Boston tankers.

It should be noted that over 90 percent of the fleet is made up of ships below 100,000 dwt, and these tankers account for about 60 percent of the total tanker capacity. This table also shows the growth of tankers since 1967 in the 100,000 dwt size or larger. Over 200 tankers of the 175,000 dwt class or larger were in operation as of January 1, 1972, and 330 were on order.

Thus, the shift to building larger vessels is clear. In less than 20 years, the world's largest tanker has increased by a factor of 8 from 56,000 dwt in 1956 to 477,000 dwt in 1973. A tanker of 706,000 dwt is on the drawing board. I should also point out that there are 9 super tankers—over 200,000 dwt—on the ways or on order at U.S. shipyards.

The next table, table 5, shows the maximum tanker vessel size able to enter various U.S. harbors. The only two ports which can take 100,000 dwt ships are in the Los Angeles area, with Beaumont, Tex. and Portland, Maine, the only ones able to handle tankers in the 80,000 dwt range.

Nearly all of the rest of the ports in the United States are in the 30–55,000 dwt range. I might add at this point that the new ships are a vast improvement over the older vessels in terms of safety, both in their internal operations and in the effectiveness of their radar and communications systems. The replacement of the older smaller tankers by the larger carriers—over 200,000—has the additional advantage of being able to employ the load-on-top, LOT, system of antipollution, which reduces substantially the amount of oil dumped on the high seas while ships are on their ballast voyage.

Table 6 compares the freight rates by size of vessel between North Africa, Middle East, and the United States. The freight savings in dollars per ton between a 65,000 dwt and 500,000 dwt vessel is \$4.60 per ton on long hauls from the Middle East. With these kinds of savings, the larger tankers will be built and used. If we do not have facilities to handle them, the oil we import will undoubtedly be carried by deep draft tanker to a transshipment terminal in the Caribbean or Canada and shipped to our ports in small tankers.

TABLE 5.—U.S. TANKER PORTS

Port	Maximum vessel size (deadweight tons)	Port	Maximum vessel size (deadweight tons)
Alaska—Nisiki.....	60,000	Massachusetts—Boston.....	50,000
California—Long Beach.....	100,000	New Jersey—Newark.....	25,000
California—Los Angeles.....	100,000	New York.....	55,000
California—Port San Luis Obispo.....	20,000		55,000
California—San Diego.....	35,000	Texas—Baytown.....	30,000
California—San Francisco.....	35,000	Texas—Beaumont.....	80,000
Florida—Jacksonville.....	30,000	Texas—Brownsville.....	35,000
Florida—Miami.....	20,000	Texas—Corpus Christi.....	50,000
Florida—Port Everglades.....	35,000	Texas—Freeport.....	30,000
Hawaii—Honolulu.....	35,000	Texas—Houston.....	55,000
Louisiana—Baton Rouge.....	45,000	Texas—Port Arthur.....	55,000
Louisiana—New Orleans.....	45,000	Texas—Texas City.....	45,000
Maine—Portland.....	80,000	Virginia—Hampton Roads.....	50,000
Maryland—Baltimore.....	55,000	Washington—Seattle.....	45,000

Source: International Petroleum Encyclopedia, 1972 Edition.

TABLE 6.—FREIGHT COST IN DOLLARS PER TON

Ship size in deadweight tons	Roundtrip distances in miles		
	Venezuela 4,000	North Africa 8,000	Mid-East 24,000
65,000.....	1.90	3.50	9.05
250,000.....	1.40	2.50	6.55
328,000.....	1.25	2.30	6.15
500,000.....	1.00	1.90	5.45

Given this situation, there are three principal choices open to us: (1) do nothing; (2) stimulate dredging of some principal ports of entry to accommodate the larger vessels; or (3) permit the licensing of deepwater terminal facilities.

In my view, the first option is economically unsound; option 2 by the same token is environmentally unacceptable.

Figure 1 and table 7 quantify oil pollution in our oceans and puts the tanker problem in perspective. Table 8 provides some data on oil pollution and tanker accidents in 1969-70.

The study which produced these data was undertaken by two Coast Guard officers experienced in tanker operations and pollution control. Let me summarize some of their findings:

TABLE 7.—ESTIMATED ANNUAL OIL POLLUTION OF THE OCEANS<sup>1</sup>

	Metric tons	Percent
<b>Marine Operations</b>		
<b>Tankers:</b>		
LOT tank cleaning operations.....	265,000	5.41
Non-LOT tank cleaning operations.....	702,000	14.34
Discharge due to bilge pumping, leaks, and bunkering spills.....	100,000	2.04
Vessel casualties.....	250,000	5.11
Terminal operations.....	70,000	1.42
<b>Tank barges:</b>		
Discharge due to leaks.....	20,000	0.41
Barge casualties.....	32,000	0.65
Terminal operations.....	18,000	0.38
<b>All other vessels:</b>		
Discharge due to bilge pumping, leaks, and bunkering spills.....	600,000	12.25
Vessel casualties.....	250,000	5.11
<b>Nonmarine Operations</b>		
<b>Offshore operations:</b>		
Refineries and Petrochemical plants.....	300,000	6.12
Industrial machinery.....	750,000	15.31
Highway motor vehicles.....	1,440,000	29.41
<b>Total.....</b>	<b>4,897,000</b>	<b>100.00</b>

<sup>1</sup> The final total does not include oil contributed by recreational boats, hydrocarbon fallout, and natural seepage.

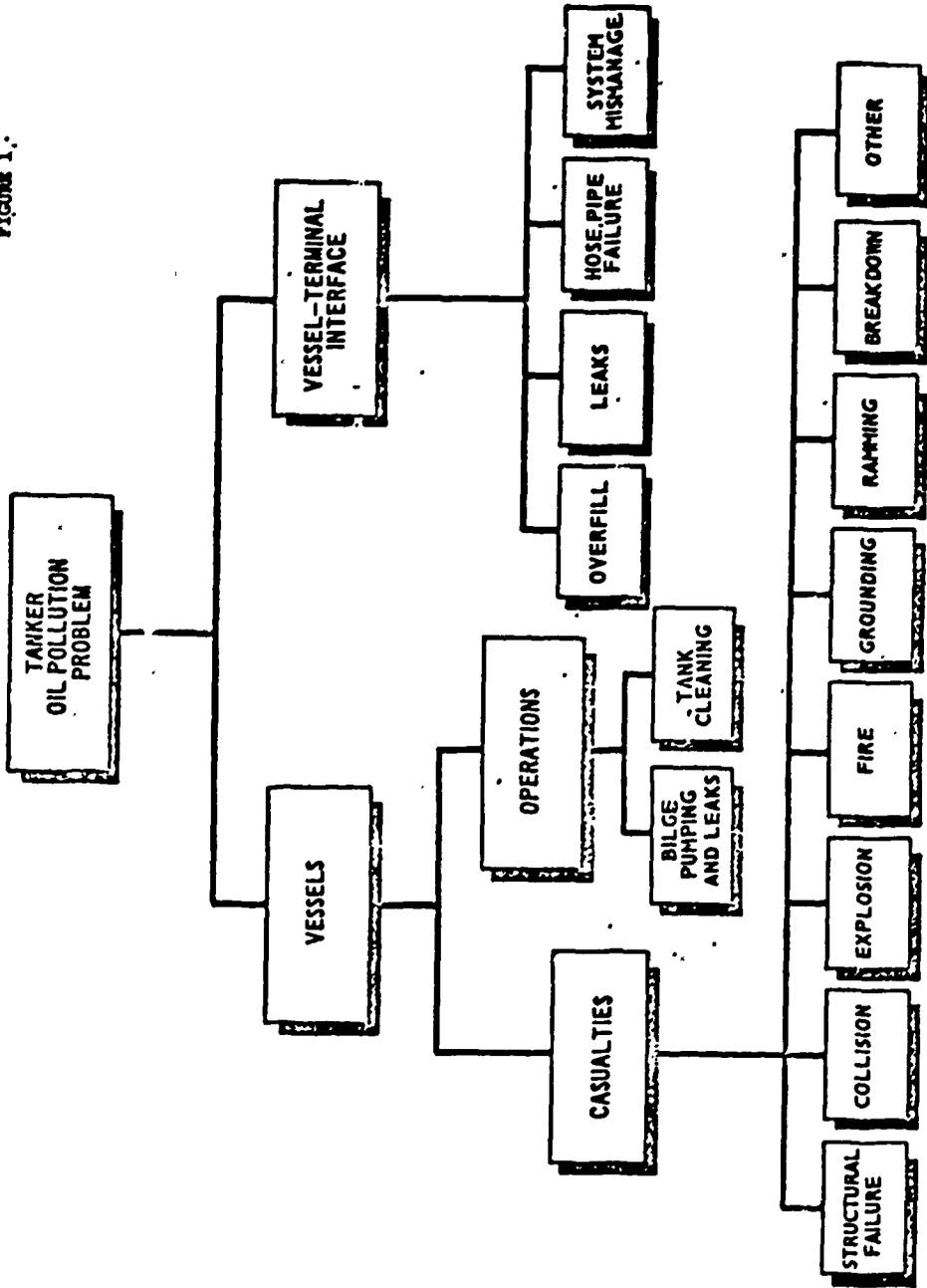
Source: Tankers and the U.S. Energy Situation—an Economic and Environmental Analysis. Joseph D. Porricelli and Virgil F. Keith.

TABLE 8.—*Statistics on Pollution and Tanker Accidents, 1969-70*

Pollution:		<i>Percent</i>
5,000,000 tons of oil pollute oceans each year:		
Auto crankcase oil disposal.....		29
Tankers accidents of all types.....		28
Industrial machinery waste oil.....		15
Other vessels.....		17
Refinery/petroleum chemical plant disposal.....		6
Offshore production.....		2
Tank barges.....		2
1,416 tanker casualties occurred over a 2-year period 1969-70. Some pollution occurred in at least 269 tanker accidents these accidents were caused by—		
Collisions.....		30
Groundings.....		26
Structural failures.....		19
Rammings.....		9
Fires.....		7
Explosions.....		6
Other.....		3
Of the 430,000 metric tons of oil outflow from tanker accidents in the 1969-70 period came from—		
Structure failure of ships.....		49
Groundings.....		29
Collisions.....		8
Explosions.....		7
Breakdowns.....		14
Fires.....		1
Important to note:		
Tankers below 80,000 dwt accounted for 92 percent of casualties and 94 percent of pollution and 94 percent of the world's tanker fleet and 68 percent of the total deadweight tonnage.		
Tankers over 80,000 dwt accounted for 8 percent of casualties contributed 6 percent of pollution, 6 percent of the world's tanker fleet and made up 32 percent of the deadweight tonnage.		
Thus, tankers 80,000 dwt and larger can transport oil about seven times safer than tankers below 80,000 dwt from a viewpoint of tanker casualties and subsequent pollution.		
The 430,000 tons of oil spilled occurred in the following places:		
At sea.....		56
Near land.....		43
Coastal.....		14
Entrance.....		19
Harbor.....		5
Pier.....		5
Unknown.....		1
95 percent of underwater pipeline spills between 1967-72 caused by ships anchor damaging unburied pipeline.		

Source: Tankers and the U.S. Energy Situation—An Economic & Environmental Analysis. Joseph D. Porricelli and Virgil F. Keith.

FIGURE 1.



Parenthetically, you may be surprised to learn that auto crankcase oil disposal, 29 percent, is a slightly bigger polluter than tankers; 28 percent. Of the tanker accidents which resulted in some pollution, collisions caused 30 percent of the accidents and groundings 26 percent. However, further analysis reveals that the volume of oil released from the tankers by groundings was nearly four times greater than from collisions. The risk of grounding is nearly zero with deepwater ports, but will increase each year without them, as more and more small tankers crowd into existing ports.

The do-nothing option has additional drawbacks. We believe that unless we provide private industry in the United States with the opportunity to utilize the large tanker traffic potential, a significant amount of refining capacity will follow the tankers abroad—especially to the Bahamas and Canada.

In other words, no action on our part will stimulate expansion of the deepwater capability of the Bahamas and Canada at the expense of our own facilities.

In addition to the economic considerations, the population centers on the east and gulf coasts will be dependent upon the decisions of governments other than their own in respect to adequate supplies of energy. Further, a profusion of product tankers versus crude tankers provides, at best, a double environmental hazard.

Research has indicated that some refined products are more toxic than crude oil; and that others, when discharged into cold seawater, resist breakup and dispersion. Therefore, in the case of substantial tanker traffic in refined products, the amendability of these materials to containment and cleanup techniques are such as to compound the environmental problems facing us.

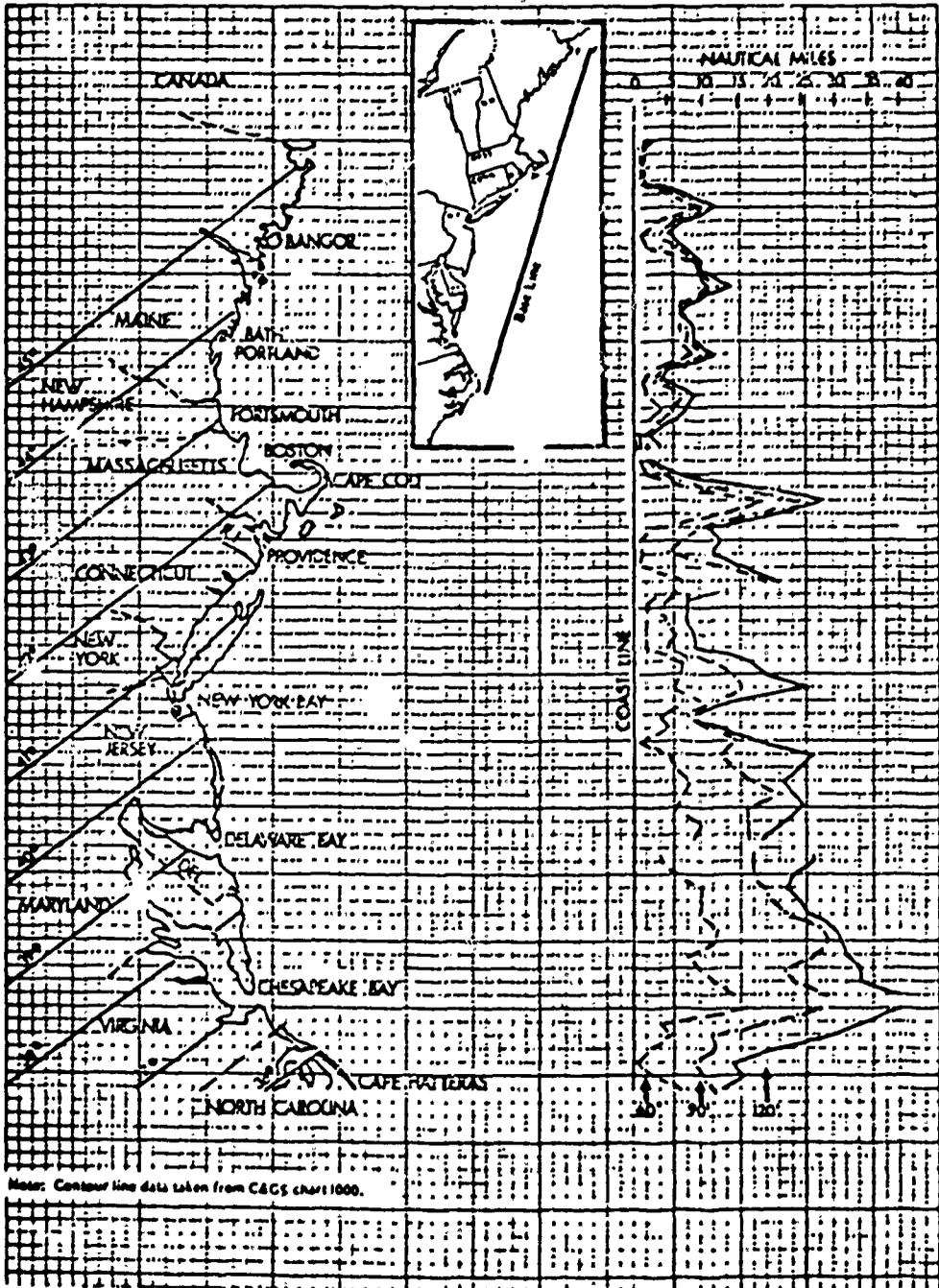
We believe that the environmental and economic costs of dredging existing ports to depths sufficient to handle the larger oil tankers are prohibitive. Figure 2 locates petroleum refining capacity in the United States. Figures 3 through 8 show the distances between the 60-, 90-, and 120-foot contour lines—water depth—and the major ports around our coasts.

As you can see, the seabed surrounding the Atlantic and gulf coast ports slopes off rather gradually. The Port of Houston, for example, is 110 miles away from water 100 feet deep. Table 9 estimates the cost of dredging selected ports. It also estimates the volume of soils that must be disposed of.

All of this leads us to believe that deepwater ports make sense at any level of oil importation. At the level we are projecting in the years ahead, it is our judgment that they are imperative.



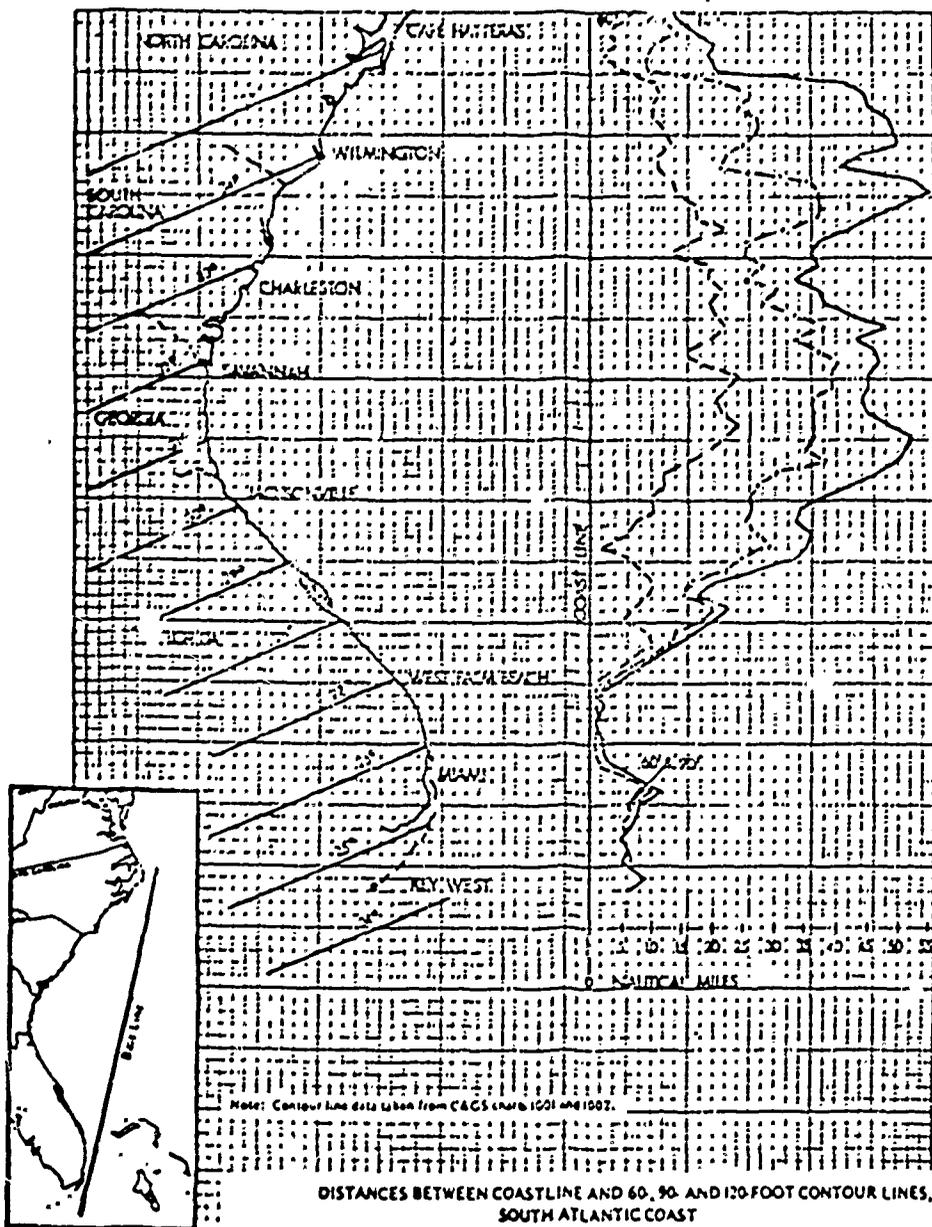
FIGURE 3



DISTANCES BETWEEN COASTLINE AND 60-, 90-, AND 120-FOOT CONTOUR LINES,  
NORTH ATLANTIC COAST

Robert B. Nathan Associates, Inc.

FIGURE 4



DISTANCES BETWEEN COASTLINE AND 60, 90, AND 120-FOOT CONTOUR LINES,  
SOUTH ATLANTIC COAST

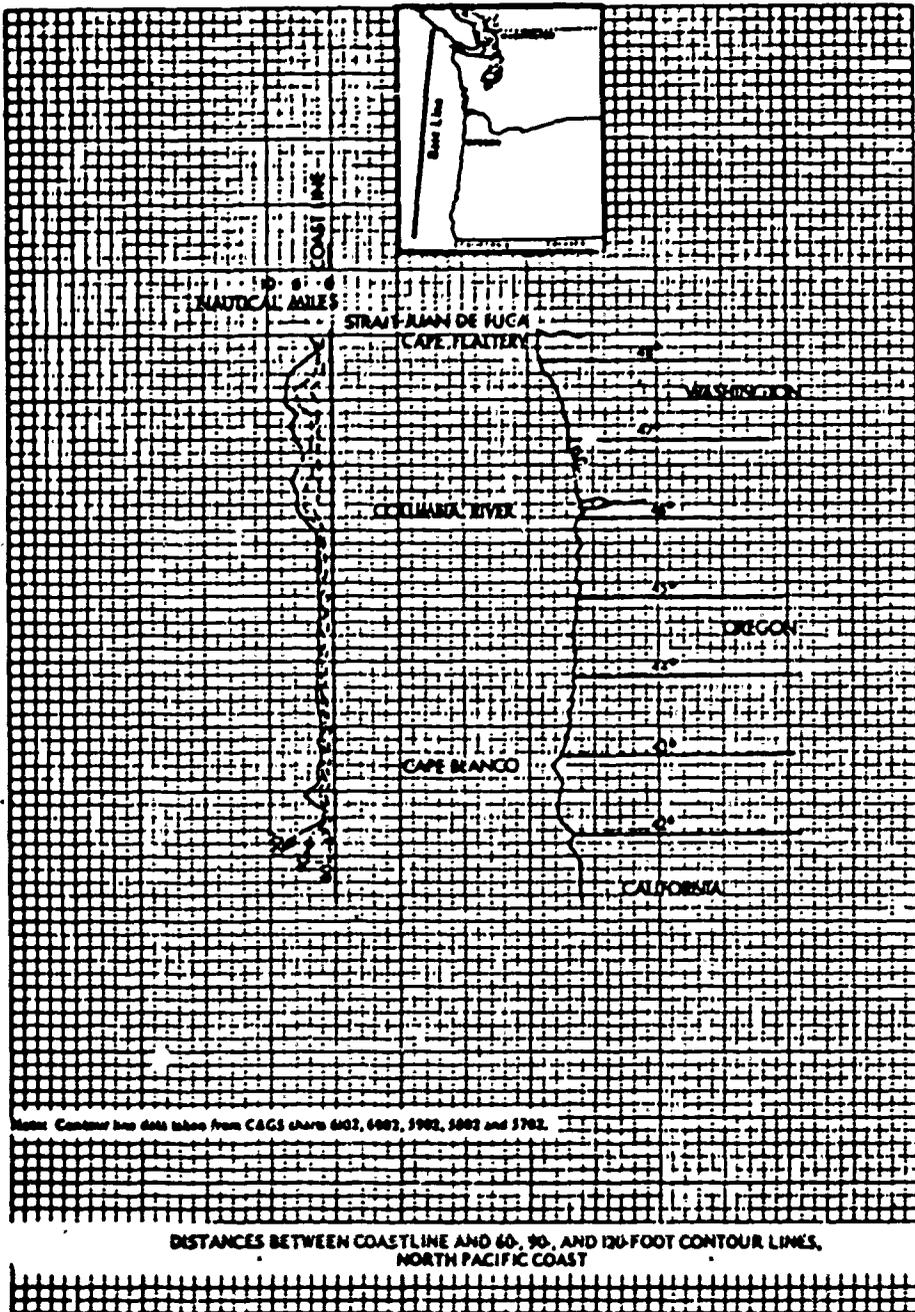
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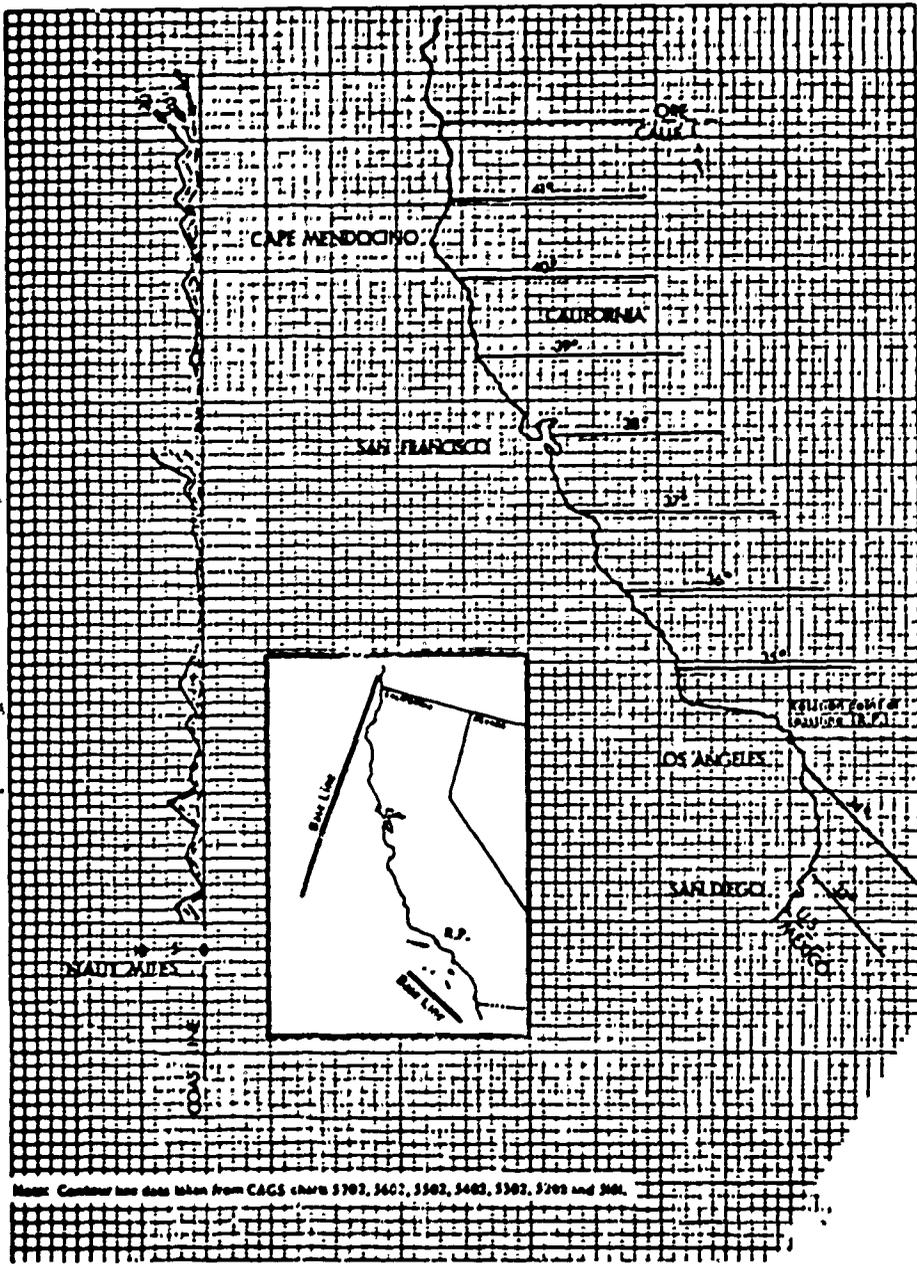


FIGURE 7



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FIGURE 8



DISTANCES BETWEEN COASTLINE AND 60-, 90-, AND 120-FOOT CONTOUR  
SOUTH PACIFIC COAST

Robert E. Nathan Associates, Inc.

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TABLE 9.—ESTIMATED COST OF DREDGING 90 FOOT CHANNEL TO EXISTING PORTS

Port	Approximate distance to be dredged (statute miles)	Volume to be dredged (million cubic yards)	Cost <sup>1</sup> (millions of dollars)
Boston.....	12	150	( <sup>2</sup> )
New York.....	22	220	\$ 520
Philadelphia.....	100	1, 660	( <sup>3</sup> )
Baltimore.....	230	2, 900	\$ 3, 200
Norfolk.....	55	650	\$ 900
Charleston.....	43	560	750
Tampa.....	65	1, 280	( <sup>4</sup> )
Mobile.....	51	470	970
Galveston.....	55	500	500
Corpus Christi.....	39	710	710
Los Angeles.....	5	40	60
San Francisco.....	13	130	150

<sup>1</sup> Costs are to dredge 1,300-foot wide channel 90 feet deep and does not include docks, slips, turning basins, etc.

<sup>2</sup> Bedrock below 60 feet. Estimate \$80 million to dredge to 60 feet (60 million cubic yards).

<sup>3</sup> Bedrock below 38 feet in part costing \$15/cubic yard to remove.

<sup>4</sup> Rock bottom in river and relocation of New Jersey Turnpike Bridge would cost billions of dollars.

<sup>5</sup> Relocation of tunnel and bridge not considered but probable.

<sup>6</sup> Hard limestone below 30 feet also Bridge interference.

Note: Reference for all data except that for Galveston: Offshore Terminal Systems Concepts, U.S. Department of Commerce, prepared by Soros Associates.

Present law provides no clear authority to license deepwater ports beyond the 3-mile limit. The principal purpose of the administration's bill is to fill this void.

We believe that the proper basis for this Federal jurisdiction beyond the 3-mile limit is the principle in international law that all nations can make reasonable use of the high seas. We consider deepwater ports to be a reasonable use and one of the conditions of the license would be to insure that the operation of the facility does not violate that principle.

The development and operation of deepwater ports involve a whole range of issues of national concern including energy resource supply, environmental quality, economic viability, navigational safety, national security, and international law.

Because Federal responsibility over these issues is widely dispersed, the administration recognizes the need to coordinate the activities of appropriate agencies as they relate to the development and operation of deepwater ports, through one central lead agency which is the Department of the Interior.

The Department of the Interior has not only the expertise, but has been involved in a broad range of issues which relate to the development of deepwater facilities. This Department has broad responsibilities for evaluating alternative means of satisfying U.S. energy needs in a manner consistent with environmental, economic, and national security goals.

It has administrative and regulatory functions incident to the oil and gas industry.

It has broad management experience in the preservation, development, and use of natural resources including those on the Outer Continental Shelf.

It has long been involved with developing and coordinating land and water resource development plans through such organizations as the National Water Resources Council, interstate compacts and river basin commissions.

Those agencies or offices within the Department of the Interior possessing responsibilities as well as in-being field activities which we view as invaluable to the administration of deepwater port policy include:

The Bureau of Land Management, which manages and protects public lands and their related resources and administers the Outer Continental Shelf Mineral leasing program.

The Geological Survey which conducts surveys and develops data and information concerning the land and its resources both on the mainland and the Outer Continental Shelf. It also regulates oil and gas production on the OCS including platforms and pipelines to shore.

The Bureau of Outdoor Recreation which has national responsibility to develop and coordinate outdoor recreation programs, plans, and projects. Much of its work is with coastal States and coastal facilities. The resources of this Bureau would support other organizations.

The Bureau of Sport Fisheries and Wildlife, which is the focal point for national planning for the management of sport fish and wildlife and for supplying the biological competence necessary to manage and preserve aquatic habitats.

The Office of Oil and Gas which develops, evaluates, and coordinates oil and gas information to provide the basis for the establishment implementation of Government policies.

The Office of Land Use and Water Planning, which is involved in determining basin regional and national land and water resource planning needs and priorities as well as monitoring the resulting planning activities for conformity with departmental goals. It is also responsible for the development of strategies and procedures needed to implement a national land use policy bill.

An important reason for specific legislative authority to govern deepwater port activity is to assure that these ports, built off our coasts, meet specific environmental and navigational safeguards. Therefore, one important feature of the administration's bill is to prohibit transporting any cargo to the United States from a deepwater port off our coast unless the port is licensed under the act.

Under the provisions of our bill, the Secretary of the Interior is granted the licensing authority. The regulatory system which will be developed to govern deepwater port facilities is basically the same as applies under present law to structures within the 3-mile limit. The role of the Interior Department would be to work with all involved Federal agencies to assure that existing legislative requirements are met and that we have a set of integrated regulations which have no loopholes.

The Corps, EPA, the Coast Guard, ICC, Office of Pipeline Safety,

NOAA and FPC, in the case of gas, presently regulate various aspects of OCS oil and gas platform and pipeline construction and regulation.

An important component of this activity will be the expertise the Department of the Interior has developed in supervising the construction and operation of oil drilling platforms on the Outer Continental Shelf.

These platforms, connected to the mainland by pipeline, will be similar to the type of facility we expect to license. The processing of license applications for both types of facilities would require virtually the same analytical or technical abilities of the Department of the Interior and a similar degree of interagency cooperation that now exists.

Another extremely important principle is contained in the administration's bill. It requires the Secretary of the Interior to consult with the Governor "to ensure" and I emphasize the word "ensure," that the deepwater facility and its related land based facilities are consistent with the States' land use planning program and plans.

There are bills in the Congress which provide for an explicit State veto over the exercise of existing Federal authority to license deepwater facilities off their coasts. We do not believe an explicit State veto is required. Any deepwater facility will only be as useful as its connection to land based facilities.

Under present law, the States have a veto power by simply not issuing permits for onshore construction. In short, we do not intend to preempt the States' authority to plan and regulate land and water resources within their jurisdiction. We also do not favor legislative language which would tend to force a State to deal with the many legitimate and complex questions presented by the location of a deepwater port off their coast by an up or down political decision in the State on the entire project. We prefer to encourage the States to resolve these questions within the context of a land use planning program.

If the proposed development is not compatible with a State's land use plan, it will not be licensed. With the responsibility for approving State land use programs vested in the Department of the Interior under the administration's proposed land use bill, we believe we will be in a good position to further coordinate deepwater port licensing with the State land use plans.

I would like to come back to the real world of specifics and point briefly to the world wide situation, vis-a-vis, deepwater ports, something about their extensive use on the west coast of the United States and what the private sector has on the drawing boards in the way of plans for deepwater ports.

Table 10 indicates that there are over 100 single port mooring installations in use around the world. We believe these types of systems will be the prevalent type used in this country if authority to license is granted. Table 11 outlines the numbers and kinds of buoys in use within the 3-mile limit on our west coast.

TABLE 10.—SUMMARY OF INSTALLED OR PLANNED SINGLE POINT MOORING INSTALLATIONS

No.	Year installed	Country	Port	Owner	Designer	Maximum vessel size
1	1959	Sweden	Dolaro	Swedish Navy	IMODCO	3,000
2	1960	Malaysia (Sarawak)	Miri	Shell	SBM	45,900
3	1961	Italy	Ravenna	SAROM	IMODCO	75,000
4	1961	Japan	Niigata	Shell	SBM	65,000
5	1961	Spanish Sahara	El Aaiun	CEPSA	IMODCO	5,000
6	1962	Germany	Cuxhaven	West German Navy	IMODCO	2,500
7	1962	Italy	Fiumicino	Purifina	IMODCO	65,000
8	1962	Libya	Brega	Esso	Esso, F. R. Harris	100,000
9	1963	Japan	Oita	Kyushu Oil	IMODCO	100,000
10	1963	Malaysia	Port Dickson	Shell, Esso	SBM	90,000
11	1963	Spanish Guinea	Bata	CEPSA	IMODCO	20,000
12	1964	Italy	Fiumicino	Purifina	Dalmine	100,000
13	1964	Japan	Yokkaichi	Shell	Mitsubishi	120,000
14	1964	do	do	do	do	200,000
15	1964	Malaysia	Miri	Shell	SBM	45,000
16	1964	do	do	do	do	65,000
17	1965	England	Nore Estuary	British Petroleum	B.P., Harlan Wolf	100,000
18	1965	Gabon	Gamba	Shell	SBM	100,000
19	1965	Japan	Chiba	Maruzen Oil	IMODCO	120,000
20	1965	Libya	Es Sider	Oasis Oil	SEM	100,000
21	1965	Qatar	Halul	Shell	do	200,000
22	1966	Korea	Ulsan	Gulf	IMODCO	75,000
23	1966	Oman	Mina Al Fahal	Shell	SBM	225,000
24	1966	do	do	do	do	225,000
25	1967	Bangladesh	Chittagong	Chittagong Port Authority	IMODCO	45,000
26	1967	Japan	Koshiba	U.S. Navy	do	100,000
27	1967	Kuwait	Ras Al Kafi	Arabian Oil	McDermott	150,000
28	1967	Nigeria	Apapa	Nidogas	IMODCO	4,500
29	1967	Oman	Mina Al Fahal	Shell	SBM	100,000
30	1967	Philippines	Subic Bay	U.S. Navy	IMODCO	100,000
31	1967	Spain	Huelva	Gulf	SBM	100,000
32	1967	Taiwan	Tai-Chung	U.S. Army	IMODCO	50,000
33	1967	USA (Louisiana)	Gulf Coast	Kerr-McGee	McDermott	8,000
34	1968	Angola	Cabinda	Gulf	SBM	100,000
35	1968	Egypt	Ras-el-Shaiq	WEPCO	do	100,000
36	1968	Japan	Hakozaki	U.S. Navy	IMODCO	100,000
37	1968	do	Kawasaki	Showa-Mitsubishi Oil	Mitsubishi	250,000
38	1968	do	Hakodate	Asia Oil	IMODCO	35,000
39	1968	do	Yokkaichi	Daikyo Oil	Mitsubishi	200,000
40	1968	Korea	Yosu	Honam Oil, Caltex	IMODCO	100,000
41	1968	do	Ulsan	Korea Oil	do	200,000
42	1968	Libya	Zuetina	Occidental	SBM	100,000
43	1968	Nigeria	Escravos	Gulf	IMODCO	100,000
44	1968	Taiwan	Kaohsiung	Chinese Petroleum	do	100,000
45	1968	do	Tai-Chung	U.S. Air Force	do	75,000
46	1968	Venezuela	Moron	CVP	SBM	100,000
47	1969	Brazil	Tramandai	Petrobras	do	105,000
48	1969	Japan	Toyama	Japan Sea Oil	IMODCO	150,000
49	1969	do	Yokohama	Asia Oil	Mitsubishi	200,000
50	1969	Libya	Brega	Esso	Esso, Van Houten	300,000
51	1969	do	Zuetina	Occidental	SBM	150,000
52	1969	do	do	do	do	150,000
53	1969	Nigeria	Forcados	Shell, B.P.	do	240,000
54	1969	do	do	do	do	240,000
55	1969	S. Vietnam	TanMay	U.S. Navy	McDermott	20,000
56	1969	United Arab Emirates	Dubai	Continental	SBM	150,000
57	1970	Argentina	Puerto Rosales	YPF	IMODCO	40,000
58	1970	Canada	St. John, N.B.	Irving Oil	SBM	350,000
59	1970	Indonesia	Pangkalan Susu	Pertamina	IMODCO	100,000
60	1970	Iran	Cyrus Field	IPAC	SBM	130,000
61	1970	do	Iman Hassan	SIRIP/AGIP	IMODCO	150,000
62	1970	Israel	Ashkelon	Elat-Ashkelon Pipeline	do	65,000
63	1970	Japan	Atsumi	Chubu Electric	Mitsubishi	200,000
64	1970	do	Hemeji	Idemitsu Oil	IMODCO	220,000
65	1970	Japan (Okinawa)	Hakagusuku Bay	Toyo Oil, Caltex	do	100,000
66	1970	do	Tengan	U.S. Army	do	55,000
67	1970	Japan	Toyama	Nihonkai Oil	do	100,000
68	1970	do	Ube	Seibu Oil	Mitsubishi	200,000

See footnotes at end of table.

TABLE 10.—SUMMARY OF INSTALLED OR PLANNED SINGLE POINT MOORING INSTALLATIONS

No.	Year installed	Country	Port	Owner	Designer	Maximum vessel size
<sup>59</sup> 69	1970	Libya	Es Sider	Oasis Oil	SBM	255,000
70	1970	do	Ras Lanuf	Mobil	do	300,000
71	1970	Morocco	Mohammedia	RAPC	IMODCO	100,000
72	1970	Singapore	Singapore	Esso	do	250,000
73	1970	South Africa	Durban	Shell	SBM	200,000
74	1971	Australia	Botany Bay	Maritime Services Board	do	120,000
75	1971	Brazil	Tramandai	Petrobras	do	200,000
76	1971	Brunei	Seria	Shell	do	250,000
77	1971	Chile	Quintero Bay	ENAP	do	209,000
78	1971	Indonesia	Balikpapan	Union Oil	do	250,000
79	1971	do	Java Sea	ARCO	McDermott	45,000
80	1971	do	do	IIAPCO	do	55,000
81	1971	Italy	Porto Torres	Sardoil	SBM	255,000
82	1971	Japan (Okinawa)	Nakagusuky Bay	Esso	Esso	250,000
<sup>83</sup> 83	1971	New Zealand	Waipipi Point	Marcona Corp.	IMODCO	75,000
84	1971	Nigeria	Qua Iboe	Mobil	do	255,000
<sup>85</sup> 85	1971	Norway	North Sea	Phillips	SBM	150,000
<sup>86</sup> 86	1971	do	do	do	do	60,000
87	1971	Taiwan	Kaohsiung	Chinese Petroleum	do	250,000
88	1971	United Kingdom	Humber River	Continental	do	210,000
89	1972	Dominican Republic	Santo Domingo	Shell	do	250,000
90	1972	United Arab Emirates	Das Island	B.P.	IMODCO	300,000
91	1972	Ecuador	Porto Baleo	Gulf/Texaco	SBM	100,000
92	1972	do	do	do	do	250,000
93	1972	Indonesia	Java Sea	ARCO	IMODCO	145,000
94	1972	Kuwait	Ras al Kaltje	Arabian Oil	McDermott	250,000
95	1972	New Zealand	Tahora	New Zealand Steel Corp.	IMODCO	70,000
96	1972	Nigeria	Ecsravos	Gulf	SBM	326,000
97	1972	Qatar	Halul	Shell	McDermott	300,000
98	1972	do	Um Said	Qatar Petroleum Co.	IMODCO	300,000
99	1972	Saudi Arabia	Zuluf	ARAMCO	SBM	250,000
100	1972	do	do	do	do	250,000
101	1972	Tanzania	Dar es Salaam	E African Port Authority	do	100,000
102	1972	Trinidad	Galiota Point	AMOCO	do	250,000
103	1972	United Arab Emirates	Dubai	Dubai Petroleum	McDermott	300,000
104	1972	Spain	Amposta	Shell	SBM	60,000
<sup>105</sup> 105	1972	Italy	Genoa	Port Authority	CIDONIO	500,000
106	1972	do	North Sea	Gulf	SBM	60,000
107	1972	Tunisia	Gulf of Gabes	Aquitaine	do	do
108	1972	England	North Sea	Shell	do	50,000
109	1972	do	do	do	do	50,000

<sup>1</sup> Out of service.

<sup>2</sup> Out of service, now used as part of multi-buoy berth.

<sup>3</sup> Out of service.

<sup>4</sup> Fixed mooring tower, underwater loading arm.

<sup>5</sup> Out of service, transferred to 59.

<sup>6</sup> Fixed mooring tower.

<sup>7</sup> An extra buoy was furnished to replace 2, 15 and 16 for maintenance.

<sup>8</sup> Experimental, 4 taunt anchor legs, out of service.

<sup>9</sup> Out of service, replaced by 69.

<sup>10</sup> Storage vessel, out of service.

<sup>11</sup> Liquid petroleum gas facility.

<sup>12</sup> To be replaced in 1973 by SPM designed for 500,000 dwt.

<sup>13</sup> Out of service, replaced by 45 designed for larger vessel.

<sup>14</sup> Storage barge, out of service.

<sup>15</sup> Out of service.

<sup>16</sup> Single anchor leg mooring.

<sup>17</sup> A second buoy was delivered for installation but was not installed.

<sup>18</sup> Transferred from 9.

<sup>19</sup> Storage vessel Pazagrad.

<sup>20</sup> Replaces 21.

<sup>21</sup> Single anchor leg mooring.

The conventional buoy mooring system is employed using a tanker's two bow anchors together with five to seven permanently anchored mooring buoys to hold a tanker in a relatively fixed position while loading or unloading. One facility at El Segundo, Calif., dates back to 1933. Thus, pipeline unloading of tankers is not new to this country and operating experience has been good.

TABLE 11.—CONVENTIONAL BUOY MOORING INSTALLATIONS, CALIFORNIA, HAWAII, AND MEXICO (WEST COAST)

Terminal	Owner	Type	Product	Maximum deadweight (in millions)	Maximum draft (in feet)
Moss Landing.....	Pacific Gas & Electric.....	5 buoy...	Fuel oil.....	50	38
Estero Bay.....	Standard Oil of California.....	do.....	Crude oil.....	50	38
Do.....	do.....	7 buoy.....	do.....	80	38
Morro Bay.....	Pacific Gas & Electric.....	5 buoy.....	Fuel oil.....	50	38
Do.....	U.S. Navy.....	do.....	Refined.....	50	38
Do.....	Texaco.....	do.....	do.....	50	38
Caviota.....	Getty.....	do.....	Crude oil.....	40	36
Elwood.....	Signal.....	do.....	do.....	30	40
Mandalay Beach.....	Southern California Edison.....	do.....	Fuel oil.....	50	35
Carpenteria.....	Standard Oil of California.....	7 buoy.....	Refined crude oil.....	80	55
Ventura.....	Union.....	5 buoy.....	Crude oil.....	35	35
Do.....	Getty.....	do.....	do.....	40	32.5
El Segundo.....	Standard Oil of California.....	do.....	Refined.....	50	42
Do.....	do.....	6 buoy.....	do.....	35	27
Do.....	do.....	7 buoy.....	Crude oil.....	130	54
Do.....	do.....	do.....	do.....	130	56
Huntington Beach.....	Gulf.....	5 buoy.....	Fuel oil crude oil.....	125	42
Encina.....	San Diego Gas & Electric.....	7 buoy.....	Fuel oil.....	80	36
HAWAII					
Barbers Point.....	Standard Oil of California.....	do.....	Fuel oil crude oil.....	125	55
Do.....	HRI.....	8 buoy.....	Refined fuel and crude.....	100	75
MEXICO					
Rosarita Beach.....	CFE.....	5 buoy.....	Refined fuel oil.....	40	40
Do.....	CFE.....	do.....	Ammonic.....	40	40

! Explanation of the CBM system is attached.

#### CONVENTIONAL BUOY MOORING

The Conventional Buoy Mooring (CBM) is an offshore mooring system using a tanker's two bow anchors together with 5 to 7 permanently anchored mooring buoys to hold a tanker in a relatively fixed position while it is loading or unloading. Transfer of oil is through one or more hoses to an underwater pipeline leading to shore. CBM's are particularly suited to open sea terminals where sea conditions would severely limit the mooring of tankers at a fixed wharf structure. A flat or gently sloping bottom, free of projections and with good natural anchor-holding conditions are preferred, although CBM's have been located in areas with coral bottoms. Considerable space must be available for multi-berth terminals as a spacing of at least one-half mile is generally desired between berths for maneuvering and locating anchors. The CBM is most practical where only one or two different types of cargoes are to be handled.

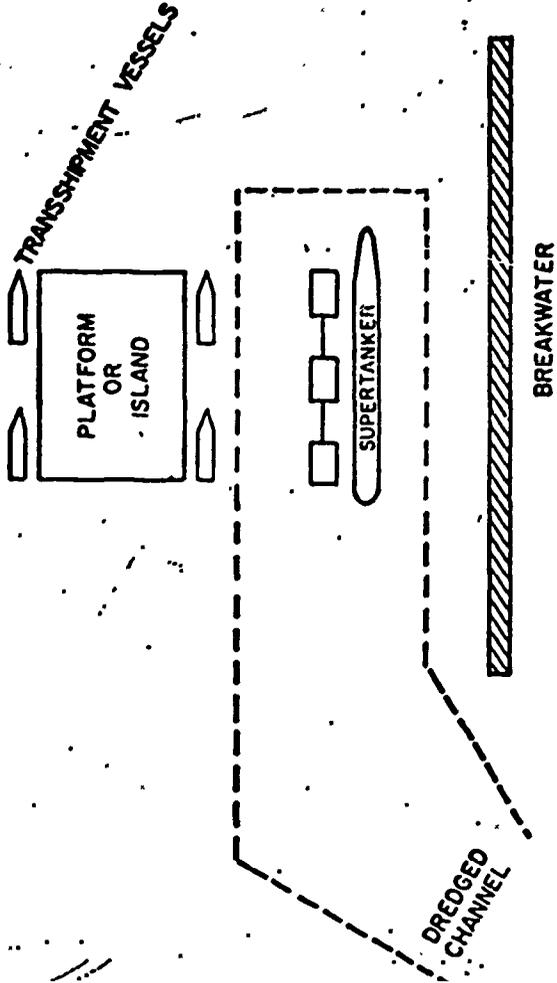
Because of the tanker's fixed heading, the forces on a moored tanker caused by current, wind and waves can be very high when their directions are at an angle to the heading of the tanker (the heading is usually designed to coincide with prevailing conditions). Since the size of a tanker's mooring lines is limited to what can be practically handled, the size of a tanker which can be routinely moored at a CBM is limited. The limitation at any particular location depends on the magnitude and direction of currents, wind and waves. For conditions offshore southern California, which is well suited for CBM's, the maximum size of tanker which can be moored routinely at a CBM is in the range of 130,000 to 150,000 DWT.

The U.S. military forces have been using buoy unloading systems around the world for many years in such places as Japan, the Philippines, Taiwan, Okinawa, and South Vietnam. Some of these military installations can handle tankers of 100,000 deadweight tons. In general, the experience with these systems has been good.

Deepwater port facilities can vary in design from an artificial island complete with storage facilities to a simple mooring buoy. Figures 9, 10, and 11 show these various designs. The mooring buoy concept can involve multiple buoys which hold the tanker in a fixed position or a single buoy which allows the tanker to swing around if the direction of the wind and waves change.

These single point buoys are generally placed in clusters of three to five, all connected to a central pumping station on a fixed platform which also houses the crew. Each buoy needs almost 1 mile of maneuvering room around it which means that the entire cluster occupies an area about 3 miles in diameter.

FIGURE 9



ARTIFICIAL ISLAND TYPE DEEPWATER PORT FACILITY  
(from: Texas Supertanker Port Texas A&M Univ., Dec. 72)

P-1000-10

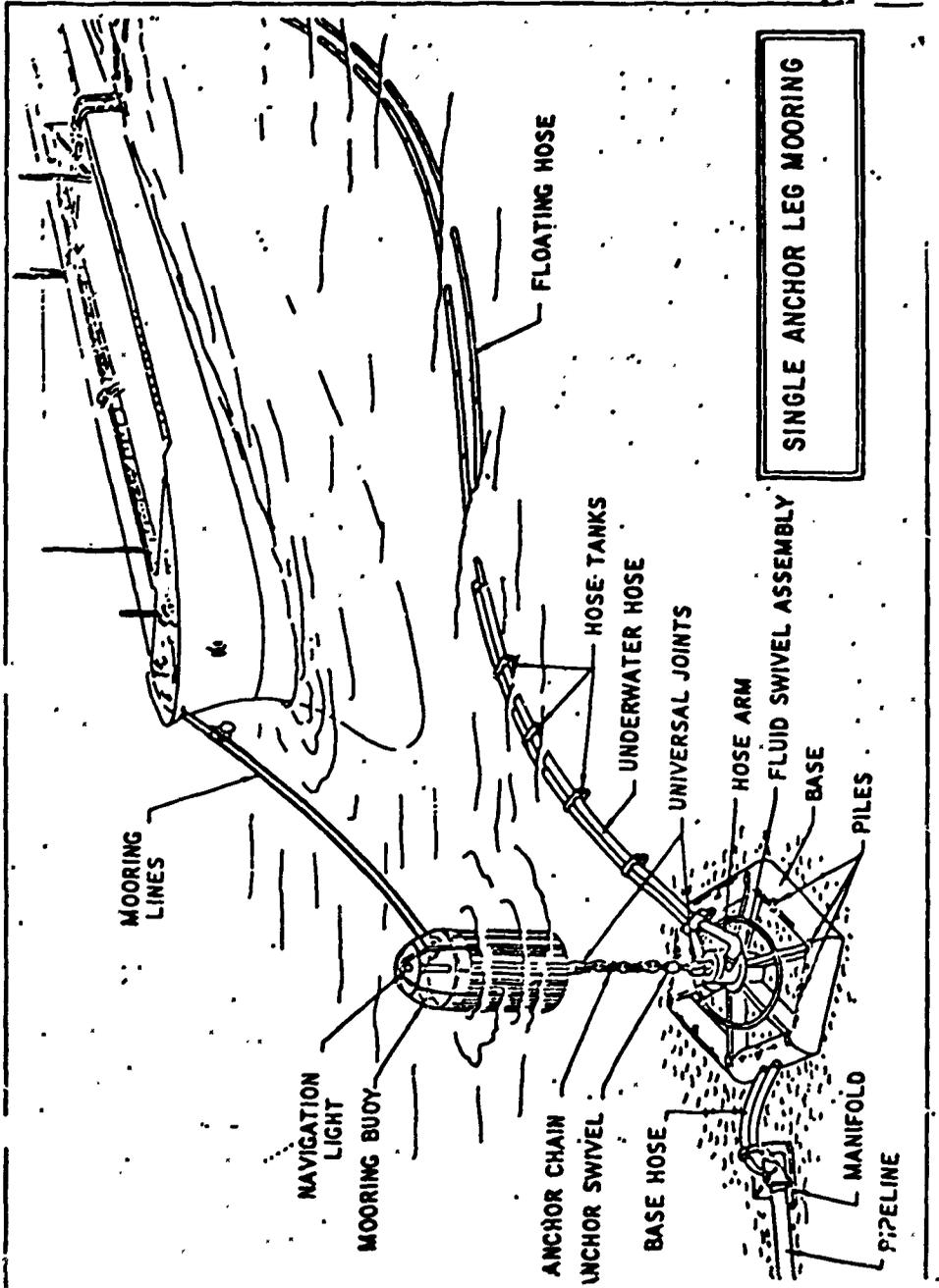
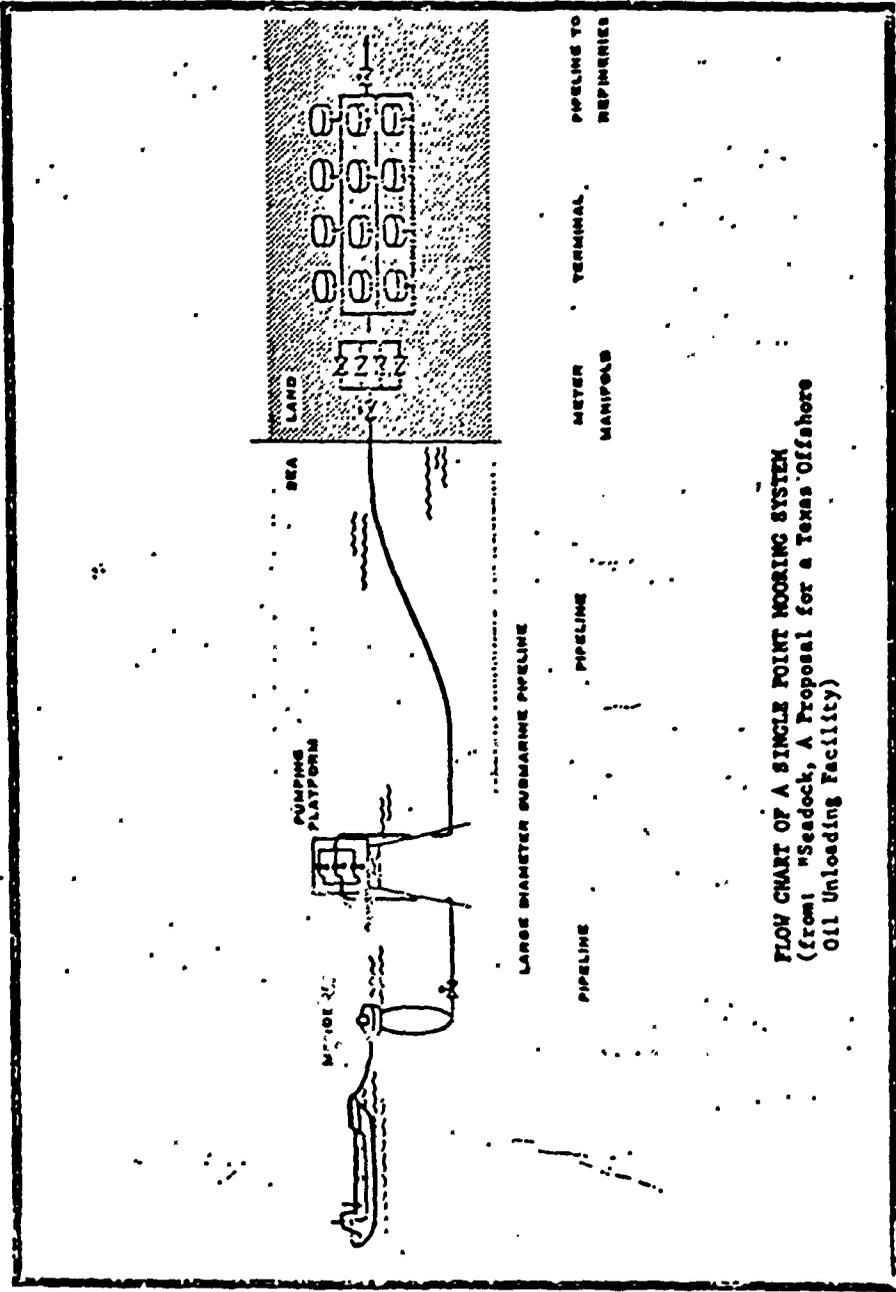


FIGURE 11



**FLOW CHART OF A SINGLE POINT MOORING SYSTEM**  
(from "Seadock, A Proposal for a Texas Offshore Oil Unloading Facility")

Two specific locations for deepwater ports have been given extensive study by industry: The "Loop" project off the coast of Louisiana and "Seadock" off of Freeport, Tex. A third, Ameriport, is at an early planning stage. The Seadock project is estimated by its sponsors to cost a total of \$545 million: \$310 million for the marine portion, including buoys, pipelines, pumping platforms, et cetera, and \$235 million for the land portion, terminal, tank farm, and related facilities.

A major portion of the cost is attributable to the underwater pipelines connecting the pumping platform to the mainland. There are normally three or more of these pipelines, each 48 to 56 inches in diameter, and buried in concrete under the seabed. It costs roughly \$1 million per mile per pipeline.

The Loop project is estimated to cost \$528 million. Initially, the system will consist of three single point moorings, SPM, operating platforms, and two buried pipelines to a shore storage facility. The SPM will be in 100 to 120 feet of water 21 miles offshore.

The offshore facilities will cost \$180 million and onshore terminal will add about \$260 million. An additional \$88 million will be required to connect this facility to a major land pipeline system—CAP line.

There are no known industry plans for the east coast beyond the 3 mile limit, although some Government studies have used the east coast in analyzing the economics of deepwater ports.

Finally, I need to mention the potential economic benefits which will result from the construction and use of deepwater ports. Attachment B to the Draft Environmental Impact Statement submitted with our bill contains the Economics of U.S. Deepwater Ports which is the most authoritative piece on this subject. Although directed by the Council of Economic Advisors, the study represents the collective efforts of a number of Government and private agencies.

The study developed data on the economic benefits for a range of possible types of deepwater ports on the east and gulf coasts. It concludes that a major determinant of the type of deepwater port to be built and whether a U.S. deepwater port should be built at all is the level of throughput for much of the facility's anticipated lifetime.

For the east coast, a deepwater port could at worst save between 0.4 cents per barrel to 9.1 cents, and at best from 3.3 cents to 16.5 cents.

On the gulf coast, the savings would range between 0.1 cent per barrel to 11.1 cents in the worst case and 2.7 cents to 18.2 cents in the best case.

The principal variants in these worst-best projections are assumptions about changes in U.S. governmental policies concerning the pricing of natural gas and the exploitation of the Outer Continental Shelf.

The study concludes, however, that the financial risk involved from building a deepwater port even under false assumptions about throughput are not generally great, even in the gulf coast region, while the rewards can be substantial.

It is not often that we get an opportunity to propose legislation

which will provide for environmental protection, energy, and transportation needs, and finally yield an economic benefit. I purposely placed economic gains last because I think the environmental and safety benefit are so important that they overshadow monetary values. This is not to say that development of a deepwater port will not have potentially adverse effects upon shoreline development.

This is why it is so important the Congress pass the National Land Use Policy Act so that the Coastal States in particular will or can develop overall land use plans which will regulate to their satisfaction the kind of downstream industrial development which may follow a deepwater port facility.

I hope you see the same values in this bill as I do. Now, I would be happy to respond to your questions.

We believe that economic concerns are equally as great as energy concerns and transportation concerns. We have indicated in our formal statement, Mr. Chairman, that we placed energy considerations last, and I think following Senator Stevens' excellent questions this morning, and viewing it after that, we believe our proposal must place all these issues on an equal level.

That concludes the formal part of my statement, unless you would like to post questions now. Mr. Johnson of the Department of the Treasury will follow with his statement.

[The attachment follows:]

#### MARINE POLLUTION CONTROL EFFORTS

The load-on-top technique was developed with the aim of minimizing the release of oily wastes to the sea and recovering the maximum amount of persistent oil from washings and dirty ballast. After unloading a cargo of oil, a significant amount of oil—a fraction of 1 percent of the total load on the average—clings to the surface of the tank compartments. In a 250,000-dwt tanker, this may amount to as much as 650 tons.

At current prices, this could mean a recovery of \$20,000 in oil at an expense of only a several hundred dollars. Thus, in addition to governmental control there are economic incentives not to pump oil over the side.

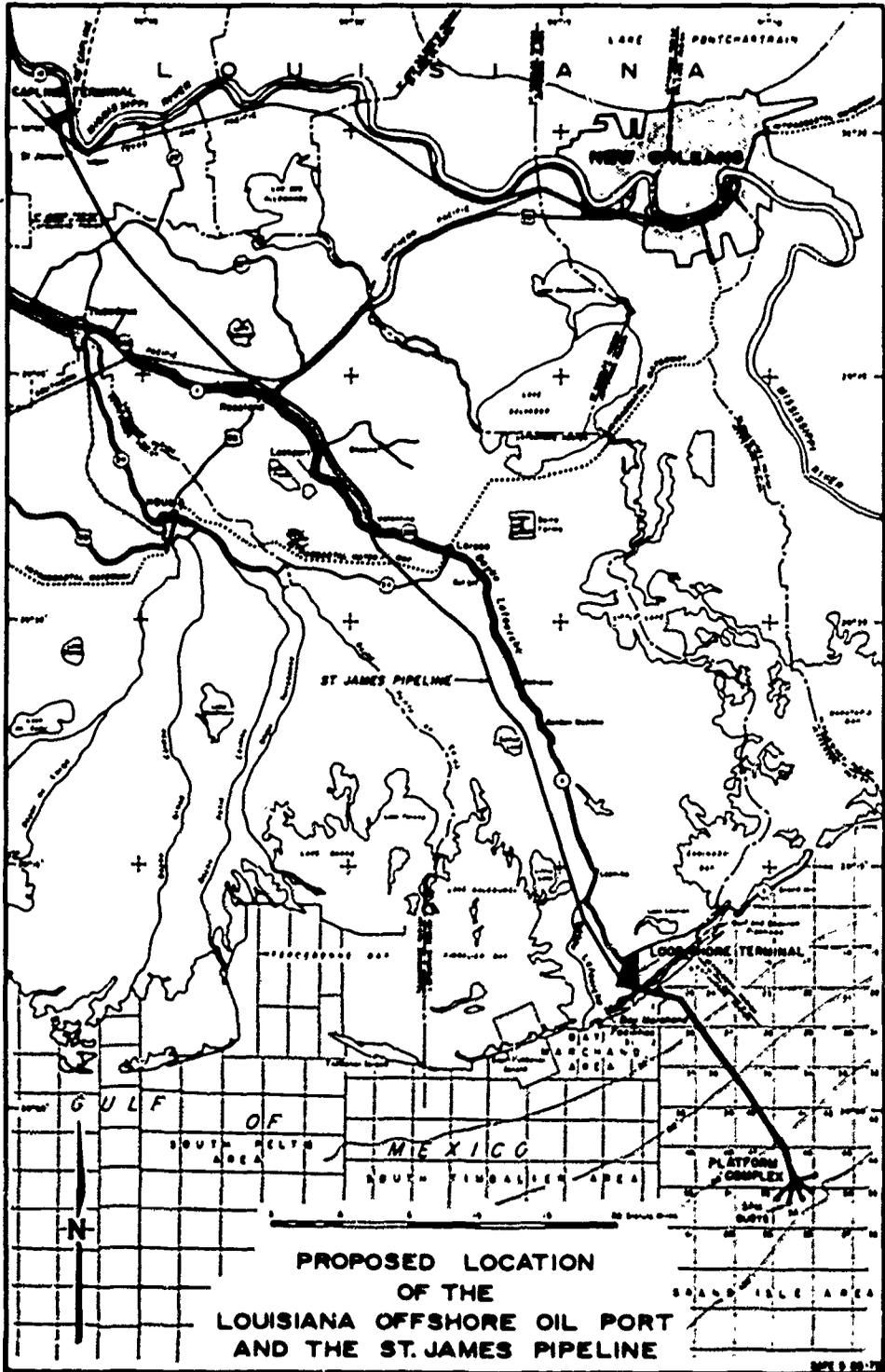
Tanks being prepared for clean ballast are thoroughly washed before ballasting and the oily mixture collected in slop tanks. This mixture is allowed to settle in these tanks until most of the water settles to the bottom. The bottom water is then pumped overboard until the oily level is approached. Discharge of the ballast water is then halted. Tanks which may not have been cleaned before being filled with ballast water are later decanted in the same manner as are slop tanks. After separation and discharge of the clean ballast water, oily residues are then pumped to the slop tanks for further settling and subsequent decanting of the water. The retained oil or oily wastes remaining in the bottom of the slop tanks become a part of the new cargo.

Although LOT is a major advance in reducing oil discharges into the sea, it is not 100 percent effective on tankers using it and is not yet in use on at least 20 percent of the world's crude carriers. It requires a reasonably long voyage to provide the time necessary for effective settling and separation and the effectiveness of separation is reduced by rough seas.

Thus, small vessels on short hauls cannot use LOT and thus, they account for the bulk of oil pumped over the side.

Further, it is difficult to determine with precision the oil-water interface during decanting, resulting at times in some oil discharge before pumping is halted.

Other alternatives for reducing oil discharges from normal tanker operations include the following: shore ballast reception and treatment facilities, segregated ballast tankers, on-board oil-water separators and waterless washing of cargo tanks in a controlled atmosphere.



**Senator JOHNSTON.** We would like to hear your statement now.

**Dr. JOHNSON.** Thank you, Mr. Chairman and members of the committee. I am delighted to appear before you today to discuss the need of our Nation for deepwater ports. In particular, I plan to focus on the economic benefits of very large crude carriers and the construction of deepwater ports to accommodate these carriers.

This is covered in my prepared statement. In addition, I will discuss some environmental benefits which are not contained in the statement.

This statement is a summary of a larger report that was prepared under my direction several months ago. This was the study, mentioned a few moments ago, done when I was at the Council of Economic Advisers. I am submitting this larger statement for the record. It is much too long to read in its entirety.

**Senator JOHNSTON.** It will be filed without objection.

**Dr. JOHNSON.** It now appears to many observers that the United States will have to increase significantly its crude oil imports in the near future. Projections of import demand vary widely.

Vessels of this size would require deepwater ports. The gulf coast has no natural harbors capable of accommodating this class of tanker and, where suitable depths exist along the east coast, such as in Maine, Long Island Sound, and Delaware Bay, the development of a deepwater port has been impeded by State governments and is likely to encounter strong opposition from environmentalists. Yet, if the United States is to receive VLCC's, it must build these ports.

The purpose of this document is, first, to determine whether, given cost considerations alone, it would benefit the nation to have one or several of these ports along the east and gulf coasts. To do this we must have a basis for comparison. Deepwater ports now exist, are being constructed, or have been proposed in the Canadian maritime provinces, the Bahamas, Haiti, Puerto Rico, and the Virgin Islands. In the absence of an east or gulf coast deepwater port, oil shipments from relatively distant sources such as the Persian Gulf are likely to be carried by VLCC's to one of these sites and then transhipped by smaller tankers to the United States.

We have assumed, therefore, that the benefits of a U.S. deepwater port will be the savings likely to result if, instead, crude oil were shipped to a U.S. port by supertanker and then transferred to mainland refineries by pipeline, tug-barge, or smaller tanker. If these savings are positive, a case could be made that a U.S. deepwater port is economically justified.

A second objective of the study is to determine which of several alternative technologies for building a U.S. deepwater port and transferring oil to the mainland are most desirable given considerations alone. Three basic port technologies exist: The mono-buoy, or single point mooring system, the sea island, and the artificial island. There are also three alternative technologies for transferring the imported crude oil to mainland refineries: pipeline, tug-barge, and small tanker. Which technology or combination of technologies is most economic will depend on the relative costs of each alternative.

Finally the study estimates the additional costs of various environmental safeguards thought necessary to prevent, contain, or clean up oil spills. In this way it determines whether these increased costs could affect the choice of a location or technology for a U.S. deepwater port, particularly if the safeguards required by the U.S. Government are not required by foreign governments.

We divide our analysis into four "modules." The first three are sequential: the supertanker, the deepwater port, and the transfer leg. Crude oil must first be shipped from the origin to the deepwater port. It must then be transferred from the port to the refinery. The fourth module, environmental safeguards, is additive to the first three. On each leg, additional investment, operating, and maintenance costs will be required to meet environmental standards specified by the government.

We have chosen as a basis for comparison deepwater ports in the Canso Straits in Nova Scotia, and near Freeport in the Bahamas. Deepwater ports now exist or are under construction at these sites. None, however, involves crude oil transshipment to the United States. Instead, these ports are intended, for the most part, to handle imported crude refined nearby to supply certain finished products to U.S. markets. The hypothetical foreign superports assumed in this study would allow transfer of large tonnages of oil destined for the United States from supertankers to smaller vessels. These vessels would then enter existing U.S. ports.

There are alternative bases for comparison. For example, the supertanker might discharge its crude by lightering at sea. We have chosen to ignore this alternative, among other reasons, because it is generally thought to be environmentally unsound.

Some feel that the base case should be continued use of regular port facilities and tankers averaging, let us say, 40,000 dwt. The problem with this option, however, is that the economic benefits of the larger tankers have been demonstrated and, for this reason, both supertankers and foreign deepwater ports are now being built. It seems unlikely that, once foreign deepwater ports are completed, the domination of smaller tankers on larger runs would continue.

Now, if I may, I will go on to some general conclusions beginning on page 26.

In this section we outline the more important conclusions of the study.

1. Under most circumstances, the construction of a U.S. deepwater port would result in significant savings to the United States. The dollar amounts of these savings are estimated in the next section. It is sufficient to note here that the amount of these savings, per barrel, tends to increase with throughput. However, the cost advantage of a U.S. deepwater port disappears at very low levels of throughput and when vessels serving a U.S. port are required to have double bottoms while vessels serving a foreign port are not. Even under the worst case, however, the differential between the least-cost U.S. and foreign port is small. Moreover, the costs of building a deepwater port are generally small relative to other costs of importing oil. It is not surprising, therefore, that there has been no serious proposal by industry that the U.S. Government help finance deepwater ports. This is not essential.

2. There is a major exception to this first conclusion, however, when U.S. flag is required for tankers docking at U.S. ports while foreign flag is permitted for tankers docking at foreign ports. The flag of the vessels could be the decisive factor in a private decision to opt for a foreign deepwater port. For example, comparing the Long Branch monobuoy with a Canadian sea island, and assuming a 6-million-barrel-per-day throughput, use of U.S. VLCC's would convert a 15 percent cost advantage for the U.S. port into an 18 percent cost disadvantage.

3. The reason for this is that, by far, the most important component of total costs of shipping oil to the United States is the tanker module. As a result, any factor affecting supertanker costs tends to drive the results of the study. The least-cost alternative is often that which permits the most efficient use of VLCC's.

4. The environmental safeguards specified by EPA do not, as a rule, add appreciably to the total costs of oil imports or affect the economics of deepwater port alternatives. A partial exception occurs when supertankers are equipped with double bottoms. Double bottoms account for over 90 percent of total environmental costs and, when required at United States but not foreign deepwater ports, reduce considerably the savings to the United States likely to result from a U.S. deepwater port.

5. As a rule, pipeline distribution provides the least-cost means of transferring crude oil from deepwater ports to refineries. Moreover, the greater the throughput, the greater the economic benefits from pipeline distribution. The exception is the Gulf Coast port handling less than 2 million barrels per day. In this case, tug-barge distribution is most economic at low levels of throughput primarily because of the greater dispersion of crude oil demand on the gulf coast. In general, the more concentrated demand, as on the east coast, the more efficient is pipeline distribution.

6. For the most part, the least-cost east coast alternative is a Long Branch monobuoy with pipeline distribution to refineries. East coast alternatives that also show well in our analysis are the Cape May sea island and island, the Raritan Bay sea island and island, and the Cape Henlopen monobuoy, all with pipeline distribution to refineries.

7. In each case, however, the differences in costs are not particularly large. For example, the second best east coast alternative, the Cape May sea island, typically adds about a penny to the cost of a barrel of crude oil for most levels of throughput, whereas the maximum differential for these sites is no more than 4 cents per barrel. Our analysis suggests, in other words, that factors other than costs are likely to be the dominant considerations in the choice between east coast locations.

8. By contrast, the monobuoys are clearly preferable in the Gulf of Mexico for all levels of throughput and under all assumptions about weather and tanker utilization. Moreover, the savings resulting from construction of a monobuoy rather than an island are considerably greater, varying between 5.5 and 10 cents per barrel. Of the two monobuoys in the gulf, our analysis suggests that the Freeport site is to be preferred. However, for reasons given in section 3, this

apparent advantage is more the result of assumptions about the distribution of imported crude oil than any inherent defects of the Bayou La Fourche site. Under real world assumptions, both would be advantageous as monobuoy sites. Indeed, there are now serious proposals by industry to build monobuoy systems at both locations.

Several additional conclusions can be drawn from these data:

1. In most cases the U.S. deepwater ports result in significant cost savings. The exceptions occur only at very low levels of throughput and, at the same time, where VLCC's serving U.S. ports are required to have double bottoms, while tankers serving foreign ports are not.

2. These savings increase significantly with throughput. There are, in other words, substantial economies of scale from using a U.S. deepwater port.

3. In general the Long Branch monobuoy with a pipeline distribution to refineries would, in all cases and at all levels of throughput, provide the least-cost alternative on the east coast. Assuming full environmental safeguards at both U.S. and foreign ports, the cost savings resulting from the Long Branch monobuoy would range between 3.3 cents per barrel for 0.6 million barrels per day and 16.5 cents per barrel for 6.6 million barrels per day. Only at throughput levels considerably below 0.6 million barrels would the Long Branch monobuoy be at a cost disadvantage relative to a foreign port.

4. By contrast, the gulf coast offers an array of best alternatives. For low levels of throughput—less than 1 million barrels—it would not pay to build a U.S. deepwater port. For higher levels of throughput—between 1 and 2 million barrels—it would pay to build one gulf coast monobuoy system with tug-barge distribution to refineries. At still higher levels of throughput—between 2 and 5 million barrels—it would pay to build one monobuoy system with pipeline distribution. Finally, at the highest levels of throughput—above 6 million barrels—a combination of monobuoy systems with pipeline distribution to mainland refineries would provide the least-cost option. For the levels of throughput considered, savings under the best assumptions would range between 2.7 cents per barrel for 1.4 million barrels per day and 18.2 cents per barrel for 14.7 million barrels per day.

5. A major determinant of what type of deepwater port should be built, and even whether a U.S. deepwater port should be built at all, will be the level of throughput for much of the facility's anticipated lifetime. This finding underlines the importance of accurate demand projections from the start. Because the principal variants in these projections are assumptions about changes in U.S. Government policies concerning the pricing of natural gas and the exploitation of the Outer Continental Shelf, this also indicates the importance of firm decisions on these issues being made by the Government as soon as possible.

6. In any event, the penalties from building a deepwater port under false assumptions about throughput are generally not that great, even in the gulf coast region, while the rewards could be substantial. In short, our analysis suggests that on the basis of

costs, an argument can be made for building deepwater port facilities on both the east and gulf coasts. The same argument probably can be made for the west coast of the United States also, although that option was not considered in our study.

Let me now mention very briefly some environmental considerations. At the same time that I, at the Council of Economic Advisers, with the help of 10 agencies of the Government, was working on a study of the economics of deepwater port facilities, the Council on Environmental Quality was conducting its own study on the environmental considerations involved in the facilities. I believe you have heard from Chairman Train about some of the work that has been done there.

The people at CEQ came out very strongly for monobuoy systems both on the east and gulf coasts, if these systems were located quite far out at sea and connected to the mainland by pipelines. They felt that this type of system was, overall, environmentally superior, in part because there was less likelihood of grounding farther out at sea and, partly, because there was less likelihood of collision with bridges and other ships. The monobuoy system would, presumably, be out of the way of heavy traffic in bays, inlets, and crowded waterways.

What is more, pipeline transfer, along with adequate safeguards, such as buried pipelines, was thought to be far better environmentally than transfer by tanker or tug-barge. There was also a preference in CEQ, and I think among environmentalists generally who understand the issue for the supertanker rather than for the smaller vessel which would be used in the absence of the supertanker, whether or not the smaller vessel hauled oil from the Middle East or from a deepwater port located in the Bahamas.

Fewer vessels would be involved if we employed a 250,000-ton tanker, than 30,000- or 40,000-ton tankers. The supertanker would be newer and better designed with such environmental safeguards as double bottoms or radar systems which would contribute to their environmental safety.

In short, what proved to be economically optimal in our study also proved to be environmentally optimal in CEQ's study. Both the monobuoy system and pipeline transfer to the mainland offered the least-cost alternative and, at the same time, that which entailed the least risk of environmental damage.

I think we do need deepwater ports. Mr. Chairman, and we should begin building them as soon as possible. And to do this, we need the passage of the bill that is now before Congress which would enable their rapid and efficient construction.

Thank you very much.

Senator JOHNSTON. Thank you, Dr. Johnson. We will now hear from Jared Carter, Deputy Undersecretary of the Interior.

Mr. CARTER. I don't have a statement. I am here to try to answer any questions.

Senator JOHNSTON. That will be fine. By the way, in case the record does not so reflect, without objection, we will introduce all statements and exhibits in full in the record.

Do you have a question?

**Mr. HERRON.** Mr. Chairman, I want to apologize to Dr. Johnson for failing to identify him as chairman of the study produced by the Council of Economic Advisers. The figures we reported were his, and were the result of his interagency study.

**Senator JOHNSTON.** The first question I have would be directed I suppose at Dr. Johnson. How many superports do you envision in the next few years, and where?

**Dr. JOHNSON.** There are two deepwater ports that are now well along in the planning stage in the gulf coast area. These are the Loop project off the coast of Louisiana and the Seadock project off Freeport, Tex. There are other proposed port developments. One is the Ameriport project in Alabama. I would expect to see two or perhaps three port facilities built in the gulf if we were to go now with this legislation.

**Senator JOHNSTON.** Two or three in the gulf coast area?

**Dr. JOHNSON.** At least two there.

**Senator JOHNSTON.** Excuse me. Let me interrupt you there. How about the Alabama project? What are the pros and cons on that, or is that too much in the embryonic stage now?

**Dr. JOHNSON.** I think it is less developed in planning, but it is, potentially, a very sound project, and I would expect to see, at some point in the future, particularly as we develop a refining complex in that area, that there will be a definite need and desirability to having a deepwater port facility there as well.

**Senator JOHNSTON.** In your judgment, which of the three gulf coast projects are the best ones? Would you rank them in order of what you think their advantages and disadvantages are?

**Dr. JOHNSON.** There is very little difference. All three of them are very desirable. Probably at the present time, given existing location of refineries in the area, the Bayou La Fourche, La. and the Freeport, Tex. projects make the greatest sense. But as we have new refinery capacity being built, as will happen in Alabama, it will make sense to have a port facility in Alabama as well.

**Senator JOHNSTON.** The CAP line there around Convent, La., is that an important factor?

**Dr. JOHNSON.** It is a big factor.

**Senator JOHNSTON.** Turning to the Atlantic, how many would you foresee?

**Dr. JOHNSON.** It is hard to say. It depends first of all on the type of deepwater port facility that is built. If a decision is made to build an artificial island, which I doubt on economic grounds alone, then I think it is clear that the Atlantic would probably accommodate only one facility.

A monobuoy is a more divisible type of investment. You could have more of them, and I think it would pay to spread out several monobuoy systems on the Atlantic coast. I would expect two or three after 1980.

**Senator JOHNSTON.** Would the location of the deepwater ports in the gulf area, would that be a feasible alternative to deepwater ports on the Atlantic?

**Dr. JOHNSON.** The place to locate the deepwater ports is where the pipeline or refinery capacity exists or will exist. There is capac-

ity, now, both in the gulf and in the Atlantic, so I do not see them as alternatives.

Certainly for existing refining capacity that is true. For new capacity, it would depend on whether the communities, the States, and local groups will allow the capacity to be built.

Senator JOHNSTON. In other words, location in the gulf area, for example, would be a proper alternative to building on the Atlantic coast for all but existing refining capacity?

Dr. JOHNSON. I think you would see some temptation and certainly desire to build a deepwater port facility to accommodate existing refineries. We can obtain the benefits of supertankers for existing as well as new refineries.

Deepwater port construction is not necessarily tied to the building of new refineries. However, if new refinery capacity is built, as will happen certainly in the gulf coast area, then you will see additional deepwater port facilities being built in that area as well.

Senator JOHNSTON. There is additional capacity in the CAP line that can be used, about 50 percent additional capacity that can be used?

Dr. JOHNSON. I don't know the particulars.

Senator JOHNSTON. We have received less than an enthusiastic reception from some of the Senators who represent the Atlantic Coast States.

Senator BIDEN. I don't know what makes you say that, Mr. Chairman.

Senator JOHNSTON. I suspect that if you go up and down that Atlantic coast, you will find almost a unanimous feeling, unanimous as far as I know, that all oppose deepwater ports. Am I correct in that?

Dr. JOHNSON. This is the one area of the country where the opposition is the greatest. I might add, if I may, that from an environmental standpoint it makes the greatest sense to build deepwater ports. We have to consider the alternatives. What are they? They are many small vessels bringing in crude oil to existing refineries, or many small vessels bringing in products from the gulf coast.

Senator JOHNSTON. My question is this: If I am correct in the feeling that all these States along the Atlantic coast oppose the superport at least as proposed in this legislation, and if we are going to try to get one there, aren't we going to have to do something to compensate them for what they see as a very real risk of environmental damage, and indeed not only they see that risk of environmental damage, but Mr. Train sees the same thing, and testified to that this morning, particularly as to the environmental degradation caused by the onshore facilities, the refineries, the petrochemical complex, the big capital intensive industries, highly automated which produce the air and water pollution. Aren't we going to have to give them some kind of compensation for the environmental degradation and to provide a fund for environmental protection?

Dr. JOHNSON. Let me backtrack a bit. If we are talking about building deepwater ports at existing facilities on the east coast, I think there will be no environmental degradation. In fact, the oppo-

site will happen. The supertankers will replace small vessels that are coming in and colliding with bridge abutments or leaking or are responsible for occasional collisions with other vessels. The east coast of the United States would be in a much better position with supertankers.

Senator JOHNSTON. Really, when Mr. Train talked about environmental degradation, it was more for the on-shore facilities than the risk of an oil spill. I think it is quite true that the risk of an oil spill with a superport is less than an accumulation of smaller ships, but once you get a big hit, it is really a big spill.

But I don't think you can deny the degradation on shore from all of the satellite refineries and complexes, petrochemical complexes.

Mr. HORROX. Unless we are looking at existing facilities that exist now.

Senator BIDEN. Would you yield a minute?

Senator JOHNSTON. Yes.

Senator BIDEN. We are told that refineries don't even have the capacity now, to handle what we now have.

In the Alaskan pipeline the practical matter is that oil refineries around the Nation are at capacity now. So by definition, we will be required to build new ones, won't we?

Dr. JOHNSON. That is true. I tried to divide my answer to Senator Johnston into two parts. One was based on the assumption that States like Delaware, which do not want to build any new refineries, will not allow the building of new refineries. This does not mean that a deepwater port facility serving Delaware should be ruled out. It makes a great deal of sense to supply the crude oil that would be required by existing refineries, which will be very largely imported, through such a port.

If we do have construction of new refineries, or expansion of existing refineries, and if we have associated growth of the petrochemicals industry, then we may need additional deepwater port facilities. If I understand Senator Johnston's point, it is that States like Delaware or New Jersey, which allow this development should be compensated for the greater environmental degradation that the on-shore facilities would create.

Those communities that do not allow the construction of new refineries will pay a price in the form of higher costs of transporting products from, let us say, the gulf coast to the east coast. There will be a higher cost of delivering gasoline, No. 2 fuel oil, and other products that are produced in the gulf coast refineries.

Second, those communities that deny new refineries will pay a cost in the form of a greater likelihood of shortages because refineries, when faced with the necessity of curtailments, tend to curtail their sales at the end of the pipeline. The further a community is from the refinery, the more likely that it will have to bear a greater burden of shortages.

Senator JOHNSTON. Certainly that would be true if you allowed the market to work its will, but we have a petroleum allocation bill whereby the Federal Government allocates to all essential areas geographically in the country.

We have the FPC regulating our natural gas so that it is shipped out of the sources where it is found, or places where it is found.

What my question is, where Mr. Train says for example:

Each of these activities generated by the superport in turn will result in a range of environmental impacts beyond what would normally be expected without a deepwater port. The impacts include demand for land and water supply, increased air and water pollution.

Then he goes on to say that you might have more strict ambient air standards because of the activity connected with it.

My question is: shouldn't those States that are going to bear the degradation there is, and certainly there is going to be some, shouldn't they be compensated first by getting some kind of direct income from the superport to provide for an environmental fund, for example, to take care of the increased cost?

Second, shouldn't they be allowed to burn more natural gas? Wouldn't there be some kind of amendment to the Natural Gas Act to—in areas where you concentrate refineries, you concentrate petrochemical complexes, you concentrate other air pollutants—shouldn't some of these industries be allowed to use more natural gas, the cleanest-burning fuel there is, because of the concentration problems?

Dr. JOHNSON. Let me hasten to state that I am not an expert on the environment. However, I would think that these States are already being compensated for having to bear a greater environmental burden. I see no reason why a State cannot require something more if it chooses.

Senator JOHNSON. Do you think a State could tax the throughput of this superport?

Dr. JOHNSON. I would think that the tax should be on the refinery and the petrochemical complexes that are creating the pollution.

Moreover, a State has the ability, as Delaware has shown, to prevent the construction of new refineries within its boundaries if it does not want them.

Senator JOHNSON. That oil that goes through the pipeline cannot be taxed. Would you agree with that?

Dr. JOHNSON. I am not a lawyer. I do not know the legal considerations.

Senator JOHNSON. Before we continue with the rest of the agencies; Mr. Horton, would you agree with that, that under the present state of constitutional law, without a special act of Congress a State would have no right to tax the throughput of the superport?

Mr. HORTON. I don't apologize for also not being a lawyer. We do have a lawyer with us, however, Mr. Carter.

Mr. CARTER. I haven't researched that question, but my recollection is that you are right.

Dr. JOHNSON. Let me stress that the superport is not causing the pollution in the situation which you postulate. It is the refineries and the petrochemical complexes which are assumed to follow the construction of the deepwater port. I would think the place to impose the tax would not be on the port facility, but on the refineries.

Senator JOHNSON. Do you want to allow an unlimited right of the State to tax that refinery, keeping in mind that the power to tax is the power to prohibit?

**Dr. JOHNSON.** Whether we allow that or not is, I think, almost immaterial. There have been cases where prohibition has been used directly without passing through a tax system. Delaware has exercised that right, and I expect that other States would also exercise that right if they chose to. A number of States and local communities on the east coast of the United States have certainly delayed construction of refineries to the point of having discouraged their proponents.

Two cases, I might add, have just come to my attention in the last several days. Two independent marketers who distribute most of their product to New England would like to enter the refining business. They are integrating, which is the long-range answer to their supply problems, by constructing refineries. However, they are planning on building refineries on the gulf coast because they cannot get sites in New England.

**Senator JOHNSTON.** Wouldn't you say it is a matter, if not of law or sound environmental techniques, would you say it is just a matter of basic justice that the Coastal States which bear the burdens of refineries and superports should be allowed to use more natural gas than otherwise they would be allocated?

**Mr. HORTON.** Mr. Chairman, at this point, with your permission, I want to test what I conceive to be perhaps a basic error in the assumption of that question, and that is, if you build superports, necessarily, you have greater environmental degradation.

**Senator JOHNSTON.** That is Mr. Train's testimony this morning.

**Mr. HORTON.** I think a strong case can be made that you have less environmental cost with deepwater ports.

So you must be sure that we are comparing apples and apples and oranges and oranges.

**Senator JOHNSTON.** Right now we have got off the gulf coast there, you have very little oil coming in, because you have no ports other than the Port of New Orleans and the Port of Lake Charles. You have very little oil coming into my State.

You are going to create a superport, and what you are talking about when you say less environmental danger, that really is from an oil spill.

What I am talking about is the on-shore problems produced by a superport.

**Mr. HORTON.** But you still have to have a greater national refining capability, or else import the oil or oil products from somewhere else.

What I am trying to do is make sure we compare the costs of environmentally impacting transportation systems.

**Senator JOHNSTON.** I am not arguing against superports. But the refineries, if they are concentrated with the superport, it seems to me you ought to make it possible that the areas have other industries as well, and in order to have other industries I think they are going to need natural gas because they are either going to have difficulty in getting the fuel oil or the fuel oil is going to produce too much pollution.

We have that right now in my State with severe cutbacks, curtailments. We lost \$2 million to \$3 million a day in sugar cane

last year because the sugar refineries couldn't get the natural gas to refine their sugar.

If you required those refiners to go to an alternate source or other industries to go to an alternate source, if you could, and then you increased the air standards or reduced them, whichever is the way of more strictness, then you would prohibit the greater development of these refineries.

So I think if we are going to bear the burden we ought to have a little break on the use of natural gas.

I have already proceeded, I think, beyond my time. Senator Buckley?

Senator BUCKLEY. Thank you, Senator.

I would like to address myself to Mr. Horton with a couple of questions, and I am exploring in my own mind the suitability of Interior in this particular area. Before that, certain positions were attributed to east coast Senators. I just want to say this one has taken no position on this issue. I am trying to educate myself at the present time.

But, Mr. Horton, you cited a number of bureaus and so on under Interior, cited responsibility for exploration and energy crisis and Geological Survey and so on. I would like to call your attention purely by way of comment to a GAO report of June of this year that found that the responsibilities that are currently vested in the Geological Survey for inspection and the reservation of offshore drilling platforms to enforce environmental protections, and found the Geological Survey wanting.

Specifically I think the report stated that the Survey needs to strengthen its enforcement actions, that the Survey's inspectors and inspection reports need to be improved, that there is a need for the regulation of additional offshore operations which have a pollution potential, et cetera, et cetera.

Doesn't it suggest that the expertise is not there yet? Is there any reason to think they could develop it?

Mr. HORTON. I don't think that was the conclusion of the report. It was that we couldn't amplify the number of experts we have. We weren't focusing on the expert qualifications of the inspectors. It was the interpretation and the reaction of the Department that this is constructive criticism that we could use more inspectors if we had the funding that would be necessary to finance them.

In terms of the basic structural integrity of our regulations, which, of course, the inspectors are enforcing, I don't think there is doubt that they have been improved substantially since 1968.

Senator BUCKLEY. In terms of a functional analysis of what these ports are all about, are we talking about the delineation and discovery and production of resources that are traditionally under the purview of Interior, or those allied more to shipping and Coast Guard and so on?

Mr. HORTON. I think the thrust of our statement indicates the multiplicity of disciplines and interest, and that Interior would be providing a focal point to have a single point and it would in fact refer these to EPA, the U.S. Coast Guard and the Department of Transportation.

But I think it would be erroneous and I hope we have not in anything we have said indicated that this comes more under our disciplinary skills than any other, but it is necessary to have a focal point, and Interior is as well qualified as any other agency to do this.

Senator BUCKLEY. Thank you.

Another concern which has been expressed this morning, and to which you gentlemen addressed yourselves, had to do with the fear of a number of coastal states about reserving to the Federal Government the ultimate right to determine whether or not there will be deepwater ports out there, meaning out beyond our 3-mile limit. You have stated that this threat was really not there because of the coastal States' controls over their own land side facilities and so on.

Are you aware of any discussion, or of the possibility of enacting legislation, that would grant to the Federal Government the right to determine where energy-related facilities will be located?

Mr. HORRON. Senator Buckley, there certainly were other pieces of legislation that would give to the individual States veto authority over Outer Continental Shelf—

Senator BUCKLEY. No. I am not talking about this: Is there a need to have Federal legislation that would give the Federal Government the ultimate right to tell Delaware, "You will have a refinery."

I don't mean to suggest legislation within the administration.

Senator JOHNSTON. If the Senator will yield, doesn't this piece of legislation do exactly that?

Senator BUCKLEY. No.

Mr. HORRON. This legislation does not. It gives to the States the authority to determine what sort of onshore facilities they would like. If they determine that after a land planning analysis in the State of Delaware or elsewhere that facilities onshore should not be built, that is in effect a functional veto over a platform beyond the 3-mile limit.

Senator JOHNSTON. If I may amplify it, it does give to the Interior Secretary the right to give the franchise with consultation with the State, rather than a veto by the State.

Senator BUCKLEY. Right, but I believe I am talking about legislation that doesn't exist, but has been discussed, that would authorize the Federal Government to tell Delaware that, "You will have a refinery."

Senator JOHNSTON. Oh, a refinery. I see. I am sorry.

Dr. JOHNSON. I would make an observation, too, that under this legislation, it is still possible for a State to say, "No pipeline within 3 miles of our shore." No company or group of companies is going to build a port unless they have State approval for the onshore terminal facilities that would be required.

Senator JOHNSTON. I think that is a good stopping point, if the Senator would yield, and we will come back to you, Senator Buckley.

Senator BUCKLEY. Then I want to continue with that one.

Senator JOHNSTON. We will be back in 5 minutes.

[Recess.]

Senator JOHNSTON. While I am waiting for my two colleagues to come, I would like to ask a question. I guess it would be to Mr. Carter, since he is the lawyer.

Isn't it a fact that the United States, the Federal Government, retains the power to regulate commerce within the 3-mile limit under this Submerged Land Act?

Mr. CARTER. Yes, sir.

Senator JOHNSTON. So that the Congress, or rather, the Federal Government would have power to grant a pipeline easement across that 3-mile limit, would they not?

Mr. CARTER. No, sir. The surface is the province of the State under the Outer Continental Shelf Lands Act. I believe that the States were granted the jurisdiction over the surface and would be entitled to determine whether or not a pipeline was laid on that surface.

Senator JOHNSTON. To be specific, 43-*USC*.1314-A, "The United States retains all its power of regulation and controls over said lands and navigable waters for the constitutional purposes of commerce, navigation, national defense, and international affairs, all of which shall be paramount to the prior rights of ownership of the United States, and further, the United States has the power to expropriate any portion of those lands when necessary for national defense."

In view of that, doesn't the Federal Government, in fact, have the power to regulate as far as pipelines are concerned, that territory within that 3-mile limit?

Mr. CARTER. It has the power to regulate the pipeline and regulate the commerce. The fine point of whether the Federal Government without expropriation could force the issuance of a State permit and then just pay the State what it was entitled to, I am just not prepared to say today, Mr. Chairman, but the State does have—

Senator JOHNSTON. Wouldn't you regard this as a matter of national defense, giving the United States the power to expropriate?

Mr. CARTER. Not offhand, I wouldn't.

Senator JOHNSTON. The point I am trying to make, Senator Buckley, talking about the right of the State once this legislation is passed to veto a superport, and I was pointing out that under certain sections of the United States Code, the United States retains the power to regulate commerce and navigation with respect to national defense, et cetera, within the 3-mile limit. They retain the power to expropriate any portion of these lands when necessary for national defense, which it would seem to be would give, with this legislation, the Federal Government the power to locate a superport, and to provide for pipelines within the 3-mile limit.

I am not saying that is a bad result, but it seems to me that that does follow from this legislation.

Mr. CARTER. It has been our assumption, Mr. Chairman, that the States would have to agree and grant a permit for the pipeline over the 3-mile limit. I believe they do that now for the OCS gathering lines in the Gulf area for offshore drilling.

Senator JOHNSTON. This question is addressed to all three of you, and I would like to get a short answer: Do you think the States

ought to have in this legislation the power, first to veto a superport, or second, the power to regulate a superport?

Mr. CARTER. I think that our prepared statement addressed the first, that they ought not to have the specific authority to veto.

Senator JOHNSON. I think it says it is unnecessary.

Mr. CARTER. Well, I would expand on that and say, undesirable, as I believe the statement did, saying that to force the State to go through the political decisionmaking of yes or no on the entire integrated project is not desired, that rather, the State has the authority with its control over the 3 miles of pipeline and over the shoreside facilities, to control the eventuality of the entire complex, and that to extend State regulation out to the operations of the superport could give rise to a great many complications, because you might have the State of Louisiana with one set of regulations, the State of Texas with another set, and if the Ameriport project came in, you might have Alabama with a third, and the tankers serving these ports may not be quite able to figure out what the specific regulations they are going to run into are.

There is a great desire built in shipping to simplify to the extent possible a set of regulations that vessels are going to have to comply with when they come in in one jurisdiction.

Mr. HOKSON. Dr. Johnson has just received an important message asking him to attend an urgent meeting at 5, and I wonder if he could depart with questions to be addressed to him in writing.

Senator JOHNSON. Certainly. We can do that. We appreciate your coming, Dr. Johnson. You have been helpful to the committee, and we will have written questions for you.

Senator BUCKLEY, I interrupted you before the bell, or the bell interrupted.

Senator BUCKLEY. I didn't get back fast enough.

What concerns me is that we might be leading into a set of situations where a State could in effect be presented with a fait accompli. As I say, there has been a suggestion that somebody in the Federal Government ought to be given the authority to locate refineries where States aren't willing to accept the refineries.

The administration does back a bill for powerplant siting. Would the administration oppose bills that would authorize somebody in the Federal Government to mandate the siting of a refinery?

Mr. HOKSON. It is our present posture that we would oppose any Federal dictatorial assertion of location for refinery capacity at this time. We believe it is within the prerogatives of the State and its own land use planning offices.

Senator BUCKLEY. Thank you.

One other question that I am going to ask, and it won't be very long.

In terms of the economics of a deepwater port complex of this sort, let's assume that for all kinds of environmental reasons, water currents, winds and so on, that one particular spot off a particular coast is an ideal place, but that the State controlling the nearest contiguous land does not want to have an industrial complex at that location. How far out could one extend the pipeline? What would be the radius of a pipeline across, say, another State's line,

or inland? Could you be thinking in terms of 20 miles or 300 or 400 miles, and have a situation that would be economically thinkable?

Mr. HORTON. Twenty or 30 miles are the distances we look at, but not a 200-mile radius.

Senator BUCKLEY. If we would achieve some of the savings we have spoken about, might this not be translatable into the ability to go beyond the adjacent shoreline for the recipient of the fuel?

Mr. CARTER. Let me ask a question for clarification, Senator Buckley. You mean a situation where the port facility itself will be offshore from an extension of the boundaries of one State, but the pipeline would come ashore in another State?

Senator BUCKLEY. Or go through a State, or avoid your coastal areas and marsh lands and beaches and locate itself 80 miles inshore. I do not have any particular situation in mind. I am just asking whether this has been considered.

Mr. CARTER. We certainly have thought about the situation where the possibility of a pipeline going ashore and bringing the refineries or other complexes away from the beach—as a matter of fact, our own thought was that probably many States with coastal zone plans would want that to happen, would insist on it happening. If the pipeline came ashore, that State would have certainly a handle on the whole problem.

Now, if the pipeline did not come ashore at all in that State and, rather, came ashore in another State, I don't believe we have given specific attention to that possibility.

Mr. HORTON. If the pipeline did not transgress upon the 3-mile limit of X State and were to run parallel outside the 3-mile limit, certainly there would be no legal impediments, but there would be very severe economic difficulties, it seems to me, with the approximate cost of the million-dollar per mile of the pipeline.

Senator BUCKLEY. Thank you. I have no further questions.

Senator JOHNSTON. Senator Biden?

Senator BIDEN. Thank you, Mr. Chairman.

Senator Buckley prefaced his comments by saying he has reached no conclusion as to the desirability of superports. I haven't either. I have reached some conclusions with respect to my State.

I would like to ask you some questions with regard to that, and I am sorry that the doctor had to leave. Some of them may relate, and I am not sure who raised the points you raised, whether they were the doctor, or you two gentlemen.

It was pointed out by someone, and I can't recall which one of you, that it was undesirable for States to have a veto power over the construction of such facilities because of the political pressures, the political implications that are attendant. I assume by that that you mean the pressure that would come from the constituency, for example, or the governor or the State legislature on the governor to take an action which may not really be desirable for the area, but politically desirable for him or her to take.

Is that what you mean?

Mr. HORTON. Let me take a step backward, Senator Biden, and indicate that the focus of our legislation is not to increase the Fed-

eral-State jurisdictional problem, but rather to turn the coin over and say there is an enormous area of interplay here for cooperation, realizing we have an energy situation on one hand, and severe environmental problems on the other. We want the State and Federal Governments to work closely. This is what we are trying to achieve with our legislation. We do not think the veto authority is necessary, but we are putting the burden on the shoulders of the State land use planning agencies to make those decisions with the governor.

Senator BIDEN. You say it is not desirable for political reasons.

Mr. HORTON. Nor is it necessary in our judgment.

Senator BIDEN. How about answering the question, it is not desirable for political reasons; what do you mean by that?

Mr. HORTON. To give the State the veto authority?

Mr. CARTER. That is what you said, and it was not desirable to force the State to decide up or down on an entire project rather than to concentrate on the context of its hazardous planning mechanism on what the undesirable features are and to arrive at some accommodation on those things to protect the State's legitimate interest.

If no accommodation can be reached that protects the State, then obviously the project will not be consistent with its overall land use plan and it cannot be granted under our legislation.

Senator BIDEN. You referred to Delaware as being the State which decided they did not want refineries, and they passed legislation to that effect.

Mr. HORTON. I do not think we referred to the State of Delaware in that context.

Senator BIDEN. Somebody did. Maybe it was the doctor while you were out of the room, and I would like to point out for the purposes of, you know, that particular example, that Delaware does have such a law, a coastal zoning law, but it only applies to an area which is along the Delaware River and down along the shore, the Atlantic coast of Delaware, which is fairly short, for 1 mile in, and it varies, but it is a maximum of 1 mile from the waterfront in. So that the vast portion of the State is not covered by any such law which would prohibit the construction of an oil refinery, and you need only run that pipeline from the deepwater facility a mile in, and the question is, could the pipeline cross that mile barrier, whether or not that is excluded as part of the thing, under State law.

I imagine there would be some legal hassle about that, assuming the State were to hold firm.

But keeping that background in mind and moving back—

Mr. HORTON. That would be a matter for State law, clearly.

Senator BIDEN. I don't know whether it is, clearly. We talked about that on the way over to vote. Senator Buckley, myself and the Chairman, and we do not know the answer. Maybe you can answer that for us. Does the State have the right to determine what happens to the throughput. No. 1, and that is, can it tax a throughput if it is in interstate commerce; and No. 2, does it have any control over whether the pipe goes in the ground in the first place?

Can you answer either or both of those? I think they are two separate questions!

Mr. CARTER. I think we answered the first part that my offhand impression was the same as the Chairman's, that no, the State could not tax the crude oil as part of foreign or interstate commerce; but as to the second, the provision in section 103-E of the bill says that the Secretary shall consult with the governor of any State off whose coast a facility is proposed to be located to ensure that, "The operation of the facility and directly related land-based activities would be consistent with State land use programs."

Senator BIDEN. What does that mean?

Mr. CARTER. Well, I think what it means is that if the state land use program says, "We do not want any pipelines coming ashore," that the Secretary could not ensure that the facility would be consistent with the State land use plan.

Senator JOHNSTON. If the Senator would yield at that point, could we get a formal opinion from Interior as to whether or not a State could prohibit pipelines crossing the 3 mile zone?

Mr. CARTER. Yes, sir.

[The following information was subsequently received for the record:]

We conclude that coastal States presently have this power and that for Congress to overcome it would require new Federal legislation.

The Submerged Lands Act (43 U.S.C. §§ 1301-1315) granted title to these lands beneath territorial waters to the respective coastal States. Consequently, the coastal States, and not the United States, have proprietary rights in this area. Neither the Submerged Lands Act nor the Outer Continental Shelf Lands Act (43 U.S.C. §§ 1331-1343) grants the Federal Government authority with respect to pipelines crossing the three mile zone. A right-of-way across State lands can be granted only by the State.

Although section 3 of the Submerged Lands Act (43 U.S.C. § 1311) grants title to the submerged lands within the three mile zone to the coastal States, section 6 (43 U.S.C. § 1314) retains for the United States

"all its navigational servitude and rights in and powers of regulation and control of said lands and navigable waters for the constitutional purposes of commerce, navigation, national defense, and international affairs, all of which shall be paramount to, but shall not be deemed to include, proprietary rights of ownership, or the rights of management, administration, leasing, use, and development of the lands and natural resources which are specifically recognized, confirmed, established, and vested in and assigned to the respective States and others by section 3 of this Act."

The statutory authority in § 6(a) of the Submerged Lands Act quoted above does give the United States some authority in the three mile zone, but a mere retention of rights in, and powers of regulation and control of, lands for the constitutional purpose of commerce does not provide adequate statutory authority for the exercise of the right of eminent domain to obtain a right-of-way for a pipeline.

I find no authority in the Outer Continental Shelf Lands Act to authorize the Federal Government to condemn a right-of-way across State lands in order to develop the Federal resources of the Outer Continental Shelf. In any event that Act pertains to the resources of the United States Outer Continental Shelf and would not extend to oil imported from a foreign country. So far the coastal States have been willing to cooperate with Federal leases and the need to acquire rights-of-way in the face of State opposition has not risen.

Senator JOHNSTON. And I would say that the answer to that question about what that consultation means, if it means they have to talk about it before they do it.

**Senator BIDEN.** That is what I am afraid it means. If it means that—let me get to some of the other questions that relate to this. You talked about in the mechanics for cooperation with the State officials, and that there will be consultation. Specifically, what does that mean? Does consultation merely mean you call up, the Secretary of Interior calls up, or the Assistant Secretary, and says, "We are thinking about the port offshore, it is a right good idea, and we would like to see it implemented."

"You don't like it. Well, it has been good talking to you, Governor," and they go ahead. I am being facetious.

**Mr. HORRON.** Under the Environmental Policy Act, that procedure would be unlawful.

**Senator BIDEN.** Would it be? I am not sure it would be, the way the act is written. It says with regard to public hearings, as I read the act, there is no requirement for public hearing unless the Secretary deems that there is enough reason to hold a public hearing.

**Mr. HORRON.** The issue is, would the State be consulted? They would be consulted by a draft environmental impact statement.

**Senator BIDEN.** That could be a one-way consultation.

**Mr. HORRON.** We go to the State and the State responds as a matter of law.

**Senator BIDEN.** Okay. So we have one thing done. Does it mean anything beyond that?

**Mr. HORRON.** Your question is the word "communication" and "coordination", but the provision of our legislation says to be sure that the operation of the facility be consistent with the land use program of the State.

**Senator BIDEN.** Who makes that determination of consistency?

**Mr. HORRON.** It would be the Secretary, but if the Governor were to say that it is inconsistent because we don't want a pipeline across this 1-mile segment, clearly that is inconsistent. So the answer would be no to a deepwater port.

**Senator BIDEN.** You are saying, in effect, that there is a—that the State would have a veto under this legislation, by saying that they think the pipeline is inconsistent with the land use planning, and that would end the matter there, as a matter of law?

**Mr. HORRON.** Functionally, that would be the effect. We think it included the issue as to the type of communications and resolving problems.

**Senator BIDEN.** Maybe I am not understanding what you are saying here. Your interpretation of subsection (e) of section 103, your interpretation of that is that if the Governor of a State determined that a pipeline was incompatible with their land use program that that would have the effect as a matter of law of vetoing that?

**Mr. HORRON.** I said that would be the functional effect.

**Mr. CARTER.** What I am worried about, Senator, is that if there is a situation and I am not aware of any, but if there is a situation where there is a practical problem that all of the facts call for placing an offshore portion of this integrated facility offshore from one State and the pipeline is going to cross only 2 or 3 miles of that State and then 30 miles inland the entire development will occur in a second site, I would be a little bit hard-pressed on the

equities of the thing to want that first State to be able to impede the entire project by an unfair interpretation of that State's land use planning program.

Now that is the only possible consideration that led me to be hesitant to say to you "Yes, the State applying its land use planning program can stop the entire facility, because if, in fact, you are going to have the major part of the facility and the downstream tank farms, refineries or associated developments, in the same State, off whose shores the receiving buoy is located, then it makes no great sense to quibble about that pipeline, because that State is going to have innumerable handles on the entire facility and may be able to work its will on whether it exists or not."

Senator BIDEN. I understand that, and I appreciate your clarification there, but what I am really concerned about, quite frankly, is not what you or I would consider equitable but what the law as proposed here, in the administration bill, would allow or not allow, and I am trying to get clarification of that, and when you say it would be a functional veto, what I want to know is does that mean that if it is raised in your opinion, if it is raised, and is the Governor saying it is incompatible with their land use program, is that prima facie—is that a prima facie basis for meeting the statute so as to preclude the construction of the facility onshore in Delaware, or any other State?

Mr. HORTON. Effectively it does, yes.

Senator JOHNSTON. If the Senator would yield, at that point, we have got three other witnesses. Two of them came from Texas and we are not quite as worried about them as we are about the third one, who came from Louisiana.

So I expect we had better leave the rest of our questions for these two witnesses, unless we have something we can terminate quickly.

Senator BIDEN. I have a couple of more, and I will try to terminate them quickly. I think they are very important questions that have not been raised.

On page 9, lines 13 through 20, of the administration bill, it does not require the public hearing, only when the judgment of the Secretary holds that substantial objections have been raised. Am I reading that correctly, that only the judgment of the Secretary at a public hearing, that only in his judgment need a public hearing be held?

Mr. CARTER. I think I may be looking at a different piece of paper.

Senator BIDEN. It is section 105(c), page 9 on the committee print.

Mr. CARTER. Yes, sir, I would read that as giving the Secretary the authority to determine whether or not the objections are substantial, and that his judgment in that regard would be subject to review only for an abuse of discretion.

Senator BIDEN. Unless it was contested in the courts, it would be final. Do you think that should be broadened? Do you think there should be mandatory public hearings?

Mr. CARTER. If there are no substantial objections, I don't think there should be.

Senator BIDEN. I thought that might be your answer.

I have been asked to ask another question. Does the Department in fact oppose the implementation of this act recently passed by Congress?

Mr. HORTON. I think we would rely, unless you would like us to go into a similar discussion—

Senator BIDEN. His answer was that he thought it should be funded if in fact we had the other act, the National Land Use Planning Act, but if you did not, you should not fund it. Is that correct?

Mr. HORTON. That is correct.

Senator BIDEN. Is that your position?

Mr. HORTON. That is correct.

Senator BIDEN. I am glad to see that. That really makes me angry by the way, and I don't mean it—you are here representing the Department, but I think that is the most consummate gall I ever heard of.

I will submit the rest in writing. Thank you very much, gentlemen. I appreciate it.

Senator JOHNSTON. Gentlemen, we do appreciate your long and very informative testimony, we will have more questions for you in writing, and we look forward to getting those answers as well as your oral testimony.

Mr. HORTON. We will answer them as expeditiously as possible.

[The statement follows:]

STATEMENT OF DR. WILLIAM A. JOHNSON, ENERGY ADVISER TO THE DEPUTY SECRETARY OF THE TREASURY

Mr. Chairman and Members of the Committee:

I am delighted to appear before you today to discuss the energy needs of the nation. In particular, I plan to focus on the economic benefits of very large crude carriers and the construction of deepwater ports to accommodate these carriers. This issue is covered in my prepared statement. In addition, I will discuss some environmental benefits, which are not contained in the statement. This statement is, incidentally a precis of a larger study done under my direction several months ago. I am submitting it for the record and will only summarize it here.

INTRODUCTION

It now appears to many observers that the United States will have to increase significantly its crude oil imports in the near future. Projections of import demand vary widely. Those used as the basis of this study have been made by the Interior Department for both the East and Gulf Coasts. (See Tables 1 and 2).

The level of throughput for each region will depend on the locations of new refinery capacity and domestic production of oil and natural gas. Projections for the East Coast range between 0.8 and 6.6 million barrels per day; for the Gulf Coast, between 0 and 14.7 million barrels per day. Future import requirements will be minimized if reserves on the Outer Continental Shelf can be exploited and U.S. production of alternative fuels, such as natural gas, is increased.

The most efficient means of transporting large tonnages of crude oil over long distances is the "supertanker" or very large crude carrier (VLCC). The definition of a VLCC varies. At a minimum, it is capable of hauling in excess of 80,000 to 100,000 DWT of crude oil. Some argue, however, that a more appropriate definition now is a vessel with a capacity in excess of 200,000 DWT. The largest VLCC to date is 477,000 DWT.

Vessels of this size would require deepwater ports.<sup>1</sup> The Gulf Coast has

<sup>1</sup> A port capable of handling 250,000 DWT tankers must have a minimum depth of about 75 feet. With restricted draft it is possible, however, to operate with lower depths depending on vessel design and height of the tide.

no natural harbors capable of accommodating this class of tanker, and where suitable depths exist along the East Coast, such as in Maine, Long Island Sound, and Delaware Bay, the development of a deepwater port has been impeded by state governments and is likely to encounter strong opposition from environmentalists. Yet, if the United States is to receive VLCC's, it must build these ports.

TABLE 1.—EAST COAST IMPORTS THROUGH DEEPWATER PORTS  
(Thousands of barrels per day)

	1975	1980	1985	2000
Case I.....	765	1,135	1,572	2,500
Case II.....	765	3,505	5,106	6,600
Case III.....	765	1,135	1,572	2,500
Case IV.....	765	2,000	1,200	3,200
Case V.....	765	1,000	600	800

TABLE 2.—GULF COAST IMPORTS THROUGH DEEPWATER PORTS  
(Thousands of barrels per day)

	1975	1980	1985	2000
Case I.....	1,573	1,805	3,248	10,900
Case II.....	1,573	1,805	3,248	10,900
Case III.....	1,573	4,175	6,782	14,700
Case IV.....	1,573	1,400	—	—
Case V.....	1,573	1,400	600	2,400

The purpose of this document is, first, to determine whether, given cost considerations alone, it would benefit the nation to have one or several of these ports along the East and Gulf Coasts. To do this, we must have a basis for comparison. Deepwater ports now exist, are being constructed, or have been proposed in the Canadian maritime provinces, the Yucatan Peninsula, the Bahamas, Haiti, Puerto Rico, and the Virgin Islands.<sup>2</sup> In the ab-States. We have assumed, therefore, that the benefits of a U.S. deepwater port will be the savings likely to result if, instead, crude oil were shipped to a U.S. port by supertanker and then transferred to mainland refineries by pipeline, tug-barge, or smaller tanker. If these savings are positive, a case could be made that a U.S. deepwater port is economically justified.

A second objective of the study is to determine which of several alternative technologies for building a U.S. deepwater port and transferring oil to the mainland are most desirable given cost considerations alone. Three basic port technologies exist: the monobuoy; the sea island; and the artificial island.<sup>3</sup> There are also three alternative technologies for transferring the imported crude oil to mainland refineries: pipeline, tug-barge and small tanker. Which technology or combination of technologies is most economic will depend on the relative costs of each alternative.

Finally, the study estimates the additional costs of various environmental safeguards thought necessary to prevent, contain, or clean up oil spills. In this way, it determines whether these increased costs could affect the choice

<sup>2</sup> Because of its restricted draft, some experts question whether the Virgin Islands port can, properly, be called a deepwater port. Several of these port schemes are also thought not to be serious proposals by knowledgeable observers.

nence of an East or Gulf Coast deepwater port, oil shipments from relatively distant sources, such as the Persian Gulf, are likely to be carried by VLCCs to one of these sites and then transhipped by smaller tankers to the United

<sup>3</sup> A monobuoy is also called a single point mooring or single buoy mooring. As its name implies, it is a mooring facility at which the tanker can connect with pipelines distributing oil to mainland storage facilities and refineries. The term "sea island" is often used interchangeably with the term "platform", although the two are by no means synonymous. The sea island assumed in this study is a platform connected by pipeline to the mainland storage area. Discharge of oil may also occur by ship-to-ship transfer at the platform. An artificial island is a man-made island built up with fill. Aside from its construction, it differs from a sea island primarily in that storage facilities would be located on the island and not on the shore.

of a location or technology for a U.S. deepwater port, particularly if the safeguards required by the U.S. Government are not required by foreign governments.

#### METHODS OF ANALYSIS

The basic method of analysis used in this study is a comparison of all costs of landing a given amount of crude oil at East and Gulf Coast refineries through U.S. and foreign deepwater ports. Because throughput is held constant, savings in costs can be treated as a rough measure of benefits. Of course, a number of other factors, such as environmental considerations and national security, will have a bearing on whether a U.S. deepwater port would be beneficial and should be built. Our study measures only the economic benefits of a superport.

We divide our analysis into four "modules". The first three are sequential: the supertanker, the deepwater port, and the transfer leg. Crude oil must first be shipped from the origin to the deepwater port. It must then be transferred from the port to the refinery. The fourth module, environmental safeguards, is additive to the first three. On each leg, additional investment, operations, and maintenance costs will be required to meet environmental standards specified by the government.

Originally, we had hoped to include two additional modules: the refinery and post-refinery leg. The refinery costs probably account for the largest share of the total costs of processing imported crude oil. However, within each region, the additional refinery capacity required by greater U.S. consumption of imported crude oil should cost more or less the same regardless of which alternative is chosen or whether a deepwater port is built at all. If so, exclusion of refinery costs should not bias our results.

Exclusion of the post-refinery leg may pose some difficulties. Opinions vary on whether, in a free market, a particular deepwater port location would affect or be affected by the location of refinery capacity. Some feel that a port location would be determined by the refineries' location and the refineries' location by the internal distribution system. Others argue just the opposite. A deepwater port will determine the location of refineries and petrochemical complexes and, in turn, the internal distribution system. In any final analysis, one must consider whether the post-refinery leg does have an impact on the economics of a deepwater port.

Our treatment of capital costs in this study poses at least two difficulties. First, the time required to build and install each capital input varies from 0.5 years to 6 years. Second, the anticipated lifetime of each component also varies from 15 to 99 years. Differences in construction period and lifetimes may have a bearing on which type of facility should be built. These differences must also be taken into account in any estimate of the total costs of a port facility.

Using a 10 percent discount rate, the cost of each capital input are compounded annually to present value during the initial year of operation. The present value for each input is then converted to an equivalent annual cost by dividing by an annuity factor.<sup>4</sup> This method of handling capital costs is logically identical to the more familiar present value and internal rate of return calculations. However, it has three major advantages. First, the different lifetimes of each capital input can be handled easily without having to make assumptions about the length of service of the deepwater port or the scrap value of its components.

Second, equivalent annual cost best meets the primary objective of the study—to estimate cost differentials for alternative port facilities. The equivalent annual cost is an annualized measure of capital costs; the differences between the equivalent annual costs of two port facilities, the annual cost differential or measure of benefits resulting from the construction of one alternative rather than another.

Operating and maintenance costs can be added directly to the equivalent annual costs of capital inputs. Some O and M costs are associated with each major component of the deepwater. Others are spread over all components. We assume two types of O and M costs: linear and step. A cost is judged

<sup>4</sup>An annuity is an annual income paid in equal installments for a specified period of time. This income is equivalent when discounted to a fixed initial payment by the investor. The annuity period assumed is the anticipated lifetime of each capital input.

to be linear if, within each increment, it increases with throughput. It is judged to be step if it increases only at the beginning of the increment.<sup>5</sup>

In Table 3, we present a sample print-out summarizing the cumulative equivalent annual costs of all increments required to raise the capacity of a monobuoy off Long Branch, New Jersey, from 0 to 6 million barrels of crude oil per day. This print-out indicates the costs of all four modules. The total equivalent annual cost for the Long Branch monobuoy is \$368.8 million for 1 mbb/d throughput. This cost rises to \$765.4 million for 2.2 mbb/d and \$2.0 billion for 6 mbb/d.

TABLE 3.—ESTIMATED COSTS OF A LONG BRANCH MONOBUOY WITH PIPELINE DISTRIBUTION TO EAST COAST REFINERIES USE OF FOREIGN SUPERTANKERS AND 0 TO 6 MILLION BARRELS PER DAY THROUGHPUT ASSUMED

(Thousands of dollars equivalent annual costs)

Longbranch Monobuoy Pipeline				Codes—4 29 54 79					
Thruput	Foreign tankers nonenvironmental costs			Environmental costs				Subtotal	Total
	Supertank	Port	Transfer	Subtotal	Berge DB	Tanker DB	Other environment		
0.0+	0	12,829	15,889	28,738	0	0	3,017	3,017	31,755
1.0-	301,957	14,593	18,768	335,329	255	27,821	5,417	33,483	368,821
1.0+	301,957	29,118	19,755	341,840	255	27,821	5,417	33,483	375,332
2.2-	659,540	21,174	19,806	700,530	255	59,209	5,417	64,881	765,420
2.2+	659,540	28,329	21,121	709,009	255	59,202	5,417	64,881	773,890
3.4-	1,017,152	29,543	23,737	1,070,431	510	90,587	5,417	96,523	1,166,954
3.4+	1,017,152	36,097	25,052	1,078,900	510	90,587	5,417	96,523	1,175,423
4.7-	1,398,584	37,911	25,120	1,461,614	510	131,870	5,417	137,806	1,599,510
4.7+	1,398,584	45,065	26,435	1,470,084	510	131,870	5,417	137,806	1,607,980
6.0-	1,787,952	48,279	28,051	1,864,282	764	165,387	5,417	171,578	2,036,870

Table 3, in effect, traces a cost curve for the Long Branch monobuoy. This curve is plotted in Figure 1, along with a similar curve for a sea island located in Nova Scotia and supplying crude oil to the East Coast U.S. market by means of tanker. These cost curves provide the basis for our comparison of alternative deepwater ports. The least cost port facility will have the lowest curve for a given level of throughput.

For the two cases illustrated, the Long Branch monobuoy is clearly optimal for all but the lowest level of throughput. The vertical distance between the curves measures the savings or benefits resulting from relying on the Long Branch rather than the Canadian facility. For example, at 6 mbb/d, the annual savings made possible by the American port would be about \$346 million or about 16¢ per barrel.

This, in brief, is how our analysis of alternative deepwater port facilities is structured. In all, 23 U.S. and three foreign port facilities are considered. (See Table 4). The investment in each of these facilities is converted to equivalent annual cost measures and then added to annual O and M costs. In this way, cost functions are generated for each port over a range of throughputs. Finally, for given levels of throughput, each of the facilities is ranked and the differences in costs between these facilities and the lowest cost alternative are computed.

We should stress at the outset that our choice of locations is illustrative only. We have selected as wide a cross-section of alternative sites as possible where suitable engineering and cost data were available. In the end, the choice of particular locations will depend on the companies, states, and local communities involved, and not a study by the Federal Government.

In the next section, we discuss the many assumptions underlying this study; in the following section, some of its basic conclusions. Finally, in the last section, we estimate the benefits (or losses) likely to result from reliance on the least cost U.S. superport rather than its least cost foreign alternative.

#### BASIC ASSUMPTIONS

We have had to make a number of assumptions. In several cases, we have been able to test the sensitivity of our analysis to these assumptions; in most

<sup>5</sup> Most capital costs are treated as step costs. There are two major exceptions, however: tug-barges and tankers.

cases, however, we have not. Throughput, we have tried to make these assumptions as realistic as possible. In this section, we also try to make them as explicit as possible.

1. *The Locations of U.S. and Foreign Superports.*—As we have indicated in Table 4, we examine seven locations on the East and Gulf Coasts and two locations abroad. Additional U.S. sites have been suggested, particularly along the Gulf Coast. Additional foreign sites have also been suggested including Mexico, Puerto Rico, and New Brunswick, Canada. For our purposes, the sites selected are more than ample. They cover the general areas likely to be chosen as locations for deepwater port facilities. However, because some potential sites have been omitted, our study cannot and should not be considered the definitive answer to where a deepwater port ought to be located. Specific site studies would be necessary before making such a determination.

2. *Choice of the Base Cases.*—We have chosen as a basis for comparison deepwater ports in the Canso Straits in Nova Scotia, and near Freeport in the Bahamas. These ports now exist or are under construction at these sites. None, however, involves crude oil transshipment to the United States. Instead, these ports are intended, for the most part, to handle imported crude refined nearby to supply certain finished products to U.S. markets. The hypothetical foreign superports assumed in this study would allow transfer of large tonnages of oil destined for the United States from supertankers to smaller vessels. These vessels would then enter existing U.S. ports.

There are alternative bases for comparison. For example, the supertanker might discharge its crude by lightering at sea. We have not chosen this alternative, among other reasons, because it is generally thought to be environmentally unsound. Some feel that the base case should be continued use of regular port facilities and tankers averaging, let us say, 40,000 DWT. The problem with this option, however, is that the economic benefits of the larger tankers have been demonstrated and, for this reason, both supertankers and foreign deepwater ports are now being built. It seems unlikely that, once they are completed, the domination of smaller tankers on longer runs would continue.

The base case chosen is not ideal. However, all things considered, it appears to be the most realistic choice possible.

3. *The Choice of Technologies for the Deepwater Ports.*—We assume one of three port technologies.

(a) *Monobuoy.*—The monobuoy is an offshore mooring connected to mainland storage facilities by a pipeline. It would not have the protection of a breakwater and the supertanker would be free to rotate around the buoy. The monobuoy is the simplest and cheapest of the three alternatives.

(b) *Sea Island.*—The sea island would be fastened by piles to the ocean floor. The sea island is, in each case studied, protected by a natural breakwater. The supertanker would be tethered on one side at both the bow and stern. The crude oil would then be transferred from the tanker to storage facilities on shore by means of one or more pipelines.

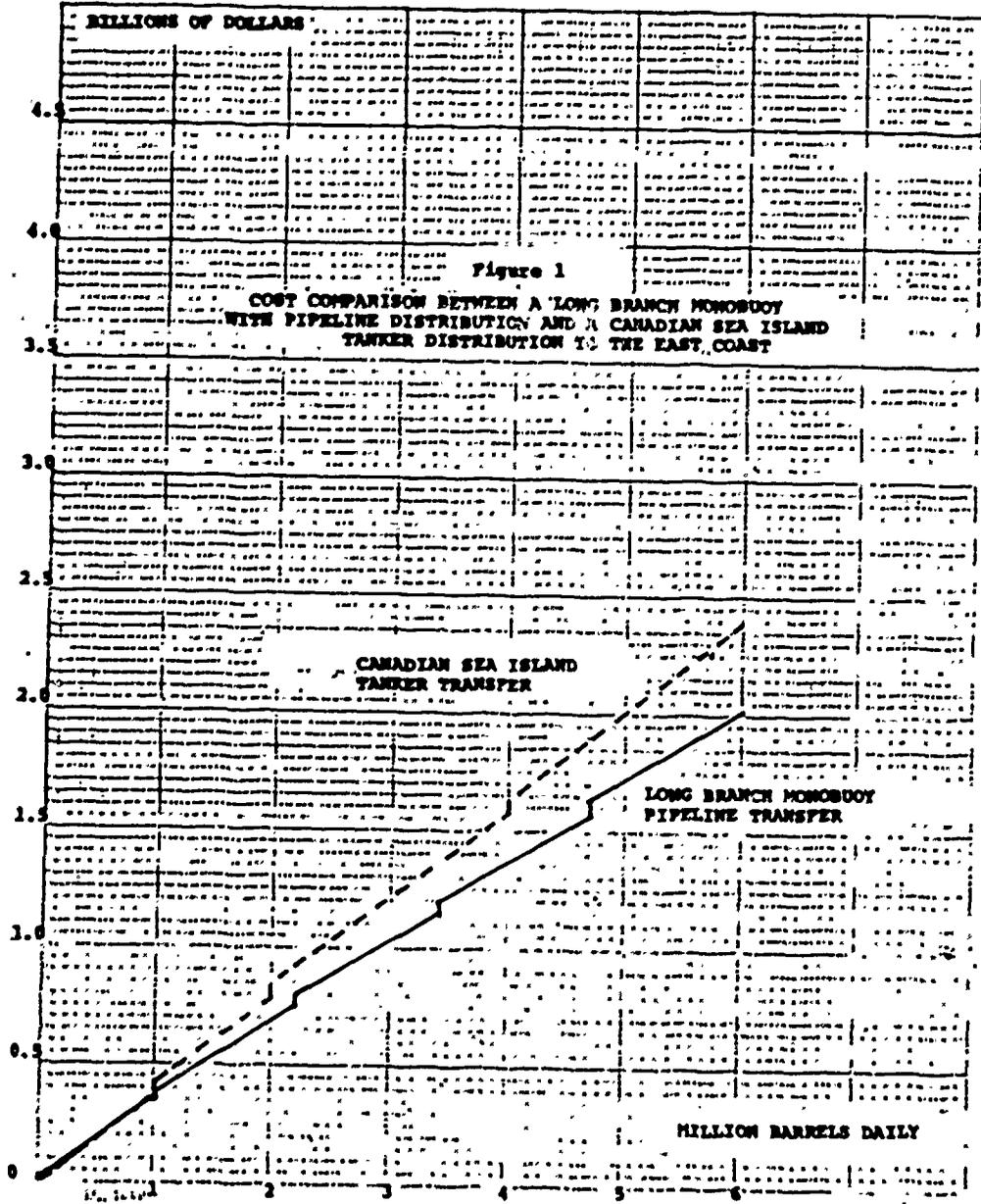
(c) *Artificial Island.*—An island would be constructed with fill and protected by a natural or man-made breakwater. The primary function of the island, over and above that of a sea island or monobuoy, would be to house storage facilities. Transfer to the mainland could occur by pipeline, tug-berth, or small tanker. The artificial island is the most elaborate and, generally, the most costly of the three alternatives.

Not all technological alternatives are assumed at each site. We have excluded those alternatives for both American and foreign ports that, in its judgment, are not feasible from an engineering point of view. The technologies assumed at each site are also listed in Table 4.

4. *Sources of Imported Crude Oil.*—We assume that all crude oil shipped through East and Gulf Coast deepwater ports will come from the Persian Gulf. This may seem an extreme assumption. However, in terms of reserves, the Persian Gulf easily outranks all other producing areas. Although some oil imports may also come from Libya, Nigeria, and Venezuela, the source of most new oil imports will be the Persian Gulf fields.<sup>6</sup>

<sup>6</sup> For example, see U.S. Department of Commerce, Maritime Administration, *Feasibility of a North Atlantic Deepwater Oil Terminal*, Soros Associates, July, 1972, pp. 9-11.

Moreover, not all imported crude oil will be shipped to the United States in VLCCs and through deepwater ports. The economics of the supertanker will depend, among other things, on the length of the haul. This fact, alone, rules out use of the supertanker to carry Venezuelan oil. Imports from Venezuela, and possibly Libya and Nigeria, will still be carried by smaller tankers through conventional port facilities. There is provision in our estimates of throughput for some imports of crude oil by other than supertankers and through other than deepwater ports.



One might also consider oil shipments via VLCC from the eastern Mediterranean. These shipments would carry both Libyan and Persian Gulf oil, the latter transported to the eastern Mediterranean by means of pipeline. Because of political instability in the Middle East, the vulnerability of the pipeline, and the policies of the present Libyan regime, it now seems highly unlikely that the United States would find it possible to rely heavily on this source of foreign oil. We have, therefore, chosen to ignore this alternative.

5. *The Level of Throughput at U.S. Deepwater Ports.*—Because the study estimates the costs of each alternative at various levels of throughput, it is important to know the range of throughput over which one must carry the analysis. For all East Coast and one Gulf Coast port, we assume 0 to 6 million barrels per day; for the remaining Gulf Coast port, 0 to 10 million barrels. These estimates are based on throughput projections discussed in the first section.

The level of throughput is increased segmentally for each deepwater port. The size of each segment was determined by the Army Corps of Engineers to be consistent with best engineering practice. In general, four or five discrete steps are required to reach an ultimate throughput of 6 million barrels per day.

TABLE 4.—*Port and transfer technologies for superport sites*

Machias.....	Sea island (platform)—Tug barge.
Raritan Bay.....	Sea island (platform)—Pipeline and tug barge. Island—Pipeline and tug barge.
Long Branch.....	Island—Tug barge and pipeline. Monobuoy— Pipeline and tug barge.
Cape May.....	Sea island (platform)—Pipeline and tug barge. Island—Tug barge and pipeline.
Cape Henlopen.....	Monobuoy—Pipeline and tug barge. Island— Pipeline and tug barge.
Bayou LaFourche.....	Island—Pipeline and tug barge. Monobuoy— Tug barge and pipeline.
Freeport.....	Monobuoy—Pipeline and tug barge.
Nova Scotia.....	Sea island (platform)—Tanker (distribution to east coast refineries).
Bahamas.....	Sea island (platform)—Tanker (distribution to east and gulf coast refineries).

6. *The Size, Type, and Number of Supertankers.*—We also assume throughout a 250,000 DWT supertanker.

Since choosing 250,000 DWT, Shell Oil has announced contracts for two 230,000 ton tankers and trade journals have begun discussing the possibility of one million ton tankers in the not too distant future. The 250,000 ton tanker may, by 1980 or 1985, be as outdated as the 20,000 ton tanker is now.

To assume a larger supertanker would require considerable reworking of the data. For our purposes, however, it is sufficient to note that the larger the tanker, the more likely that those deepwater port alternatives relatively close to the shore (i.e., sea islands and artificial islands) would be placed at a greater cost disadvantage. Much would depend on the amount of dredging and the length of berths required to accommodate the larger tankers at the various port sites. By contrast, because the monobuoys are further out at sea, their costs should be less affected by changes in tanker size.<sup>7</sup>

We have computed costs for both U.S. and foreign flag supertankers. The choice of flag is critical to the study of the economics of U.S. and foreign deepwater ports. Under all assumption, the VLCC is responsible for over 80 percent of the total costs of deepwater port operations.<sup>8</sup>

The equivalent annual cost of a foreign vessel is about 60 percent that of a domestic vessel. Clearly, anything that influences the relative costs of VLCCs will influence the relative costs of deepwater port operations.

We also assume two types of tanker construction: conventional and double

<sup>7</sup> Some observers believe it is possible to design larger tankers with minimal addition to draft. If so, use of larger tankers may not affect appreciably the relative costs of deepwater ports close to the shore. However, the reduced draft may be achieved at still another price, less efficient handling of the vessel.

<sup>8</sup> For the example of the Long Branch monobuoy, see Table 2.

bottoms. Double bottoms are considered by EPA and CEQ to be among the most important environmental safeguards necessary to assure reasonable protection against major oil spills. We treat the cost of double bottoms as additive. In this way, we are able to estimate whether a U.S. requirement that supertankers have double bottoms, which is not imposed by Canada or the Bahamas, might put U.S. deepwater ports at a significant cost disadvantage.\*

Finally, we must estimate the number of supertankers required for each level of throughput, each deepwater port, and each technology. This number varies with both level of imports and distance. It also varies with weather conditions and the existence of natural or manmade breakwaters at each site. For example, for a certain number days monobuoys in the Atlantic may be inoperable because of the weather. Supertankers would have to stand-off before being able to moor and discharge their cargoes. By contrast, protected sea islands and artificial islands along the Atlantic Coast would have a greater all-weather capability and would, for this reason, allow more efficient use of VLCCs. This cost differential should be considered in our analysis of alternative port sites and technologies.

7. *Assumptions about the Weather.*—The treatment of weather was, perhaps, the most difficult issue considered in the study. Originally, we assumed a weather differential which we then expressed in terms of less efficient use of VLCCs serving both Atlantic and Gulf Coast monobuoys. (All sea islands and artificial islands would be protected by natural or man-made breakwaters; monobuoys would not.) This assumption did not affect, appreciably, the relative costs of the East Coast alternatives; sea islands and artificial islands in New York Harbor and Delaware Bay are favored by extreme assumptions about weather differentials in the Atlantic. The monobuoy alternatives are favored by the absence of weather differentials.

Disagreement with our initial treatment of the weather differential stemmed, in part, from objections to our implicit assumption that monobuoy practices would continue with little improvement in the near future. In fact, monobuoy operations are relatively recent and have been evolving rapidly. There is a consensus in the industry that, as experience in the use of monobuoys grows, technology will improve to the point where downtime because of weather will be minimized. If so, the monobuoys would suffer little, if any, disadvantage because of adverse weather conditions. Second, the primary constraint imposed by weather is not in the discharging of oil in high seas, but in the tanker's mooring at the monobuoys. In most conditions of weather, it would be possible for pumping to occur as long as there were a break in the weather sufficient to allow mooring. Third, the problem is essentially one of queuing. Adverse weather would result in a line-up of tankers at the monobuoy. Work by EPA suggests that the size of the queue and, hence, waiting time could be reduced substantially by the simple and relatively inexpensive expedient of adding one additional monobuoy. Finally, the island, too, may be inoperable during bad weather if the tugs needed to assist tankers to their berths are unable to put to sea.

For these reasons, we also estimate the costs of the various alternatives assuming no weather differential at a given location. This assumption, in effect, sets a lower as well as an upper boundary to the impact of weather conditions on the choice of deepwater port locations and technologies. For the most part, we restrict ourselves in this paper to the second case only. We assume no weather differential at each port site.

8. *The Discount Rate.*—We use throughout a discount rate of 10 percent. This, we feel, is a realistic measure of the value of capital in the United States. It is also the standard now used by OMB.

Our choice of 10 percent has stirred some controversy. This, it is argued, is much too low and unacceptable to industry given the substantial risks involved in constructing a deepwater port. What are these risks? For one, recent changes in U.S. oil import policies may result in a reduced need for imports beyond, let us say, 1980 or 1985. Or, there may be changes in policies affecting other energy sources, such as natural gas, that increase the consumption of these sources and, because of this, decrease import demand for crude oil. In each case, the risks involve, primarily, the useful or economic

\* In estimating the higher costs of double bottoms we not only consider the higher construction costs, but also the lower carriage capacity of double bottom vessels having the same dimensions as conventional vessels.

lifetimes of the deepwater port facility. We account for these risks by varying the lifetime of the facility to determine whether, in fact, this would result in different port sites and technologies providing the least cost means of importing Middle Eastern crude oil. In effect, therefore, 10 percent represents a risk-free rate of return on investment.

9. *The Lifetime of the Facility.*—We assume, first, that each capital input would be used for its full physical lifetime. We then assume maximum economic lifetimes of 20 and 10 years in the expectation that the port would be used only for a finite number of years, after which alternative sources of fuel or energy would come into being and terminate a substantial U.S. requirement for imported oil. However, we exclude from this constraint capital inputs that are not committed to the port itself, but would have alternative uses were the port to cease operations. These inputs are assigned their full physical lifetimes throughout. The most important are supertankers.

Imposition of a 20-year lifetime on non-reusable capital inputs yields results little different from our initial assumption of full physical lifetime. However, imposition of a 10-year economic lifetime does result in some change in our conclusions. As a general rule, the shorter the lifetime, the more the monobuoy and tug barge mode of transfer are favored over the islands and pipeline transfer. In any event, the cost differentials are not that great. For our purposes, we can assume full physical lifetime. Alternative computations are available, however, for those who would prefer a different assumption.

10. *The Location of New Refinery Capacity.*—The destinations to which throughput is transferred will depend on the location of new refinery capacity. In the absence of any guidelines, we have assumed that the geographic dispersion of East and Gulf Coast refineries will, in the future, be the same as the dispersion at present. On the East Coast, this means transshipment of large amounts of crude oil to New York and the Upper Delaware Bay and a small amount of crude oil to the New York River. On the Gulf Coast, this means transshipment to the many refineries located on or near the Gulf of Mexico. The percentages of throughput assumed to be distributed to each refinery site on each coast are presented in Table 5.

Some have disagreed with this choice of locations of future demand for crude oil. Where demand will be located in the year 2000 is anyone's guess. Some dispersion of refinery capacity, particularly on the east coast, now seems likely.

11. *The Choice of Technology for the Transfer Leg.*—We also assume three means of transferring the crude oil from the deepwater port to refineries: pipeline, tug-barge, and small tanker. In no case is a pure transfer technology assumed. On the East Coast, for example, the imported crude oil may be pumped ashore by pipeline and then transhipped by tug-barge to a refinery. Pipeline transshipment would be used only if there is sufficient throughput. This is not the case for the York River refinery which, it is assumed, would under all circumstances receive its crude oil via tug-barge or tanker.<sup>20</sup>

TABLE 5.—*The assumed distribution of crude oil to various refinery sites*

	Percent
<b>East coast:</b>	
Yorktown.....	4.0
New York.....	23.0
Wilmington.....	70.0
<b>Gulf coast:</b>	
New Orleans.....	15.0
Baton Rouge.....	8.9
Lake Charles.....	6.4
Pascagoula.....	5.8
Houston.....	19.7
Beaumont.....	26.7
Corpus Christi.....	6.3
Texas City.....	9.4
Freeport.....	1.8

<sup>20</sup> In retrospect, we should have ignored distribution to the York River refinery altogether on the assumption that, were this refinery to depend on foreign crude, it could be accommodated by smaller tankers sailing directly to the York River from origins other than the Persian Gulf.

We were also faced with a choice between tug-barges and small tankers. An examination of costs suggested that, for short hauls close to the shore, tug-barges provide much the more efficient alternative. For relatively long hauls, however, the opposite is the case. The reason for this is that the higher costs of tankers are then nullified by the greater speeds obtained on the open seas. The breakeven point appears to occur at about 1000 miles round trip. Therefore, to simplify our analysis, we assume that tug-barges would be used for transfer from a U.S. deepwater port while tankers would be used for transfer from a foreign deepwater port to U.S. refineries.

We assume throughout that the tug-barge and tanker would have a 40,000 DWT capacity. We also assume both conventional and double bottom tug-barges and tankers. Finally, we assume that tug-barges carrying crude oil to U.S. refineries would be subject to the Jones Act and would, under all circumstances, sail under the U.S. flag, while tankers carrying crude oil from foreign deepwater ports would have an advantage in their ability to sail under a foreign flag.

12. *Restriction of Refinery Demand to PADs I and III.*—We also assume that all imports of crude oil through East Coast deepwater ports will serve PAD I (East Coast) refineries, while all imports through Gulf Coast deepwater ports will serve PAD III (Gulf Coast) refineries. This is an extreme assumption that, in retrospect, we wish we had varied. In practice, some of the crude oil entering the United States through PAD I will be transhipped to other PADs. This is especially true of the Gulf Coast ports which would also supply PAD II (the central states) and PAD III refineries.

Our restriction of throughput to the PAD in which the port is located probably does not have that great an impact on the relative costs of East Coast deepwater ports. However, it does bias our results for the Gulf. Under all assumptions about throughput, a monobuoy at Freeport, Texas, appears from our analysis to be a better choice than a monobuoy at Bayou LaFourche, Louisiana. The reason for this is apparent in the data on the distribution of import demand presented in Table 5. Sixty-four percent of the refining of crude oil in PAD III is concentrated in Texas in areas relatively close to the proposed Freeport facility. If, instead, substantial amounts of crude oil were to be imported through a Gulf Coast deepwater port for eventual transshipment to the central or eastern states, the optimal port site would most likely be off the Louisiana coast. In other words, the disadvantage of the Bayou LaFourche site is more apparent than real. It is the result of a simplifying assumption. Here, more than anywhere else, one can see the dangers of using the results of this study as a justification for or against a particular deepwater port site.

13. *The Mutual Exclusivity of Port Alternatives.*—For the most part, we assume that, within each PAD, each port facility would operate to the exclusion of all others. In other words, we assume that each deepwater port on the East Coast would, by itself, supply all East Coast refineries and that each deepwater port on the Gulf Coast would supply all Gulf Coast refineries in the proportions assumed in Table 5.

In the real world, one might expect more than one deepwater port on each coast with some market specialization and resulting economics of operation. This is particularly likely on the Gulf Coast where both projected imports and dispersion of refineries are considerably greater than on the East Coast. In Section 5 of this report we do, in fact, consider the possibility of two deepwater ports operating simultaneously on the Gulf Coast. To do this we have had to make several adjustments, notably in the transfer module, to take into account the economics likely to result from greater market specialization within the Gulf Coast region.

14. *Environmental Controls.*—EPA has drawn up a list of minimum standards necessary to prevent, contain, and clean up spills resulting from operations at each type of facility. They have also estimated the costs of implementing these requirements from port to port depending on the type of facility and transfer leg used.

For the tanker leg, only one basic safeguard is established, the requirement that tankers using U.S. deepwater ports have double bottoms. For the port module, provision is made for curtains, screens, and other devices for preventing and containing a spill and booms, skimmers, and launches for cleaning up a spill once it occurs. These devices are essentially the same for the

sea island and artificial island. Devices for prevention and containment of minor spills are not likely to be effective at a monobuoy and are, therefore, omitted. Environmental safeguards also vary with the type of transfer leg assumed. Double bottoms are required for tug-barges and small tankers. Also, for both vessels, provision is made for prevention, containment, and clean up of spills at the refinery end of the transfer leg. Provision is also made for storing the dirty ballast generated by tug-barges and tankers either on the island or at on-shore storage facilities. The pipelines at sea are assumed to be buried to EPA specifications and to be equipped with bleeder and block valving systems.

In all instances, we have tried to estimate the incremental cost of environmental safeguards. This has not been easy and, in at least one instance, storage tanks for receiving dirty ballast, it would appear that the Army Corps data on port module costs and the EPA data on environmental costs overlap to some extent.

One major environmental cost is excluded because it is unpredictable. This is the cost of damage to adjacent property because of spillage. The amount of these costs will depend, among other things, on probability of occurrence, currents, weather conditions, and value of the property, and is impossible, at least within the time frame of our study, to predict with any accuracy for each of the alternatives.

#### SOME GENERAL CONCLUSIONS OF THE STORY

In this section we outline the more important conclusions of this study.

1. Under most circumstances, the construction of a U.S. deepwater port would result in significant savings to the United States. The dollar amounts of these savings are estimated in the next section. It is sufficient to note here that the amount of these savings per barrel tends to increase with throughput. However, the cost advantage of a U.S. deepwater port disappears at very low levels of throughput and when vessels serving a U.S. port are required to have double bottoms while vessels serving a foreign port are not. Even under the worst case, however, the differential between the least cost U.S. and foreign port is small.

2. There is a major exception to this first conclusion, however, when U.S. flag is required for tankers docking at U.S. ports while foreign flag is permitted for tankers docking at foreign ports. The flag of the vessels could be the decisive factor in a private decision to opt for a foreign deepwater port. For example, comparing the Long Branch monobuoy with a Canadian sea island and assuming a 6 mmb/d throughput, use of U.S. VLCCs would convert a 15 percent cost advantage for the U.S. port<sup>14</sup> into an 18 percent cost disadvantage.<sup>15</sup>

TABLE 6.—SAVINGS RESULTING FROM AN EAST COAST U.S. DEEPWATER PORT

[Costs per barrel]			[Costs per barrel]		
Throughput (million barrels per day)	Worst case <sup>1</sup>	Best case <sup>2</sup>	Throughput (million barrels per day)	Worst case <sup>1</sup>	Best case <sup>2</sup>
0.000	-4.0	1.3	2.000	5.3	12.7
0.500	-1.0	5.7	2.500	6.6	14.0
1.000	-0.2	7.2	3.200	7.4	14.8
1.125	0.4	7.8	3.100	8.1	15.5
1.200	1.0	8.4	6.000	8.1	16.5
1.572	2.2	10.5			

<sup>1</sup> Tankers serving U.S. deepwater ports are required to have double bottoms while tankers serving foreign ports are not.  
<sup>2</sup> (For the most part, tankers serving both United States and foreign ports are required to have double bottoms.)

Sources: Tables 1.1, 2.1, 3.1, 4.1, and 5.1 in the Statistical Appendix. Cost projections above 6 million barrels per day have been based on linear extrapolation of cost functions estimated by simple regression analysis.

<sup>14</sup> See Figure 1.

<sup>15</sup> This assumes that crude oil must also be transhipped from Canadian to U.S. ports by U.S. flag tanker. Legislation requiring use of U.S. tankers for 50 percent of oil imports was narrowly defeated by the last Congress. The same legislation has been introduced again in this Congress. Our results suggest that the effect of such legislation may well be to drive oil importers away from both U.S. tankers and U.S. deepwater ports.

TABLE 7.—SAVINGS RESULTING FROM A GULF COAST U.S. DEEPWATER PORT

[Cents per barrel]									
Throughput (million barrels per day)	Worst case <sup>1</sup>		Best case <sup>2</sup>		Throughput (million barrels per day)	Worst case <sup>1</sup>		Best case <sup>2</sup>	
	0.000	-14.2	-4.7	4.175		4.6	12.0	0.000	-14.2
1.000	-4	2.7	6.752	7.7	14.9	1.000	-2.6	3.8	17.1
1.500	-2.6	3.8	10.000	10.0	17.1	2.000	.1	8.4	17.2
2.000	.1	8.4	10.000	10.1	17.2	2.500	4.0	11.5	18.2
2.500	4.0	11.5	14.700	11.1	18.2				

<sup>1</sup> Same as in table 6.

<sup>2</sup> Same as in table 6.

<sup>3</sup> Top-barge distribution of crude oil assumed.

Source: Tables 1.2, 2.2, 3.2, and 5.2 in the Statistical Appendix. Cost projections above 10 million barrels per day are based on linear extrapolation of cost functions estimated by simple regression analysis.

3. The reason for this is that, by far, the most important component of total costs is the tanker module. As a result, any factor affecting supertanker costs tends to drive the results of the study. The least cost alternative is of ten that which permits the most efficient use of VLCCs.

4. The environmental safeguards specified by EPA do not, as a rule, add appreciably to the total costs of oil imports or affect the economics of deep-water port alternatives. A partial exception occurs when supertankers are equipped with double bottoms. Double bottoms account for over 90 percent appreciably to the total costs of oil imports or affect the economics of deep-water ports, reduce considerably the savings to the United States likely to result from a U.S. deepwater port.<sup>23</sup>

5. With one major exception, pipeline distribution provides the least cost means of transferring crude oil from deepwater ports to refineries. Moreover the greater the throughput, the greater the economic benefits from pipeline distribution. The exception is the Gulf Coast port handling less than two million barrels per day. In this case, top-barge distribution would permit slightly lower total costs. This exception results from the greater dispersion of crude oil demand on the Gulf Coast. In general, the more concentrated this demand, as on the East Coast, the more efficient is pipeline distribution.

6. For the most part, the least cost East Coast alternative is a Long Branch monobuoy with pipeline distribution to refineries. East Coast alternatives that also show well in our analysis are the Cape May sea island and island, the Raritan Bay sea island and island, and the Cape Henlopen monobuoy, all with pipeline distribution to refineries. In each case, however, the differences in costs are not particularly large. The second best East Coast alternative, the Cape May sea island, typically adds about a penny to the cost of a barrel of crude oil for most levels of throughput, whereas the maximum differential for these sites is no more than 4 cents per barrel. Our analysis suggests, in other words, that factors other than costs are likely to be the dominant considerations in the choice between the six East Coast locations.

7. The Long Branch monobuoy ceases to be the least cost alternative when extreme assumptions are made about the effect of weather conditions on the operations of an East Coast deepwater port. In this case, the Cape May sea island, which is naturally protected, tends to be the least cost alternative. However, the cost advantage of the Cape May sea island, relative to the Long Branch monobuoy, is only 2 to 3 cents per barrel for all levels of throughput. Even under the worst possible conditions for the Long Branch monobuoy, the monobuoy still proves to be, in the terms of costs at least, a reasonably attractive alternative.

8. By contrast, the monobuoys are clearly preferable in the Gulf of Mexico for all levels of throughput and under all assumptions about weather and

<sup>23</sup> Estimates of this reduction in savings are presented in the next section and the statistical appendix at the end of this paper.

tanker utilization. Moreover, the savings resulting from construction of a monobuoy rather than an island are considerably greater, varying between 5.5 and 10 cents per barrel. Of the two monoboys in the Gulf, our analysis suggests that the Freeport site is to be preferred. However, for reasons given in Section 8, this apparent advantage is more the result of assumptions about the distribution of imported crude oil than any inherent defects of the Bayou LaFourche site. Under real world assumptions both would be advantageous as monobuoy sites. Indeed, there are now serious proposals by industry to build monobuoy systems at both locations.

9. The reason why the sea islands and islands are relatively more competitive in the Atlantic than in the Gulf is that the Delaware and Raritan Bays are well-suited for island construction while the Gulf is not. Both East Coast sites are protected. Neither requires a breakwater, one of the more expensive elements of sea island and island construction. There has been industry interest in a sea island in Delaware Bay. One reason for this may be the impact of the weather on alternative port sites and technologies. However, the industry may also anticipate the federal government's assumption of one of the major costs of sea island construction, dredging. Dredging would not be necessary for the monobuoy alternatives.

10. In summary, the study favors the monobuoy facilities in both the Gulf and the Atlantic, although in the Atlantic several alternatives to monoboys would provide nearly the same level of benefits. In both regions, however, the construction of U.S. deepwater ports would, under most conceivable circumstances, result in considerable savings than if imported crude oil were to enter the United States through foreign deepwater ports.

#### SAVINGS RESULTING FROM A U.S. DEEPWATER PORT

In this last section, we estimate the savings likely to result from U.S. construction of one or more deepwater ports. To do so, we compare the costs of the three foreign ports with the costs of the least cost U.S. alternatives.

For the East Coast, the comparison is reasonably straightforward. The highest anticipated level of throughput, 6.6 mmbbl/day, and the concentration of demand on the East Coast would justify no more than one or two port facilities. We have, for this reason, assumed one facility—a Long Branch monobuoy system with pipeline distribution to refineries—for all levels of throughput. We also estimate the savings for the second best U.S. alternative—a sea island inside Delaware Bay near Cape May with pipeline distribution to refineries.

The Gulf Coast is more complex. Here, the maximum level of throughput and dispersion of demand would, most likely, justify several facilities located along the Coast. We have, for this reason, assumed a pair of monobuoy systems, each serving a part of the Gulf Coast market, as well as single monobuoy systems at Freeport and Bayou LaFourche serving the entire Gulf Coast market. To measure the costs of the Freeport and Bayou LaFourche systems combined, we must make some rough adjustments in the transfer module; regional specialization within the Gulf Coast market would permit economies in distributing imported crude oil from the deepwater port to refineries. There is a trade-off, however, between these economies and the additional costs resulting from the duplication of port facilities. For the Gulf Coast we also assume different transfer technologies depending on the level of throughput. For cases involving relatively high levels of crude oil imports, we assume pipeline distribution to markets. For relatively low levels of throughput, we assume tug-barge distribution.

The total cost of each facility, as well as the cost differential of each facility relative to the least cost U.S. facility, are presented in Tables 1.1 through 5.2 in the Statistical Appendix. Each table represents a case considered by the Department of Interior in making its throughput projections. Table 1.1 presents the cost data for East Coast throughput under Case I; Table 1.2, for Gulf Coast throughput under Case I. Similarly, Table 2.1 presents East Coast throughput under Case II; Table 2.2, Gulf Coast throughput under Case II. In one instance, Case IV, the level of throughput for the Gulf Coast is too

small and of too short a duration to justify building a deepwater port. We have, for this reason, omitted Table 4.2.<sup>14</sup>

Several conclusions can be drawn from these data.

1. In most cases, the U.S. deepwater ports result in significant cost savings. The exceptions occur only at very low levels of throughput and, at the same time, where VLCCs serving U.S. ports are required to have double bottoms, while tankers serving foreign ports are not.

2. The cost savings for various levels of throughput are converted to cents per barrel and summarized in Tables 6 and 7. It is clear from the data presented in these tables that these savings increase significantly with throughput. There are, in other words, substantial economies of scale from using a U.S. deepwater port.

3. In general, the Long Branch monobuoy with pipeline distribution to refineries would, in all cases and at all levels of throughput, provide the least cost alternative on the East Coast. Assuming full environmental safeguards at both U.S. and foreign ports, the cost savings resulting from the Long Branch monobuoy would range between 3.3¢ per barrel for 0.6 mbb/day and 16.5¢ per barrel for 6.6 mbb/day. Only at throughput levels considerably below 0.6 mbb/day would the Long Branch monobuoy be at a cost disadvantage relative to a foreign port.

4. By contrast, the Gulf Coast offers an array of "best" alternatives. For low levels of throughput (less than one mbb/day), it would not pay to build a U.S. deepwater port. For higher levels of throughput (between one and two mbb/day), it would pay to build one Gulf Coast monobuoy system with tug-barge distribution to refineries.

At still higher levels of throughput (between 2 and 5 mbb/day) it would pay to build one monobuoy system with pipeline distribution. Finally, at the highest levels of throughput (above 6 mbb/day), a combination of monobuoy systems with pipeline distribution to mainland refineries would provide the least cost option. For the levels of throughput considered, savings under the best of assumptions would range between 2.7¢ per barrel for 1.4 mbb/day and 18.2¢ per barrel for 14.7 mbb/day. The only instance in which a Gulf Coast deepwater port facility might not be built on the basis of costs, aside from Case IV, is Case V. Here the savings are small throughout and, for much of the monobuoy's lifetime, may even be negative.

5. A major determinant of what type of deepwater port should be built, and even whether a U.S. deepwater port should be built at all, will be the level of throughput for much of the facility's anticipated lifetime. This finding underlines the importance of accurate demand projections from the start. Because the principal variants in these projections are assumptions about changes in U.S. government policies concerning the pricing of natural gas and the exploitation of the outer continental shelf, this also indicates the importance of firm decisions on these issues being made by the government as soon as possible.

6. In any event, the penalties from building a deepwater port under false assumptions about throughput are generally not that great, even in the Gulf Coast region, while the rewards could be substantial. In short, our analysis suggests that, on the basis of costs, an argument can be made for building deepwater port facilities on both the East and Gulf Coasts.

<sup>14</sup> With one exception, we assume the same technologies throughout. The exception is Case V for the Gulf Coast (Table 3.2). Here, because the level of throughput is rather small for the entire lifetime of the monobuoy system, we assume tug-barge distribution of product and exclude the Freeport and Bayou LaFourche facilities combined.

## STATISTICAL APPENDIX

TABLE 1.1.—CASE I: EQUIVALENT ANNUAL COSTS (IF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
<b>1.125 million barrels crude per day:</b>						
Long Branch, monobuoy, pipeline.....	382.2	—	419.2	—	419.2	—
Cape May, sea island, pipeline.....	399.9	8.7	432.2	13.0	432.2	13.0
Canada, sea island, tanker.....	410.8	28.6	439.9	1.7	451.4	32.2
Bahamas, sea island, tanker.....	417.1	34.9	424.4	5.2	454.9	35.7
<b>1.572 million barrels crude per day:</b>						
Long Branch, monobuoy, pipeline.....	514.9	—	563.5	—	563.5	—
Cape May, sea island, pipeline.....	521.8	6.9	575.7	12.2	575.7	12.2
Canada, sea island, tanker.....	568.8	53.9	581.6	12.1	624.7	66.5
Bahamas, sea island, tanker.....	578.2	63.3	588.5	24.9	630.9	67.3
<b>2.500 million barrels crude per day:</b>						
Long Branch, monobuoy, pipeline.....	798.4	—	872.2	—	872.2	—
Cape May, sea island, pipeline.....	813.0	13.6	893.2	21.0	893.2	21.0
Canada, sea island, tanker.....	913.7	114.4	932.5	68.3	1,008.0	127.9
Bahamas, sea island, tanker.....	928.9	127.5	944.2	72.1	1,011.8	138.7

TABLE 1.2.—CASE I: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE GULF COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
<b>1.805 million barrels crude per day:</b>						
Freeport, monobuoy, pipeline.....	671.5	—	727.3	—	727.3	—
Bayou Lafourche, monobuoy, pipeline.....	713.0	41.5	765.0	37.8	765.0	37.8
Freeport-Bayou Lafourche combined.....	762.8	31.3	765.6	26.3	765.6	26.3
Bahamas, sea island, tanker.....	698.9	15.4	703.5	-23.8	752.2	24.9
<b>3.248 million barrels crude per day:</b>						
Freeport, monobuoy, pipeline.....	1,137.4	—	1,237.2	—	1,237.2	—
Bayou Lafourche, monobuoy, pipeline.....	1,175.0	38.5	1,270.0	32.8	1,270.0	32.8
Freeport-Bayou Lafourche combined.....	1,176.1	38.7	1,263.0	46.7	1,263.0	46.7
Bahamas, sea island, tanker.....	1,251.0	113.6	1,268.3	48.0	1,373.1	138.8
<b>10.900 million barrels crude per day:</b>						
Freeport, monobuoy, pipeline.....	3,713.4	74.3	4,025.0	42.0	4,025.0	42.0
Bayou Lafourche, monobuoy, pipeline.....	3,718.0	71.7	4,022.7	43.3	4,022.7	43.3
Freeport-Bayou Lafourche combined.....	3,688.1	—	3,984.0	—	3,984.0	—
Bahamas, sea island, tanker.....	4,238.6	628.5	4,388.1	462.1	4,678.0	688.0

TABLE 2.1.—CASE II: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
<b>3.505 million barrels crude per day:</b>						
Long Beach, monobuoy, pipeline.....	1,108.8	—	1,269.7	—	1,269.7	—
Cape May, sea island, pipeline.....	1,114.4	4.6	1,222.4	12.7	1,222.4	12.7
Canada, sea island, tanker.....	1,275.0	162.1	1,298.8	68.1	1,363.6	163.9
Bahamas, sea island, tanker.....	1,288.6	183.8	1,318.2	168.6	1,412.9	263.3
<b>5.105 million barrels crude per day:</b>						
Long Beach, monobuoy, pipeline.....	1,582.0	—	1,741.3	—	1,741.3	—
Cape May, sea island, pipeline.....	1,616.0	22.1	1,770.2	24.9	1,770.2	24.9
Canada, sea island, tanker.....	1,864.4	263.8	1,882.6	151.3	2,038.6	268.2
Bahamas, sea island, tanker.....	1,891.2	298.3	1,927.9	188.6	2,061.5	328.2
<b>6.600 million barrels crude per day:</b>						
Long Beach, monobuoy, pipeline.....	2,947.1	—	2,238.8	—	2,238.8	—
Cape May, sea island, pipeline.....	2,978.1	30.9	2,276.0	24.2	2,276.0	24.2
Canada, sea island, tanker.....	2,411.5	364.4	2,488.6	218.8	2,638.0	268.2
Bahamas, sea island, tanker.....	2,457.6	418.4	2,508.3	266.5	2,678.1	438.3

TABLE 2.2.—CASE II: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE GULF COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differ-ential	Total cost per year	Differ-ential	Total cost per year	Differ-ential
<b>1,266 million barrels crude per day:</b>						
Freeport, monobay, pipeline.....	671.5	-----	727.3	-----	727.9	-----
Bayou LaPouche, monobay, pipeline.....	713.0	41.5	765.0	37.8	765.0	37.8
Freeport-Bayou LaPouche combined.....	762.8	31.3	765.6	38.3	765.6	38.3
Sabana, sea island, tanker.....	688.9	15.4	703.5	-23.8	732.2	24.9
<b>3,248 million barrels crude per day:</b>						
Freeport, monobay, pipeline.....	1,137.4	-----	1,237.2	-----	1,237.2	-----
Bayou LaPouche, monobay, pipeline.....	1,175.9	38.5	1,276.0	32.8	1,276.0	32.5
Freeport-Bayou LaPouche combined.....	1,178.1	38.7	1,283.0	46.7	1,283.0	46.7
Sabana, sea island, tanker.....	1,251.0	113.6	1,286.3	48.0	1,373.1	138.8
<b>10,680 million barrels crude per day:</b>						
Freeport, monobay, pipeline.....	3,612.9	78.5	3,917.1	38.1	3,917.1	38.1
Bayou LaPouche, monobay, pipeline.....	3,611.6	68.2	3,915.9	37.0	3,915.9	37.0
Freeport-Bayou LaPouche combined.....	3,542.4	-----	3,678.0	-----	3,678.0	-----
Sabana, sea island, tanker.....	4,141.8	388.4	4,264.6	388.6	4,546.8	682.8

TABLE 3.1.—CASE III: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differ-ential	Total cost per year	Differ-ential	Total cost per year	Differ-ential
<b>1,135 million barrels crude per day:</b>						
Long Beach, monobay, pipeline.....	382.2	-----	419.2	-----	419.2	-----
Cape May, sea island, pipeline.....	388.9	6.7	432.2	13.0	432.2	13.0
Canada, sea island, tanker.....	434.8	28.6	438.9	1.7	484.4	28.2
Sabana, sea island, tanker.....	417.1	34.9	434.4	5.2	484.9	38.7
<b>1,572 million barrels crude per day:</b>						
Long Beach, monobay, pipeline.....	514.9	-----	581.5	-----	581.5	-----
Cape May, sea island, pipeline.....	521.8	6.9	571.7	12.2	571.7	12.2
Canada, sea island, tanker.....	588.8	33.9	584.6	18.1	634.7	68.5
Sabana, sea island, tanker.....	575.2	61.3	588.5	34.9	688.9	67.3
<b>2,880 million barrels crude per day:</b>						
Long Beach, monobay, pipeline.....	788.4	-----	872.2	-----	872.2	-----
Cape May, sea island, pipeline.....	811.0	13.6	889.2	21.0	889.2	21.0
Canada, sea island, tanker.....	913.7	114.4	922.5	68.3	1,008.0	127.0
Sabana, sea island, tanker.....	888.9	127.5	944.2	72.1	1,011.8	138.7

TABLE 3.2.—CASE III: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE GULF COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differ-ential	Total cost per year	Differ-ential	Total cost per year	Differ-ential
<b>4,175 million barrels crude per day:</b>						
Freeport, monobay, pipeline.....	1,457.0	-----	1,888.2	-----	1,888.2	-----
Bayou LaPouche, monobay, pipeline.....	1,481.3	13.7	1,684.7	11.5	1,684.7	11.5
Freeport-Bayou LaPouche combined.....	1,479.2	11.6	1,684.6	11.4	1,684.6	11.4
Sabana, sea island, tanker.....	1,617.2	148.6	1,688.2	78.0	1,778.3	182.2
<b>6,782 million barrels crude per day:</b>						
Freeport, monobay, pipeline.....	2,333.0	25.7	2,331.0	4.0	2,331.0	4.0
Bayou LaPouche, monobay, pipeline.....	2,334.9	48.8	2,548.5	21.5	2,548.5	21.5
Freeport-Bayou LaPouche combined.....	2,338.1	-----	2,327.0	-----	2,327.0	-----
Sabana, sea island, tanker.....	2,641.9	333.8	2,714.5	158.5	2,888.6	348.6
<b>14,760 million barrels crude per day:</b>						
Freeport, monobay, pipeline.....	4,488.5	121.1	4,488.5	77.8	4,488.5	77.8
Bayou LaPouche, monobay, pipeline.....	4,488.6	183.2	4,388.6	88.9	4,388.6	88.9
Freeport-Bayou LaPouche combined.....	4,483.4	-----	4,327.7	-----	4,327.7	-----
Sabana, sea island, tanker.....	5,782.9	588.5	5,828.1	387.4	6,388.7	678.6

TABLE 4.1.—CASE IV: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
<b>2,000 million barrels crude per day:</b>						
Long Branch, monobuoy, pipeline.....	640.8	-----	700.4	-----	700.4	-----
Cape May, sea island, pipeline.....	645.9	5.1	711.8	11.4	711.8	11.4
Canada, sea island, tanker.....	723.5	82.8	730.0	30.6	793.1	92.7
Bahamas, sea island, tanker.....	736.1	95.3	740.2	48.8	863.2	102.8
<b>1,200 million barrels per day:</b>						
Long Branch, monobuoy, pipeline.....	401.6	-----	440.3	-----	440.3	-----
Cape May, sea island, pipeline.....	410.1	8.5	453.2	12.9	453.2	12.9
Canada, sea island, tanker.....	434.3	24.2	444.8	4.5	477.1	36.7
Bahamas, sea island, tanker.....	441.1	39.5	448.8	8.5	481.1	40.7
<b>3,200 million barrels crude per day:</b>						
Long Branch, monobuoy, pipeline.....	1,010.2	-----	1,101.4	-----	1,101.4	-----
Cape May, sea island, pipeline.....	1,022.9	12.7	1,122.5	21.0	1,122.5	21.0
Canada, sea island, tanker.....	1,166.3	156.1	1,187.6	96.2	1,274.1	172.7
Bahamas, sea island, tanker.....	1,182.3	172.1	1,204.7	103.2	1,291.2	188.8

TABLE 5.1.—CASE V: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[In millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
<b>1,000 million barrels crude per day:</b>						
Long Branch, monobuoy, pipeline.....	336.3	-----	368.0	-----	368.0	-----
Cape May, sea island, pipeline.....	343.9	8.5	369.3	11.5	369.3	11.5
Canada, sea island, tanker.....	356.9	23.5	368.1	-0.7	394.0	25.1
Bahamas, sea island, tanker.....	364.3	28.0	370.7	1.0	397.5	28.7
<b>6,000 million barrels crude per day:</b>						
Long Branch, monobuoy, pipeline.....	212.7	-----	234.0	-----	234.0	-----
Cape May, sea island, pipeline.....	220.8	8.1	244.5	10.5	244.5	10.5
Canada, sea island, tanker.....	219.7	7.0	225.2	-0.8	241.3	7.3
Bahamas, sea island, tanker.....	222.3	9.6	226.2	-7.8	242.3	8.3
<b>0,800 million barrels crude per day:</b>						
Long Branch, monobuoy, pipeline.....	274.0	-----	301.4	-----	301.4	-----
Cape May, sea island, pipeline.....	282.3	8.3	312.4	11.0	312.4	11.0
Canada, sea island, tanker.....	280.3	15.3	296.7	-4.7	318.1	16.7
Bahamas, sea island, tanker.....	283.3	19.3	298.5	-2.9	319.0	18.5

TABLE 5.2.—CASE V: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE GULF COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
<b>1,000 million barrels crude per day:</b>						
Bayou LaFourche, monobuoy, tug barge.....	512.5	-----	563.2	-----	563.2	-----
Fresport, monobuoy, tug barge.....	513.6	1.4	563.7	0.5	563.7	0.5
Bahamas, sea island, tanker.....	528.5	16.0	541.9	-22.2	576.0	13.7
<b>6,000 million barrels crude per day:</b>						
Bayou LaFourche, monobuoy, tug barge.....	236.4	-----	261.3	-----	261.3	-----
Fresport, monobuoy, tug barge.....	227.5	-7.9	251.6	-0.3	251.6	-0.7
Bahamas, sea island, tanker.....	225.0	-18.4	230.1	-31.2	246.1	-15.2
<b>2,000 million barrels crude per day:</b>						
Bayou LaFourche, monobuoy, tug barge.....	860.0	-----	940.5	-----	940.5	-----
Fresport, monobuoy, tug barge.....	857.4	8.5	906.4	15.0	906.4	15.0
Bahamas, sea island, tanker.....	825.5	64.6	840.5	8.0	1,014.4	72.0

Senator JOHNSTON. I would like to read at this time by way of introduction of the next two witnesses, a statement by Senator Lloyd Bentsen, which follows:

Mr. Chairman, I regret that due to a previous scheduling arrangement, I am unable to be present today to personally welcome the two, very distinguished gentlemen who will appear before this Committee this afternoon.

The Honorable Robert Armstrong, Land Commissioner of Texas and Dr. Daniel M. Bragg of Texas A & M University have travelled the distance from Texas to Washington to testify on this matter which is of great concern to our state as well as to the Nation as a whole.

I know that the Committee will extend them every courtesy and give weighty consideration to their expert testimony.

Thank you Mr. Chairman.

With that introduction by Senator Bentsen, we will now hear from Robert Armstrong.

#### STATEMENT OF ROBERT ARMSTRONG, LAND COMMISSIONER, STATE OF TEXAS

Mr. ARMSTRONG. Mr. Chairman, and members of the committee, I am Bob Armstrong from Austin, Tex. In 1970, I was elected Commissioner of the General Land Office of Texas, an office which is generally analogous to that of Secretary of the Interior. I have held the office for two and a half years. I am charged with the responsibility of protecting, managing, and developing the minerals and surface of some 22.5 million acres of public lands in Texas.

Governor Briscoe has designated me to serve as liaison between Texas and NOAA in implementing the Coastal Zone Management Act of 1972.

Finally, I serve as a member of the Governor's Energy Crisis Committee. It is in the context of these three areas of responsibility that I appear here today.

Because of the State's ownership of the tidelands area out some 10 miles from shore, and because we own all submerged lands subject to ebb and flow of the tide inside the barrier islands, any decision relative to deep water port or monobuoy location will be governed to a degree by our office.

In this connection, we work closely with General Cross and the Offshore Terminal Commission and I am in general agreement with his statement to you that States should retain the right to select port sites within their boundaries.

But, I think the question you have before you is broader in scope and, with no pun intended, deeper. It is this: What role should the Federal Government play in port planning in a broad national context?

I understand that the United States is the only maritime nation in the world with no coordinated port planning. I would suggest that this leads to duplication of effort with attendant waste problems. Just as S. 968 requires that land use planning must recognize that some problems are of greater than local concern, and must hence be handled at the State level, the port problems is of greater than State concern and to a degree must be coordinated on a broader level.

We must take into consideration energy requirements for transportation of refined products to ultimate users. Can we afford to transport crude past the east coast to a refinery in the center of the Nation, only to ship the refined product back to the east coast when transportation alone drains some 15 percent of the energy supply ultimately delivered.

What are the additional environmental pressures we place on the coastal zone when we fail to coordinate port siting and ports proliferate?

What is the energy cost, as well as the dollar cost, of dredging and maintenance dredging of two ports or three, when one might do—or wouldn't a monobuoy system work more acceptably?

These, then, are the questions that I believe should properly be coordinated on a national level.

While I am for proper delegation of authority and responsibility to the States wherever possible, I still believe these are areas of such magnitude—the nature of which is so broad—as to be the proper subject of Federal responsibility and I urge you to meet this responsibility. We are past the point where we can afford to have a few aggressive port authorities and chambers of commerce controlling the location and number of ports this Nation has, and builds, on an uncoordinated and unplanned basis. Our constituents deserve better from us.

Finally, permit me to make one more observation. The coastal zone is subjected to the most extreme pressures, both in terms of people and industrial expansion of any area in our country. The zone is also the most fragile as well as the most productive of our lands.

You have just passed the Coastal Zone Management Act. Let's implement it. Texas is ready, as evidenced by the actions of the recent legislature which passed two broad and workable management acts. I hear that there is some possibility that the act will be held up until the Jackson bill passes, then tied in some way to the general land use concept. I suggest that the coastal problems are too pressing to wait.

Also, while there is some reluctance to accept upland land use planning—and an education process is going to have to take place—Texas does understand the beaches and the coast.

I, therefore, urge you to separate the two as a matter of practicality—not of arguing as to which is more or less important, or how they relate to each other—and let's move where we need to and where we can—now. Texas is ready when you are.

Senator JOHNSTON. Thank you very much, Mr. Armstrong, for a very excellent statement. Do I gather from your statement that you would not give to the State the right to veto location of a superport?

Mr. ARMSTRONG. Mr. Chairman, I am convinced that when you have got the problem on as broad a basis as it is right now, that you are going to have to look at your refinery facilities, certainly, but as I understand the earlier testimony today, and I agree with you, if you are looking at an 8-year projection, and hopefully there is light at the end of the tunnel at that point, then what are you going to do in the 8 years? I think we are going to have to build some additional refiners.

But I think somebody has to look at it in the context of if we are going to have ultimate consumers on the east coast, are we really not paying too high a price to continue to move this crude into the center part of the United States, and then send it up there, or shouldn't we consider some method which is the most practical? We may have to make the Port of Wilmington, or ask them to make concessions.

Senator BIDEN. They have been asking.

Mr. ARMSTRONG. I have heard you wrestle with it all day. But I think you are getting to an ultimate answer, if you really look at the total requirements and the total need to start talking about ways, and refining capacity, and then see if you can't work out some accommodations in our land use program.

I think the pipeline onshore is one of the problems we know we are going to have to deal with, but we can sell people on it if we move it off of what I call the estuarine areas, and on to the clay base soils, and you might use methods that are available to you.

Take the Louisville area port siting process, which is probably the best example of a problem which was resolved after examining all the available alternatives, and putting that airport where it belonged in the community with the least environmental damage. I think you can do the same thing with refineries. Some of it is going to have to do with proximity to present refineries, or if you are operating, as Secretary Moore told us in Hot Springs, earlier last week, if you are operating with a 97 percent capacity as opposed to the 100 percent demand, you are going to have to have additional refining capacity.

Senator JOHNSON. Given that fact, and given the fact that Mr. Train testified this morning, and you heard the testimony relative to the onshore impact that a superport would make in terms of refineries in the petrochemical complex, additional area demands, the air pollution that is required, do you think the adjoining State should be given, first, some share of revenues to create a fund for environmental protection for building roads, schools, et cetera, and should they be given, or not, an additional break on the use of natural gas to recompense the fact that there is going to be so much pollution caused by the additional refineries, the additional petrochemical complex?

Mr. ARMSTRONG. I don't operate on the theory that we have to have that additional pollution, necessarily. I still think that you approach this from a cost point of view, and you charge—you make that company do what it takes to limit that pollution as much as you can.

I think that is one thing you have to look at. This goes, of course, to EPA.

Senator JOHNSON. Let me interrupt there to say that I think refineries do that. I think they have done a great deal, the Esso refinery has done a great deal to clean up pollution. Nevertheless, they do add significantly to the pollutants.

Mr. ARMSTRONG. Your problems increase. If I had to make a judgment as between accepting the responsibility and being paid for it, and also maybe accepting responsibility by making that in-

dustry comply, perhaps at some cost, and maybe you might think there should be additional incentives to the industry to put in whatever filters, whatever technological devices are available, so that he can't produce without polluting, I think that this might be one way that you would reward a state that would accept the responsibility for the refinery.

I know your problem with natural gas, and we are getting it, too, into the area. But in my judgment, either of those two things might be acceptable. I think there is a broader problem, and that is, where do they go to begin with. That is really what I am speaking to.

I heard about the hearings, and people were saying:

Well, the state doesn't care, a few of them are doing it, there are a few that are after it, and all who want them can put them all up and down the coast, like put a service station on every corner.

But I would really urge against that, it is not sensible. You pay too many prices for it, and I think that perhaps the Federal Government ought to bite the bullet. I am a person from a State that normally stands up for States' rights, who stand up for people who believe there are Federal responsibilities.

Senator BIDEN. You are really refreshing. It is really interesting to hear an official from the State of Texas to argue the opposite position from States' rights.

At any rate, I don't want you to think that the chairman or I are parochial. We have much broader interests.

Mr. ARMSTRONG. I don't for a minute, and hope you will reciprocate.

Senator BIDEN. The fact that those questions come up 20 times with each witness doesn't mean we are not broad minded.

Speaking for myself, you do admit that unlike our last witness, that there is an absolute need for additional refineries, is that the basis of your position? That is the premise from which you are starting? You need additional refineries?

Mr. ARMSTRONG. I am convinced by evidence that comes not just from the oil industry, and I think you have to be very careful about that, that we are operating on pretty thin margins as far as ability.

Some of this is greater, because of the ports' population movement and a lack of planning, Denver, for instance, is operating with 90 percent ability to supply their demand. The 97 percent is generally, I think, the national figure, but of course there are also some areas which, because of transportation matters and others, other factors, have enough, but I do think that, and this is not something I can back up, but I am persuaded from the people I talk to, your Deputy Commissioner and the Joint Council between the House and Senate on Energy is one source.

It leads me to believe that this is true.

Senator BIDEN. You are land commissioner for the State of Texas, is that correct?

Mr. ARMSTRONG. That's correct.

Senator BIDEN. Do you have to deal with local governments and municipalities?

Mr. ARMSTRONG. All the time.

Senator BREN. You are speaking from your experience in that capacity, and I want to ask you this question. A question was raised here about the political pressures that are brought to bear, and I raised it in the context of political pressure that might be brought to bear on a governor to veto a port because of reelection considerations as opposed to the good of the Nation. I assume that is what witnesses are referring to, but they explained that that is not what they are referring to, so I lost them.

You didn't understand what they meant. But I think those kind of political pressures do exist, and I think they work both ways.

I am wondering whether or not you think in your experience dealing with zoning on local levels and county levels, I having been there myself as a local commissioner, I wonder whether or not you think it is possible for a pipeline to come ashore in the State of Delaware or the State of New York or any State at all, intended to get toward the existing refineries to be sent in that direction which may be 50 or 100, or 500 miles away, whether or not you think that pressure from the interest groups who might be concerned about tapping a spigot along that pipeline to construct an oil refinery which would be closer to the source of the oil, it would be cheaper, and you could raise all the quells you are now raising—and I mean you in the editorial sense—whether or not you think the average local individual you deal with on a day-to-day basis could withstand that kind of pressure?

Mr. ARMSTRONG. It does cut both ways. The other side of it is an aggressive port authority and chamber of commerce who can raise enough sand with their Congressman to get it.

You really might have a broad case of concerned people that maybe would just as soon not have it. That one aspect is true. But back to the other side of it, I think that where we are right now in terms of management is, you are going to have to sell the whole land use concept to people as a matter of good economics, first of all, as well as quality of life, and we are not doing very well in selling it in Texas, frankly, but as a legal question, you start with a proposition that this is an interstate carrier, and how much right does that State have to burden that carrier pipeline?

I doubt very seriously if Tennessee could stop the big inch, the condemnation processes that went through, and I don't know if the big inch runs through Tennessee, and it was an interstate carrier. We thought about this in terms of our ability to tax on a per barrel basis what crosses our state lands to get in, but I think you have to look at the overriding interest in terms of national policy and sell people on the proposition that some of these local interests are going to have to give way.

That is, if you handle a national problem.

Senator BREN. I think your point is well taken, but it really is not quite my question. On a subjective judgment from your standpoint, how do you deal with the men and women you have to deal with, the local boards, and local planning commissions, whether or not you think they could stand the political pressure that would be brought to bear by major interest groups to in fact alter the existing land use management legislation, whichever way it was?

You know, in this new federalism, we have sort of annointed the local officials.

Mr. ARMSTRONG. I think you made a mistake when you did that.

Senator BIDEN. I am not sure you are from Texas.

Senator JOHNSTON. The 5-minute bell is coming up. We had better recess.

[Recess.]

Senator JOHNSTON. Proceed.

Senator BIDEN. I have two specific questions relating to other legislation similar to the administration bill, one of which is referring to as the Biden-Muskie bill, and I have no pride of authorship in that. I don't really think that is a much superior bill. I just thought I would ask a few questions about it.

No. 1, in our bill, we tried to strike what I considered a balance between the interests you are concerned about, that is the national interests, versus the potentially crippling parochial interests of the state. That is one reason I assume you think we shouldn't go the gas station on every corner route. I agree with you in terms of the legislation across the board.

I think there is and can be an overriding national interest. But it seems to me that in trying to put the bill together, you tried to incorporate this concept, that if in fact the state was going to—assume it gave the State the right to exercise a veto over the construction of a facility off their shore.

If they exercised this veto, I would be concerned whether this would be capricious exercise of the veto based on political pressure at that time. In order for the veto to stand up in our bill, it is required that the State do a number of other things in addition to exercising the veto to prove they mean what they say.

If they are exercising the veto, ostensibly it is because—it has a severe environmental impact on their State which they don't feel they want, and they don't feel they have to pay—

Senator JOHNSTON. Excuse me. Senator Biden, if you will continue with your questioning, I will go vote while you finish up and then we will start again.

Senator BIDEN. Good. In our bill, what we said was if you really are concerned about the environment, if that is really why you are vetoing this, then you have to prove to use that you have gone out of your way to protect your environment. Then we set out in the legislation, and I won't go into detail now, but I appreciate your taking a look at it and commenting on it later, we set out a number of conditions that the state would have to meet in order for their veto to hold up.

If they didn't do this within a matter of 2 years, the veto would have no effect. You could go ahead and construct the port and assuming it met all the federal regulations, and the Environmental Protection Agency didn't object, but the point is that the State would no longer be able to have any influence over whether or not the port was constructed, and it sets out in detail what some of these things are.

—I have said, "requirement for concurrence of the governor of adjacent states shall be waived two years after the date of enact-

ment of this act unless the state shall adopt and the administrator shall have a proven environmental program", and so forth.

Then we set out—I won't read them all, but there are nine particular criteria set out such as public and private development will be permitted only in the process of development, and if the development will not result in violation of the Commission's effluent standards and other requirements of the Clean Air Act.

It gets fairly specific, but the intent of it is, and we are not particularly concerned about each and every thing that must be done, if the state is going to exercise the veto, they must have an affirmative showing that they really are concerned about the environment and they have done something about it.

Otherwise, they have no right to as the rest of the nation not to pollute their environment.

Mr. ARMSTRONG. My reaction is that first of all, I suppose that State has that right. It is a little hard to think that somewhere within the confines of that state some suitable location might not be found.

Another approach that just came to mind as you were speaking would be perhaps an areawide, not just a statewide approach, that says, "All right, we have a heavy pollution concentration that is going to have to be satisfied in some way on the eastern seaboard with power, fuels, with gasoline." and wouldn't we look at this area and see what is the best place for this location?

Now if it is the best one, somebody is going to have to give us, perhaps, this right, but I think they would also get some other benefits, and economic benefits would be one of those. There would also be other things that people argue for. But this is a planned approach that has been used successfully in some areas, and I cite again the Louisville example, because I think that is probably one of the better federally funded projects where the alternatives were looked at objectively from the environmental point of view and everybody was satisfied at the time the airport was located, because they recognized they needed an airport.

But I think you are going to have to sell people on planning, and the advantages of it. If you did that, you might be able to satisfy some of these local objections first of all, if they realize that this is the best place to put it after weighing all the tests and the alternatives.

So it seems to me like what you are doing, and General Cross is going to get to this tomorrow, he says the first thing you have to do is have a decisionmaking process that is more rapid than our present decisionmaking process, and that you have been able to tell somebody who is a proposed site locator "no" with some rapidity, and this has been brought out time and time again in talking about Alaska. For 9 years they just didn't know. And it is not whether they ought to put the pipeline in, or shouldn't, and nobody knew until you began to move in this area, and I mean the Federal area, to withdraw some of the objections statutorily.

Contrast this with the State of Washington, which tells you you have got 120 days from the time you make the simplification until such time as you have a decision, and if the environmentalists are

correct that this is a poor site, you get an alternative site, but you get a decision within 120 days.

Most companies can live with that, and I think one of the problems that we have as far as the environmental route is concerned is that it is so new that it is difficult to make definitive guidelines that people can live with.

I would urge you to keep the legislation first in some sort of a single forum so that you don't have to make 15 or 16 stops and satisfy 15 or 16 different agencies, if that is possible to do, but maybe that forum asks for environmental impact statements from other interested authorities.

But, I think this is one thing that as a general rule, and keeping your eye on what I call the big ball, that you try to make the system work, and you think it sounded to me like, though complicated, the fact that it took 2 years before you do it, I think that time would be short.

But I appreciate your approach and the sense that you don't want to put this on the back of some State that doesn't want it, and I can appreciate that States not wanting it, but that really begs the issue.

The issue is where does it go?

Senator BIDEN. That sort of begs the question, too, whether or not there is an absolute necessity that it need go. I am going to adjourn this for a minute. I have 4½ minutes to get there and vote.

[Recess.]

Senator JOHNSTON. I would assume, Mr. Armstrong, that Senator Biden finished with his round of questions or did he just get warmed up?

Mr. ARMSTRONG. You are correct.

Senator JOHNSTON. We appreciate very much your testimony and now we would like to hear from Dr. Bragg of Texas A. & M. University.

**STATEMENT OF DR. DANIEL M. BRAGG, TEXAS A. & M. UNIVERSITY,  
ASSISTANT RESEARCH ENGINEER, INDUSTRIAL ECONOMICS  
RESEARCH DIVISION OF THE TEXAS ENGINEERING EXPERI-  
MENT STATION**

Dr. BRAGG. Thank you.

Mr. Chairman, and distinguished committee members: My name is Daniel M. Bragg. I work for Texas A. & M. University where I am employed as an assistant research engineer in the Industrial Economics Research Division of the Texas Engineering Experiment Station.

I am primarily responsible for studies related to offshore deep-water ports. It is a pleasure to be here today to speak in behalf of legislation to expedite the construction of vitally needed deep draft harbors facilities at points along our Nation's coastline where proven needs exist.

My remarks are given as a personal matter and do not reflect an official position of my employer.

I have been associated directly with the study of offshore ports for almost three years, since becoming the university's principal investigator in this subject area in December 1970. I was hired at that time specifically for this job on the strength of my 15 years of professional experience in cost and feasibility studies in the transportation and manufacturing fields. I have also been a licensed industrial engineer in Texas since 1959.

Since taking on this assignment for the university, I have been the principal investigator for two exhaustive and highly detailed studies in the area of offshore ports, reports of which are attached to these remarks. I have also been a co-investigator for the supertanker environmental study which was conducted by Texas A. & M. along with four other universities for the White House Council on Environmental Quality. And lastly I was the author of testimony presented to the Interim Committee on Coastal and Marine Resources of the Texas Legislature in hearings which subsequently resulted in the creation of the Texas Offshore Terminal Commission by legislative action in 1972.

Today I would like to briefly address the subject of the need for offshore deep draft facilities in this country, not by reiterating what has already been said many times concerning the energy shortage, but instead by couching my comments in terms of hard economic facts which I feel should be given serious consideration.

The first project I participated in at the university was called "Work Plan for a Study of the Feasibility of an Offshore Terminal in the Texas Gulf Coast Region."

This study which I understand was one of the first of its type completed in this country or elsewhere, was released in July of 1971. To date almost 3,000 copies of the study report have been distributed worldwide in response to direct requests. Support for this study came from the sea grant program of the Commerce Department's National Oceanic and Atmospheric Administration, supplemented by funds from the Texas ports of Port Arthur, Galveston, and Freeport.

"Work Plan" as it is commonly referred to, basically emphasizes the crisis nature of the impending conflict between our Nation's apparent need to import massive amounts of crude oil in the years to come and our complete lack of facilities to receive and berth the supertankers that will most likely be used to move the imported oil to us.

After establishing this premise, the report then goes into detail concerning the needs of the economy of Texas for uninterrupted supplies of crude oil to feed the State's ubiquitous oil refining and petrochemical industry. It then concludes by citing the importance of providing supertanker facilities in the Texas gulf coast region, based upon the predictions that "Failure to build deepwater ports may be looked upon by future economists as the 'turning point' that marked the beginning of the decline of the Texas gulf coast as a dominant figure in the world economic picture."

"Work Plan" proposes a comprehensive program of study in several major areas of concern before building deepwater ports. These areas are identified as:

- (a) Environmental.
- (b) Socioeconomic.
- (c) Engineering and design.
- (d) Legal and legislative.
- (e) Site location.
- (f) Financing and management.

The second major study conducted by Texas A. & M. for which I had the lead responsibility was entitled "The Economic Impact of a Deepwater Terminal in Texas." This work was also supported by Sea Grant with supplementary funding provided by various segments of private industry. "Economic Impact" as it is called was published in November 1972, and almost 1,000 copies of the report have been circulated to date.

This latter study describes in some detail the positive economic effects that are most likely to result from constructing one or more deepwater terminals off the Texas coast, thereby permitting economic importation of the large quantities of foreign crude oil anticipated to be needed in the years ahead.

What it does not do is delve deeply into the negative aspects of failure to build deepwater terminals, except to predict a slow decline of the oil refining industry in Texas which in 1972 employed approximately 30,000 people in the State.

Presently Texas has 26 percent of the Nation's oil refining capacity—about 3.5 million barrels per day, contained in some 40 refineries. And partly because of this ready availability of petroleum product feedstocks, Texas also produces 40 percent of the total U.S. output of basic petrochemicals, including 80 percent of all the ethylene made in this country.

"Economic Impact" provides a summary and interpretation of several major energy-related studies recently published, such as that of the Chase Manhattan Bank, and concludes that the most logical short range solution to national energy shortages is the importation of large quantities of foreign crude oil. Under the conditions of this conclusion, the study predicts that refiners in Texas must import foreign crude at the rate of 3.5 million barrels per day by 1985, if all essential needs are to be met.

The question has often been asked, "What does all this mean to Texas?" It would be an understatement to just say that petroleum is important to the State. In 1967, oil refining in Texas created an economic impact in the State of \$6.3 billion while in that same year agriculture was responsible for only \$3.3 billion. Because of various inflationary factors, as well as growth in refinery output, it has been estimated that in 1972, oil refining in Texas contributed about \$12 billion to the State's economy.

This impact was a result of the spending and respending cycle generated by some \$4.7 billion in refinery sales that year.

Oil refining also created an estimated 223,720 jobs in the State, including the 30,000 directly employed in the refining industry.

An example of the direct and indirect economic impact of petroleum and petrochemicals in just one sector of the Texas economy may be shown by examination of the maritime transportation indus-

try of the State. In 1970, more than 185-million tons of cargo moved through the State's 12 major ports.

Of this total movement, 140 million tons—or about three quarters consisted of liquids, mostly petroleum and chemical products. Maritime transportation in Texas currently employs approximately 20,000 persons. The economic security of these 20,000 people would be seriously threatened by any significant reduction in the movement of refined oil products, such as could occur if imported oil is not available to bolster shrinking domestic supplies.

Finally, any major reduction in petroleum related economic activity in Texas could well lead to serious problems in the financing of public education in the State. This is because, at the present time about 25 percent of the public school funds as well as 18 percent of all State tax revenues are derived from the oil industry. For this reason, the prospect of a decline of oil related activity in the State portends a serious problem for the future.

To summarize, if deepwater terminals are not built in Texas, it is evident that the State could suffer deep and lasting repercussions. Not only would there be a failure to achieve continuing economic gains from growth in oil refining, but also the probability of losses to the economy would increase.

For example, although the tax life of an oil refinery is 20 years and the useful life is about 40, the present high cost of money causes many industry executives to plan for a 5 to 7 year payout on a new plant investment. Thus when supplies of crude oil feedstocks can no longer be assured in Texas, shutdown of refineries in the State and relocation of operations elsewhere could conceivably become a reality.

Therefore, although the deepening energy supply problem is of sufficient magnitude, in itself, to justify expedient action on legislation to permit the construction of supertanker terminals in this country, it is important also for consideration to be given to the other facets of the problem as well.

This is especially important when it becomes obvious that certain other parts of the problem may have greater long range impacts on the well being of our nation than could an energy shortage alone.

Senator JOHNSTON. Thank you very much, Dr. Bragg.

If there is no objection, I would like to call at this time on the final witness, and then we can question the two of you together.

Mr. Melancon, if you will come from the table, we would like to hear from you.

I know Mr. Melancon personally, as I do the members of the Port Commission. He is doing an outstanding job in LaFourche Parish, and I know he will have a good statement for us.

**STATEMENT OF IRVIN P. MELANCON, JR., GENERAL MANAGER,  
GREATER LAFOURCHE PORT COMMISSION**

Mr. MELANCON. Thank you. I agree that LaFourche should get additional gas, and also that there should be no pipelines built in the State of Delaware.

My name is Irvin Melancon, Jr. I am general manager and a board member of the Greater LaFourche Port Commission, as well as executive director of the LaFourche Superport Task Force. The Greater LaFourche Port Commission was created by an act of the legislature in 1960. Its district of the 10th ward of LaFourche Parish, or the area from the intracoastal southward of the Gulf of Mexico. Our nine board members are elected for a term of 6 years. Collectively these men employ in their business approximately 1,190; about 432 are engaged in the seafood industry.

The LaFourche Superport Task Force was created by the LaFourche Parish Police Jury in September of 1972. It consists of 20 members who are representative of the political and business factions of our parish.

[The list follows:]

**LAFOURCHE SUPERPORT TASK FORCE,  
Galliano, La.**

Nolty Theriot, president, Greater Lafourche Port Commission, Vice-President of Deep Draft Harbor & Terminal Authority, Golden Meadow, La.

Thomas M. Barker, president, Lafourche Parish Police Jury, Lockport, La.

Hubert Robichaux, assessor, Parish of Lafourche, Raceland, La.

Irvin Melancon, Jr., general manager, Greater Lafourche Port Commission, Cut Off, La.

Donald Barker, president, Lafourche Parish Water District No. 1, Lockport, La.

Allen Danos, Jr., member, South Louisiana Tidal Water Control Levee District, Larose, La.

Leroy Delgrandille, chairman, South Lafourche Planning Commission, Larose, La.

Dr. Robert Dolese, president; Lafourche Parish School Board, Thibodaux, La.

Dr. John Green, biologist, Nicholls State University, Dept. of Biological Science, Thibodaux, La.

Richard "Dick" Guidry, Representative, State of Louisiana, Galliano, La.

Dr. Alva Harris, biologist, Nicholls State University, Department of Biological Science, Thibodaux, La.

Floyd Landry, general manager, Louisiana Power & Light Co., Lockport, La.

Andrew Martin, secretary, Greater Lafourche Port Commission, Chairman of Louisiana State Mineral Board, Galliano, La.

Floyd Naquin, general manager, Halter Marine, Lockport, La.

Harvey Peltier, Jr., Senator, State of Louisiana, Thibodaux, La.

Stanley L. Perry, attorney, Lafourche Parish Police Jury, Galliano, La.

Mayor Kip Plaisance, Town of Golden Meadow, Golden Meadow, La.

Sheriff Cyrus "Bobby" Tardo, Parish of Lafourche, Thibodaux, La.

W. J. "Billy" Tauzin, Representative, State of Louisiana, Thibodaux, La.

Troy W. Thompson, Jr., member, Lafourche Parish Police Jury, Thibodaux, La.

One of the purposes of this organization was to have an agency in a position to work and cooperate with the different State, Federal, and private concerns involved in this superport concept. But possibly the most important responsibility of this group would be to keep informed of all developments, to study and evaluate the various aspects and possible consequences of these developments and to make certain that the environment of LaFourche and its neighboring parishes receive the utmost consideration and protection.

I have called your attention to the membership of these two groups in order to show that these are all informed and responsible individuals who have a vital interest in LaFourche.

Various studies have indicated the many physical advantages of LaFourche Parish in regards to a super oil port, such as adequate foundation, water depth, pipeline corridor able to tie into existing facilities. But possibly the most important advantage is the people of our area and their attitude.

For decades LaFourche and neighboring parishes have played a major role in the production of domestic oil, both onshore and offshore. As a result, our people have developed the skills and have acquired the temperament needed to do the job. There is already available an experienced work force, accustomed to some of the same working conditions which will be required in the operation of an offshore oil port.

In addition to the oil industry, agriculture and seafood are also an important part of our economy.

Senator JOHNSTON. Let me interrupt you at this point. LaFourche Parish, for the benefit of Senator Bayh, is one of the richest areas in seafood in the United States and I guess the world. What percentage of the shrimp of the whole gulf are caught right off LaFourche? It is almost half of the gulf region, isn't it?

Mr. MELANCON. I think it would be about half in dollars and cents.

Senator JOHNSON. When you are talking about gulf shrimp you eat up here, it is about a 50 to 50 chance that it is going to be off LaFourche Parish.

Mr. MELANCON. Or the surrounding parishes.

The southern portion of LaFourche, like many other coastal areas, has been traditionally and historically dependent upon our marshes, bays and bayous for our livelihood. We have learned through experience that the oil and seafood industry can both exist and prosper together in the same community. It is not uncommon to find a family where its members are engaged in both industries. For example, the father may be a shrimper while the son may be employed by an oil company.

Occasionally there have been problems between the industries, but with open-minded cooperation on both sides, these problems have always been resolved.

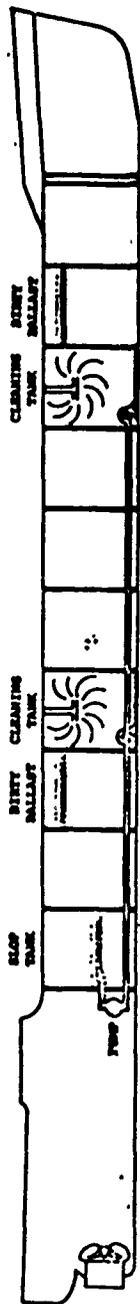
Gentlemen, I can assure you, we in LaFourche are convinced that an offshore oil terminal with the necessary onshore tank farm and connecting pipelines can be designed in such a manner which would result in very little stress to our surroundings.

In view of the energy crisis, we realize the importance of this facility to our parish, State and country. We have worked closely with many agencies, particularly the Deep Draft Harbor and Terminal Authority and Loop, Inc. The personnel of Loop, Inc. has always kept us informed and consulted with us concerning their preliminary plans, designs, and permit applications for their Lafourche site.

[The chart follows:]

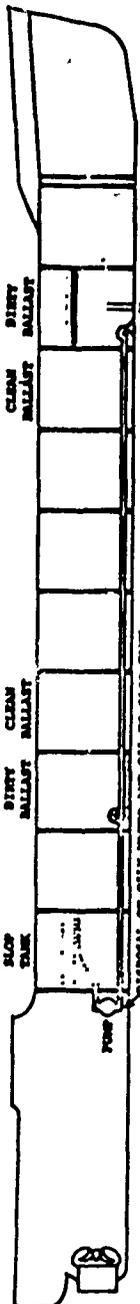
HOW LOAD-ON-TOP WORKS

A CROSS OIL TANKER USING THE LOAD-ON-TOP SYSTEM OF ANTIPOLLUTION



1 Vessel at sea in dirty ballast condition and cleaning tanks. All oily washings are transferred to the slop tank, aft -- Oil in the dirty sea water ballast floats to the top.

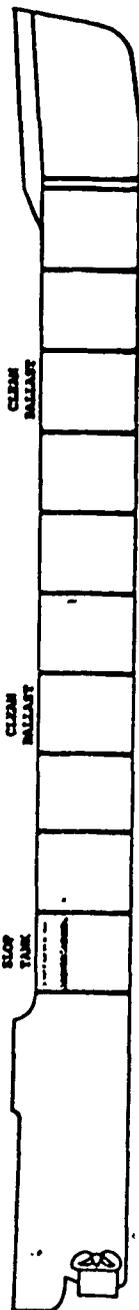
A SLOP FROM TANK CLEANING TO SLOP TANK



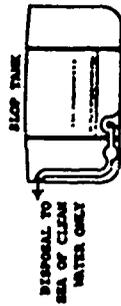
DISPOSAL OF OIL: WATER AND OIL TO SLOP TANK

DISPOSAL TO SEA OR CLEAN WATER ONLY

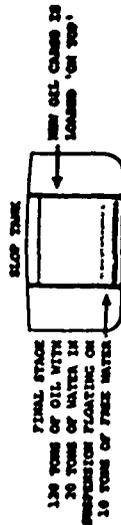
2 Vessel at sea when tank cleaning complete and with clean ballast in washed tanks. Disposing of dirty ballast. Clean sea water under the floating oil is returned to the sea from the dirty ballast tanks. Oily sludge from the dirty ballast tanks are pumped to the aft slop tank.



3 Vessel at sea in clean ballast condition, all polluted water and oil occurred in slop tank. The oil in the slop tank is given time to separate from the water.



4 The water under the oil in the slop tank is carefully pumped into the sea.



5 At the loading part oil cargo is loaded 'on top' of the oil in the slop tank.

Oil  
Sea Water  
Only Slop

Courtesy of Shell International Petroleum

What they propose to construct, that is a tank farm with pipeline distribution, is nothing new to Port Fourchon. For many years, on a site located just east of the mouth of Bayou Lafourche several oil companies have been operating a large tank farm. Oil is transported by means of underwater pipelines from their offshore oil production platforms to this onshore storage facility, and from there, again by the use of pipelines, it is transported to various refineries. In a sense, the only difference is that the volume of oil handled by this deepwater port facility will be greater, and the oil will be imported in supertankers, rather than produced offshore in the Gulf of Mexico.

I realize that it is essential that nature's bountiful gifts be protected and preserved for this and future generations. But it is equally important that some planning for the future of this country be done soon in order to guarantee to the present and succeeding generations a means of livelihood.

I can well appreciate the environmentalist's concern for the protection and preservation of our marshes. I agree that all possible safeguards, within reason, and I would like to emphasize within reason, should be taken in any and all projects affecting our wetlands.

But too often, when an industrial or public project is proposed, so-called environmental groups and individuals attempt to give the impression that all public officials are irresponsible and solely concerned with their own welfare rather than the public's. They would also have you believe that a pipeline means total destruction of the surrounding marshes and that saltwater intrusion is as devastating as a plague.

My feelings, based on my personal experience, are that a pipeline with the proper dams and control structures is an asset to the surrounding marsh area. I can take you to many pipeline dams where a fisherman can catch saltwater fish, such as speckled trout, red fish, and flounder on the outside, and on the inside of the dam, he can catch freshwater fish, such as perch, sac-a-lait, and green trout. The levees created by the pipeline canals attract rabbits, deer, nutrias and other forms of wildlife. Because of their adequate depth, marine life can survive in these pipeline canals during the severe winter months.

During our recent excessive high tides and flooding conditions when our natural marshes were completely covered with water, these pipeline levees and production canal levees offered the only refuge for our wildlife.

Another point that has never been brought out is that, because of the revenues derived from oil production, many of the large landowners have been able to spend considerable sums to improve the quality of the marshes. One method employed to accomplish this is the construction of a series of weirs or control structures in order to regulate the flow and level of the tide. These structures also help to slow down the destructive erosion process of our marshes.

Centuries ago, the French Acadians were forced to settle in coastal Louisiana, an area many considered worthless, mosquito and snake infested marshes. Through hard labor and the ability to adapt, these

Cajuns were able to form a productive and self-sufficient community. As a descendent of the Cajuns, my future and my family's future is dependent upon the prosperity of Lafourche Parish and the proper use of its wetlands.

There will be some groups and individuals who will oppose this superport concept. Their views will be eloquently presented by gifted speakers. I often wonder how informed these people are. What do they base their opinions on? Where do they get their information? Have they actually had personal contact with our wetlands? Or, are they just against any and all forms of progress? How sincere are these people? The ones I have been in contact with seem to enjoy all of the comforts of our modern times.

At the beginning of my presentation I mentioned that one of the most important responsibilities of our Lafourche Superport Task Force was to keep informed of all developments, to study and evaluate the various aspects and possible consequences of these developments and to make certain that the environment of Lafourche and neighboring parishes receive the utmost consideration and protection.

In order to accomplish this, we have had numerous meetings and get-togethers involving businessmen, concerned citizens and public officials. At these meetings such topics as the anticipated effects of a superport on schools, transportation, employment—both permanent and temporary—police, utilities and housing has been discussed.

Representatives of Loop, the State superport authority, Lafourche Superport Task Force, and other agencies, over the past year, have appeared before many civic organizations, such as the chamber of commerce, Jaycees, Rotary, Lion's Club, et cetera, in order to explain and discuss the superport concept.

Just recently, on July 18, Mr. P. J. Mills, executive director of the Deep Draft Harbor and Terminal Authority, was the featured speaker at an area meeting involving public officials and businessmen of the parishes of Lafourche, Terrebonne, and St. James, as well as the town officials of Grand Isle.

Grand Isle is an example of the seafood industry, oil and sulfur industry, and recreation coexisting together.

1. Grand Isle serves as a base of operation for the offshore oil industry.

2. It has a large shrimp and fishing fleet.

3. Seven miles from its beach is the world's largest offshore platform and the first onshore sulfur platform.

4. It is a major port for the oyster industry.

5. It features recreational facilities, such as beaches, State parks and camping grounds.

6. The Grand Isle International Tarpon Rodeo is the oldest in the country.

7. Grand Isle is considered one of the top 10 fishing spots in the United States.

8. It is located 20 miles from the proposed offshore oil terminal and 10 miles from the onshore tank farm.

Mayor Joseph Shephard, of Grand Isle, along with the other town officials, has assured us that they and the people of Grand Isle are all 100 percent in acceptance of this superport concept.

In closing, I would like to say that the parish of Lafourche would be privileged to serve this country as the site for the first super oil port.

Senator JOHNSTON. Thank you very much, Mr. Melancon. That is an excellent statement. I wish the members of this committee could come down to LaFourche Parish, not only to see the oil industry there coexisting with the fishing industry, but also to enjoy some of the treats of that fishing industry.

I did not see a word in your statement about food in Lafourche Parish, but you might have added that that is the finest in the world, at least in that part of the State.

I think you have made it fairly clear, Mr. Melancon, that people in Lafourche Parish have been familiar with the oil industry for many years. I think it is 25 years now that offshore drilling has been conducted over the Louisiana coast.

Mr. MELANCON. That is right.

Senator JOHNSTON. I think, in that 25 years, the amount of commercial fish produced has gone from something like 1,600,000 pounds per year to over a billion pounds of commercial seafood per year. In other words, something like seven times increase during that period of time. Is that correct?

Mr. MELANCON. I have not seen the figures. There has definitely been an increase.

Senator JOHNSTON. At the same time, I am sure you are aware, as I am, that people of that part of the country are quite concerned with the very delicate ecology. When you have a commercial seafood industry with over a billion pounds produced each year, not to mention the recreational activities, the premium on protecting the ecology down there is something more than just birdwatching. It involves the very lifeblood of the economy down there, and it is of tremendous importance to keep that ecology protected and in proper balance, because any activity which would destroy that commercial seafood industry would be tremendously harmful, almost fatal to that part of the country.

I know it is with that spirit that the Greater Lafourche Port Commission and the mayor of Grand Isle are supporting the idea of a superport, because they are confident that they can control the possible ecological harm that would take place.

Senator Biden?

Senator BIDEN. I have no questions.

Senator JOHNSTON. Gentlemen, we appreciate very much your waiting so patiently until a late hour to come and testify. Let me say, Irvin, that I was not responsible for the chronology by which people spoke first this morning.

Thank you very much, gentlemen.

The committee will recess until 10 a.m. tomorrow.

[Whereupon, at 5:55 p.m., the hearing was adjourned, to reconvene at 10 a.m. on Tuesday, July 24, 1973.]

# DEEPWATER PORT ACT OF 1973

TUESDAY, JULY 24, 1973

U.S. SENATE,  
COMMITTEES ON COMMERCE, PUBLIC WORKS, AND  
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS, SPECIAL  
JOINT SUBCOMMITTEE ON DEEPWATER PORTS LEGISLATION,  
Washington, D.C.

The subcommittee met at 10:05 a.m., in room 5110, Dirksen Senate Office Building, Hon. Ernest F. Hollings presiding.

Senator HOLLINGS. The subcommittee will please come to order. I want to recognize our distinguished senior Senator from Louisiana who will welcome the witnesses to the committee this morning.

## OPENING STATEMENT BY SENATOR LONG

Senator LONG. Mr. Chairman, it is a distinct pleasure for me, as a member of this special subcommittee, to present to my colleagues a number of distinguished constituents, including and led by the Governor of Louisiana, the Honorable Edwin W. Edwards.

These gentlemen have come before us to testify on the various aspects of S. 1751, the proposed Deepwater Port Facilities Act of 1973. First, let me ask Governor Edwards to stand and be recognized.

Early in his testimony, he will be introducing the distinguished panel of officials and experts who have accompanied him. I will, therefore, concentrate briefly on the Governor's credentials and qualifications to speak on the subject before us and permit him to introduce his team of experts.

Governor Edwards' interest and involvement in the general subject of superports began when he was a Member of Congress. Almost 3 years ago, he and other members of our Louisiana delegation introduced superport study resolutions, later adopted by the Public Works Committees of the House and Senate.

Much of the technical information which has been developed by the Corps of Engineers, the Maritime Administration and other agencies, can be traced back to those study resolutions of which Governor Edwards was a cosponsor.

About a year and a half ago Mr. Chairman, the then Congressman Edwards was elected Governor of Louisiana and even before he was actually sworn into office, he took the first of several positive and constructive steps toward moving Louisiana ahead in its understanding of the superport question.

He immediately appointed an ad hoc Superport Task Force, headed by Hon. Gillis Long, who has since been elected to the Congress from Louisiana's Eighth District.

That task force immediately began the detailed environmental and engineering, economic and legal studies on which Louisiana's testimony this morning will be based.

Upon assuming the Governorship he got the Louisiana Legislature to finalize the Louisiana Superport Authority, which has now spent more than a year moving ahead on the investigations and studies begun by the Governor's Ad Hoc Task Force.

I might point out, to Governor Edwards' credit, that Louisiana was the first State in the Nation to create an agency to promote and develop a superport and at its own expense to undertake detailed legal, engineering, economic, and environmental studies.

Mr. Chairman, I think the committee will be pleased at the well-informed, energetic and forward looking testimony which Governor Edwards is about to give. I am personally very proud of the highly professional manner in which my State has approved this most important subject, and I look forward to Governor Edwards' testimony.

Senator HOLLINGS. Thank you very much, Senator Long. We can confirm the wisdom and thoroughness and dedication with which Louisiana has approached this problem. We have heard your distinguished Governor, and Eberhard P. Deutsch and other witnesses before.

We followed them in the coastal zone bill. We are also pleased that this is a joint hearing between Commerce and Public Works, and we are pleased to have Senator Johnston with us.

Senator JOHNSTON. Thank you. I would like to add a note of welcome to our distinguished visitors today. They are all my friends and informed colleagues, the Governor and P. J. Mills. They are in outstanding group, particularly as concerns superport matters.

I think Louisiana is not only the first State to recognize the great things that a superport can bring to the State and to the Nation, but also the first to recognize the great dangers that superports present environmentally. I think the thrust of Louisiana's legislation, as opposed to the other States, has been to recognize that environmental possibility, and to cope with it, I think, very realistically.

I am pleased to have them all here. I know they are all qualified in their fields. Governor Edwards is particularly qualified in the political field, having had great experience in running for Governor against yours truly, and it is a tribute to him that we could come out of the same race still good friends and both happy where we are.

Senator LONG. One of the achievements of Governor Edwards is to provide Louisiana with a very good junior Senator.

Senator HOLLINGS. We welcome you and your associates. We would like to have you introduce your associates for the record.

**STATEMENT OF HON. EDWIN W. EDWARDS, GOVERNOR, STATE OF LOUISIANA; ACCOMPANIED BY E. C. HUNT, PRESIDENT, LOUISIANA SUPERPORT AUTHORITY; NOLTY J. THERIOT, VICE PRESIDENT; P. J. MILLS, EXECUTIVE DIRECTOR; RANDOLPH PARRO, ASSOCIATE DIRECTOR; COL. EBERHARD P. DEUTSCH, OF DEUTSCH, KERRIGAN AND STILES; CHARLES K. REASON-OVER; RICHARD BRENNAN; AND ROGER WALLIHAN OF KAISER ENGINEERS**

Governor EDWARDS. I certainly will, Mr. Chairman. Prior to that, I would like to express the warm regards of Senator Johnston's immediate predecessor to the Chair, Senator Long. I have furnished two junior Senators, one by appointment and one by election. Senator Johnston and I have not always occupied friendly forums, and probably but for the wisdom of about 5,000 voters in Louisiana, our roles today might be reversed.

I am not prepared to say that that may not be a happy possibility. But it is a tribute to his character and to the people of our State and to the election process that we came out of that election still good friends, and I like to proudly tell people that out of the 20 people who ran for Governor, the 3 who came closest to the top besides myself ended up in the U.S. Congress—1 as Senator and 2 as Congressmen. This indicates I believe a pretty good group of fellows.

I am pleased to be here, and I want to thank our Louisiana Senators for taking time out to attend these hearings. We are pleased with the efforts that they are putting forth on the Washington level as members of this committee, and commend them and other Senators for the excellent job they are doing in bringing this subject to the attention of the American people and the attention of the Congress.

I have with me some Louisiana citizens who are interested in the development of a superport offshore Louisiana, and I would like to introduce to you at this time Mr. E. C. Hunt, Jr., president of the authority; Mr. Nolty Theriot, vice president; Executive Director P. J. Mills on my right; and Associate Director Randolph Parro. Col. Eberhard P. Deutsch and his associate, Charles K. Reasonover who is legal counsel for the authority. I might say in passing that Mr. Deutsch has been a long-time personal friend of Senator Long, and that has not hurt his association with our authority.

Mr. Richard Brennan and Mr. Roger Wallihan of Kaiser Engineers, represent respectively our technical and environmental counsel, and each of these gentlemen will be available to the committee for questions at the conclusion or during my testimony as you see fit.

Before going into my prepared remarks, I would like to read briefly two excerpts from the latest edition of "Seapower," which is the official publication of the Navy League of the United States, which just came to my attention accidentally while reading on the plane last night.

The editorial—and here we want to put a small plug for American seapower—quotes from a recent speech by the Federal Maritime Commissioner, Mrs. Helen Bentley:

We are currently importing some 68 of the 72 vital raw materials necessary to maintain our present high standard of civilization. What is more, we must import 90 percent of those 69 raw materials by ship.

The editorial points out that what Mrs. Bentley did not say in the speech is that only about 60 percent of these imports come in on U.S.-flagships. That is how farsighted or short sighted we were in our maritime policy.

Then there is an interesting article by a gentleman whom all of you will recognize, Senator Henry M. Jackson, entitled "Needed: A Manhattan Project on Energy."

In 1948 the United States was a net exporter of petroleum. The public is now finding out what has happened since then. Last year we imported 27 percent of our petroleum products.

This year it will be 35 percent. By 1982 the figure may be 60 percent. This is a dangerous situation from every standpoint.

Then he points out that:

Most sources agree that the use of supertankers rather than numerous small tankers to carry petroleum is highly preferable from an environmental point of view. Yet the United States has no ports capable of receiving tankers in the super-size class.

Mr. Chairman, I shall concentrate my comments here today on what we feel is the soundest and most equitable approach to the licensing procedure for offshore deepwater facilities which S. 1751 would establish in the executive branch of the Federal Government.

We have heretofore submitted a detailed statement with supporting documents which outlines the history of activity in the area of deepwater port development in Louisiana, and specifically answers the eight questions posed by the committee in your letter of invitation to testify today.

Much has been said and written in the last year about the energy shortage facing this country and numerous means offered to solve that shortage, some for the short term and some for the long.

One of the alternatives, pending development of an alternate and environmentally acceptable energy source to oil and natural gas, is the importation of foreign crude oil primarily from the oil rich Persian Gulf area of the Middle East.

In order to accomplish such importation in the very large crude carriers (VLCC) which are the most economic means of moving vast quantities of liquid cargo, it is necessary for the United States to develop deepwater port facilities offshore from the continental United States.

This need arises from the draft requirements of the VLCC's. Draft requirements range from 80 to 100 feet or more minimum depth when fully loaded.

Louisiana has had a major role in national and international water transportation since long before there was a United States. It continues that role today, particularly through the Port of New Orleans which is the second largest port in the United States and third largest in the world.

However, even that outstanding facility is unable to handle the new supertankers because of depth limitations in entering the Mississippi River. The same is true at ports all along the east coast and gulf coast of the United States.

Recognizing the coming demand for offshore deepwater ports to accommodate changes in technology, numerous Louisiana citizens called on me to begin planning even before I took office as Governor, for the role Louisiana should play in offshore deepwater facility development.

Consequently, on February 6, 1972, only 5 days after I was elected Governor, I named an ad hoc task force to begin work on a direction our State would take in this vital subject area. An outgrowth of the task force's work was legislation creating the Deep Draft Harbor and Terminal Authority which is commonly known as the Louisiana Superport Authority.

That agency was created by the Legislature in 1972, and charged with the responsibility for planning, promoting and developing any offshore deepwater terminal envisioned off the Louisiana coast. [A copy of the act of the 1972 regular session of the Louisiana Legislature is enclosed with the supplementary material accompanying this statement.]

From its inception in September of last year, the Louisiana Superport Authority has operated with a plan of action that envisions; (1) an overall deepwater port developed offshore in stages as technology and economics dictate; and (2) an oil terminal developed as the first phase with development and operating resting in the private sector subject to Federal and State regulation.

In line with the latter, a consortium of 14 major oil and pipeline companies have formed a Louisiana corporation known as LOOP Inc. (Louisiana Offshore Oil Port) for purposes of building and operating an oil terminal off the coast of Louisiana. That consortium is also scheduled to testify before this subcommittee, and will at that time outline in detail, as they have before other committees, the plan they envision for the Louisiana offshore oil port.

The Louisiana Superport Authority and Louisiana State Government have given assistance to the LOOP organization in their planning and will continue to do so. The Superport Authority has been asked by LOOP to include their plans for oil terminal development, as the first phase of overall superport development off the Louisiana Coast.

The Superport Authority Board has that request under advisement at this time, and as more detailed and specific data as to the facility is delivered, the Authority will take appropriate action on the request.

The fact that LOOP has chosen Louisiana for its planning and proposed development is complimentary to our State and to the planning we are doing in the area of offshore port development.

In order to assure those concerned with the environment that we in Louisiana do not pursue the superport goal for economic reasons alone without regard for the unique environment of our State, the legislation creating the Superport Authority embodied some of the most comprehensive language enacted to date by any State with regard to environmental safeguards.

The statute, in fact, surpasses the requirements contained in the National Environmental Policy Act (NEPA), in that it not only requires assessment of actual and potential environmental impacts from such a facility, it also establishes the criteria for development of an Environmental Protection Plan (EPP).

This plan is to become an administrative rule of the Superport Authority to govern environmental factors within the boundaries of the State of Louisiana, resulting from superport construction and operation.

One of its principal features is a plan for continuous monitoring of environmental stresses from the planning stages of time of operation and beyond. Also unique is the plan currently being developed which will place an economic value on the coastal area of our State so that adequate compensation can be determined for damage which might result from operation of an oil terminal off our coast.

There is a strong principle in the civil code of Louisiana which requires that when one causes another to suffer a loss, that loss must be compensated by the one who has caused it. That principle is applied once again in this Environmental protection plan because we realize all too well in Louisiana the value of our unique coastal marshes to our fishing and shellfish industry, to our fur industry and to the millions of sportsmen who gain untold hours of enjoyment from fishing and hunting our coastal areas. (The details of the requirements for the environmental protection plan are included in the statute which has been filed with this statement.)

Copies of two studies which have been made on offshore terminal facilities by the Louisiana State University Center for Wetland Resources, are also included as supplements to this statement. One study was made for the Louisiana Superport Task Force and one for the President's Council on Environmental Quality (CEQ).

The implementation of the environmental protection plan called for in the statute creating our superport authority is well underway and the finished plan will be ready for promulgation by January 1974, as required by the statute.

Data gathering is being conducted by the Louisiana State University Center for Wetland Resources and Henry J. Kaiser Co. The final data will be adopted as a rule of the superport authority after drafting by the authority's counsel and public hearings on the subject.

In keeping with our belief that economic benefits can be won without sacrificing environmental integrity, we in Louisiana have walked a middle road in the planning associated with this project. We are undertaking one of the most comprehensive environmental planning programs associated with any project to our knowledge, and at the same time we have assessed the potential economic impact of the oil terminal to see that the project will indeed be worth the effort and expenditure that must be made by both the State and private enterprise.

We have made that economic impact assessment and have found that the efforts of the State are well justified. (A copy of the economic impact statement on the offshore oil terminal has also been included with the detailed statement filed with the committee.)

Section 103(e) of S. 1751 now before the committee states that:

The Secretary shall consult with the Governor of any State off whose coasts the facility is proposed to be located to insure that the operation of the facility and directly related land-based activities would be consistent with the state land-use program.

We feel that the intent of this provision is sound and recognizes the vital interests which the coastal States have in any facility that is developed off their individual shores. To my knowledge, however, none of the States which have expressed an interest in offshore facility development off the coast of their individual States have developed open land-use plans at this time.

Section 103(e), in effect, merely requires consultation by the Secretary of Interior with the Governor of the affected coastal State to insure that offshore operation is consistent with the State's land use plan.

It is essential that there be more than mere consultation. In the case where a coastal State has not yet developed such a plan, but is desirous of having offshore facilities developed off its coast, considerable problems could arise. Not the least of these problems is the development of offshore facilities which might not be ultimately compatible with the on-shore land-use plan developed by the affected State.

With that major concern in mind, we in Louisiana would like to take the thesis that recognizes the concern and interest of affected coastal States one step further. We would propose amending S. 1751 in such a way that the legislation would grant exclusive license for deepwater port facilities development, to the State offshore from which such a facility would be located.

In this way, the affected State may either exercise the right contained in the act by obtaining the license, or not exercise the right. For those States, such as Louisiana, which would exercise such a right, the provisions currently contained in S. 1751 permitting transfer of the license to a third party would be very beneficial.

The LOOP organization, to which I referred earlier, would provide an excellent vehicle to accomplish actual construction and operation of such a facility as an offshore oil terminal, while the State would be assured that onshore planning for industrial development and land use, would be coordinated with the planning undertaken by the transferee both onshore and offshore.

While on the subject of onshore planning by the coastal States, I would like to mention that in response to an inquiry by Senator Hollings we in Louisiana have over the past 2 years been working at the administrative level of State government to develop a program for coastal zone management in Louisiana.

By act of the 1971 Louisiana Legislature (Act 35 of the 1971 regular session) the Louisiana Advisory Commission on Coastal and Marine Resources was specifically directed to consider all aspects of management of the coastal zone of Louisiana, as defined in the act, and to make a final recommendation for action by September 1973. (Act 35 and a copy of the 1973 report of the Louisiana Advisory Commission on Coastal and Marine Resources, "Wetlands 1973; Toward Coastal Zone Management in Louisiana" is attached to this statement for the record.)

The importance of this function of State government, and funding of the programs of the States is, in our opinion, vital to the role of the coastal States in onshore planning for such developments as offshore deepwater facilities.

Further effort in this area is important to Louisiana and other coastal States, and the funding of State programs at the Federal level would enable comprehensive coastal zone programs to be undertaken.

In this way, the benefits to be derived from offshore developments, and related onshore activities, would be far more meaningful in that they would be coordinated between the affected States, and the plans of those engaged in offshore developments.

Accordingly, the national interest would be served, and the demand for imported oil met, while at the same time the peculiar concerns of the individual coastal States would be recognized and guarded.

This proposal follows a positive approach, in that it calls for the States to take positive action to claim the license. It does not put the State in a position of having to veto an action which might have been approved by a Federal agency.

It runs counter to my appreciation of the Federal system to give the States a "carte blanche", to veto proposed offshore activities, when such facilities are proposed in the overall national interest.

However, to give the States the right to act positively, or not to act at all is, it appears to me, a strong manifestation of federalism at its best. For we already know that some States offshore from which facilities would be proposed, would act at once to see them built; others would not act because of the particular interests of that State.

But the overall national interest would be served by those States which would act affirmatively, and that interest would be served without demeaning in any way the interests of any individual State.

This proposed legislation recognizes the role of the States in the Federal system and particularly in this type of development. The proposal we make strengthens the role without diminishing the national purpose of the measure.

Some say that specific protection for the coastal States is not required, because the States can stop such offshore development if they choose, particularly in the case of offshore oil terminals, where pipeline rights of way are required, and onshore storage terminals are needed.

But for those states wishing to stop such development, it would become necessary to use the hammer, when the proposal we make to the committee today substitutes the more palatable velvet glove of negotiation. We in Louisiana obviously welcome the opportunity to assist in the development of an offshore oil terminal, and later, facilities for other type cargo.

Some other States do not share this interest. Our proposal gives each of us an equal opportunity to pursue our individual destinies. It would appear that the intent of section 103(g) of S. 1751 is to permit precisely what we propose here today. That section says:

Licenses issued hereunder may be transferred after the Secretary determines that the transferee meets the requirements of this Act.

In the case of offshore oil terminal facilities, it is fairly well recognized that the private oil companies and consortiums of various companies have proven worldwide their expertise in the building and operation of such facilities. By giving the license to the State offshore from which such a facility is to be built, and continuing the right of transfer as contained in section 103(g), a partnership between the states and the private sector could be developed for the benefit of the private sector, the public and the national interest.

The act as presently drawn envisions the transfer of the license when "the transferee meets the requirements of the act." This would mean in the case of almost any oil terminal development, that in the final sense the transferee would be that group from the private sector which proposes to develop such an offshore facility.

That is certainly the case in Louisiana where the only proposal for development of an offshore oil terminal facility has come from the LOOP organization referred to earlier. The same is true off the coast of our neighboring State of Texas, where a consortium known as seadock is making a similar proposal to that State.

It seems logical to us in Louisiana that if a license is to be issued by a Federal agency that a State offshore from which the permitted facility is to be located should be considered first. The responsibilities of the States for broad-based planning and representation of the public interest, far exceed those of the private groups to whom a license would ultimately be issued.

Transcending the proposal for exclusive license for the states in a Federal licensing procedure for offshore facilities, is the role of the Federal government in regulating and administering the licensing procedure. In the case of S. 1751 the Interior Department is the Federal agency charged with issuing licenses for operation of deep-water facilities.

Interior would have original and paramount regulatory powers over both the licensee and any ultimate transferee under the provisions of the act. Thus, if the States were given exclusive licensing authority under this legislation, the Federal agency charged with issuing those licenses, and regulating offshore operations could, in effect, use the individual states as "agents" of the Federal Government to assure protection of the public interest and compliance with all regulations.

At the same time, the particular interests of the individual states—whether they exercise the option contained in this proposed amendment or not—would be protected.

Under this proposal, the license which would be issued by the Interior Department would go to the State offshore from which the facility is to be built, and would be granted when the affected State makes application to receive it.

If the State plans to build and operate the facility to be constructed, then all Federal requirements would have to be met by the State. However, if the State transfers rights under its license to another to build and/or operate the facility, then the transferee would be required to meet all Federal requirements imposed under the act.

Many will ask "why?" to the proposition of an exclusive license to the coastal states. Louisiana asks, "why not?"

The Federal Government has seen, at least through the intent of this legislation and announced government policy on the subject, not to finance in whole or in part the construction of offshore facilities. It has, likewise, indicated it does not desire to operate such facilities through any Federal agency.

It would then appear that the likely place for primary licensing would be in the affected coastal States. The justification for this lies in the fact that those States such as Louisiana which have shown an interest in this subject, have moved ahead with the appropriation of State funds to explore the feasibility of such a project.

Funds have been expended in Louisiana to assess potential environmental impact and to regulate activities to minimize environmental impact through development of an environmental protection plan.

State funds have been spent to assess the economic impact on the State and generally to promote the concept so that the public can understand the ideas involved and what their State is doing to insure that the impact of such a facility is planned.

Because of the approach that is being taken at the Federal level to the operation of offshore facilities, responsibility rests heavily on the coastal States to do everything possible to have a strong voice in whatever is done off their shores.

For what is done off the shores of our State in the development of offshore facilities, greatly affects not only the future economic development of Louisiana, but also contributes to social and physical needs which must be anticipated if they are to be met.

The natural environment varies from State to State, particularly in the coastal regions of each State. An offshore facility, although possibly located outside the territorial jurisdiction of a coastal State, still contributes heavily to the burden that State must assume in having such a facility off its coast.

For those States wishing to assume that burden and the attendant costs that go with extensive environmental planning and regulation, there should be more than an intangible ability to deter unfavorable development once it reaches shore. By having the exclusive license as a point of departure, coastal States will be able to coordinate the physical planning of the offshore facility with the planning needs of the State.

Also, the State will be able to have a definite say in who and how, when and where things are done offshore which will greatly affect the State onshore. The States can do these things and meet their challenges without having to resort to the negative approach that stops planned projects.

The States can have a hand in the planning, and, rather than be stumbling blocks to offshore development, they can be partners in that development.

Louisiana has taken the first step on the long road to development of offshore facilities. In fact, we took that step a full year before the Federal Government began establishing a position on the subject. Other coastal States are moving in a similar direction.

Each State has spent, and is spending, State funds to assure the soundness of the development that occurs both onshore and offshore.

In the absence of stated Federal policy specifically to build and operate such facilities, Louisiana respectfully suggests that the coastal States should be granted the license that would be issued under provisions of this act if adopted.

This would afford the States an excellent opportunity to work with private interests to build offshore deepwater facilities, with the States providing environmental safeguards, and private industry, the economic development.

Louisiana stands ready to play its role in assisting in the solving of this national problem. We ask your help in making that possible, and strongly urge that you accept our theory as one which will make offshore development not only possible, but meaningful to the affected coastal States, and I might add in the national interest.

Thank you.

Senator LONG. I am going to have to go to the Finance Committee and try to put out a major piece of legislation, so I will have to leave in just a moment, Governor.

I want to congratulate you for a very fine statement, and I would like to plead with all members of this Ad Hoc Subcommittee on Deepwater Ports that we join together in seeing that the Congress does act, hopefully this session, on this very important piece of legislation, and I am very proud of the fact that the Congress has demonstrated time and again that it can act even while the executive branch is still thinking about matters, and I would hope very much that the leadership of Senators Hollings, Warren Magnuson, Henry Jackson, Mike Gravel, Joe Biden, Lloyd Benson, that we can, having obtained the information we need, reach a decision on this matter.

If you don't watch out, history is going to move off and leave us in this area.

I am very proud we have our present presiding officer on this committee to help move matters along.

Senator HOLLINGS. Thank you, Senator, but in your position of the chairman of Finance, maybe you can shake loose this administration.

We passed last October the coastal zone bill and your great State of Louisiana, under the leadership of Governor Edwards, has really led the Nation in not waiting for Federal funding. But what did the administration do? They absolutely refused to fund one dime of the coastal zone bill that they had signed eloquently into the law.

On the contrary, they started funding land use which has yet to pass this Congress.

But this is the leadership which really is what we enjoy this morning, Governor Edwards, and that is what we obtain from the States themselves.

The States are leading the way and the Federal Government is trying to play catchup football, and we hope we can catch up with you, and not necessarily preempt you.

I am very much interested in the idea that the State be the sole licensor, the one that would grant the license. But I don't want to preempt Senator Long's time.

Senator LONG. Go ahead. Thank you very much.

Senator HOLLINGS. Senator Johnston?

**Senator JOHNSTON.** Thank you, Mr. Chairman.

I would like to congratulate the Governor on this statement and on his leadership in this field. I think, as I mentioned in my opening remarks, Louisiana has recognized more than any other State the problems that a superport presents, and the Louisiana approach that you just outlined would give the State the power to head off some of those problems.

Yesterday we heard some testimony from Russel Train, the new head of the EPA. He said as follows: Each of the activities, connected with the superport will result in a range of environmental impacts beyond what would ordinarily be expected without a deep-water port.

The impacts include demand for air and water supply, increased air and water pollution, and a burden on public services.

Thus, not only the offshore danger, but the onshore impact of a deepwater port, with the petrochemical industry, the refineries that it would be sure to engender—those present a very clear and present danger of pollution.

In our State, air pollution would increase in an area which is already fairly well burdened and saturated. Because of that fact, I questioned witnesses yesterday about the possibility, the justice and the equity of a proposal to grant to Louisiana more of its own natural gas to burn in order to prevent further degradation of our atmosphere there.

I pointed out to those witnesses that in Louisiana we have an enormous store of natural gas. Industry came to our State and gave us blessings in terms of jobs, but now we are being curtailed in the gas that is under our ground. We can't use it.

Now, if at the same time we are having this curtailment you put in a superport with additional petrochemical industries and all the complex of industries that go with it and continue to curtail the use of that natural gas it is going to give us a very clear and present danger of an air pollution problem.

My question to you, and I suppose I could predict the answer, is: Don't you think Louisiana is entitled to and as a matter of fact must have—or any State must have, if it gets the superport—the ability to burn more natural gas than other States because of the impact on air pollution?

**Governor EDWARDS.** I think that is clearly one of the compelling considerations that should be fed into the computer in making these ultimate determinations. Of course, Louisiana, as you know, has been a little shortsighted in its gas policy for the past 30 years.

I met last night with the FPC to discuss this very subject and I responded by saying that you state the case very well, Senator.

**Senator JOHNSTON.** I think there is some sympathy on this committee for giving to the State that is going to be adjacent to the superport some ability to cope with the real problems that are presented by the superport.

Under your leadership, Governor, we in Louisiana have prepared ourselves, I think, for the superport, and have gone further in that preparation than any other State.

I might add, however, that we are one of the only States in the nation which is willing to have a superport.

You can go all up and down that Atlantic seaboard and Senators are either unmistakably opposed to it or are taking a "wait and see," attitude.

Governor EDWARDS. They don't even want to develop the oil reserves offshore of the Atlantic seaboard States, much less having a superport.

Senator JOHNSTON. That is right. They don't want to put up with the blessings or the problems which they present. All these things are mixed blessings, and I think there is sympathy on this committee, as well there should be, for giving to the adjacent States some share of the revenues; we should have the right to get revenues to compensate us for what we are going to have to do in terms of environmental control, schools, roads, and all the battery of public services.

I think the Louisiana plan gives us a good basis for doing that, it also seems to offer a good approach for solving related environmental problems.

Thank you, Mr. Chairman.

Senator HOLLINGS. Senator Biden?

Senator BIDEN. Thank you, Mr. Chairman.

Governor, it is a delight to hear from you again. I had the pleasure of hearing you testify before the Commerce Committee earlier this year and I think the perspective that you bring to bear on this question is different from that shared, for example, in my State, to which there has been vague reference made, and I would like to ask a few questions if I may.

In your capacity as Governor I am wondering how you are going to handle these things.

Number one, in your testimony you state, and I quote: "One of the principal features is a plan for continuous monitoring of environmental stresses 'from the planning stages to the time of operation and beyond. Also unique in the plan being developed, it would place an economic value on coastal areas of large states,'" and so forth.

I have two questions regarding that. They are for anyone on the panel.

Number one: What type of damage are you referring to? Is that just the damage from the construction of the facility itself and the attendant oil spills that are going to occur, or does that include the damages as a result of landside development?

The second question is: What are, specifically, some of the particular features of this plan? How are you going to make the assessment of what constitutes damage?

Governor EDWARDS. We have the happy advantage of having 35 years of experience with the development of offshore oil facilities.

The Gulf of Mexico has probably sprouted over 11,000 wells in its coastal waters since offshore development first began about 35 years ago.

Naturally whenever a refinery or a storage battery is built on the

coastline the land use takes an abrupt departure from its originally intended use.

Our concern would be how that use would affect the going and coming of the tides, how it would affect the salinity of the water, and the development of the shellfish and fish, particularly with reference to oysters and shrimp.

We depend upon estuaries for breeding grounds.

That is the type of concern that we have, but our experience in the overall field, plus our early movement into the environmental impact studies convinces us that we can have minimal adverse effects on the environment while at the same time getting the benefits from the development of the offshore facility.

We merely say that we are moving ahead, planning and taking precautions to prevent the damage, and to provide for its compensation.

Senator BIDEN. I am reticent to press this point.

Governor EDWARDS. Go ahead. Press it.

Senator BIDEN. I specifically wanted to ask what are you doing, like A, B, C, D, E?

Governor EDWARDS. I will let our environmental counsel tell you.

Mr. MILLS. We have Mr. Roger Wallihan from Kaiser Engineers who is representing Kaiser as well as the LSU Center for Wetland Resources. I think Mr. Wallihan can address himself to the specifics of your question, and also included in our detailed statement which we gave to the committee is supporting data which spells out the legal requirements that must be included in this environmental protection plan which Mr. Wallihan, I think, can speak to.

He is seated at the side table. I think he can elaborate on that and satisfy your question.

Senator BIDEN. You have it all. You don't have to go through it all for me. But if you could give me some examples of the compensation and the protection.

Mr. WALLIHAN. Louisiana law calls for an Environmental Protection Plan. The Louisiana State University is currently doing research and is developing the basis for this plan. We expect the work to be completed in October so that this plan can be promulgated by January. Although the principal purpose of the plan is to protect the environment, it will also assess the types of damage which can occur. Land usage, such as a tank farm, will use some marshland and marshland has value. The pipelines will use up marshland. That marshland has value. More than the commercial value, it has a value from its annual production in fisheries, providing refuges to wildlife.

The value of marshland is not a well established or agreed fact. There are wide differences of opinion. LSU is looking further into the subject to establish what we feel is a reasonable value to put on this marshland so that we can establish what are the environmental costs to the State in environment.

Senator BIDEN. Excuse me, now what you are saying is that if you determine the value of the marshland is  $x$  dollars per acre, whatever it happens to be, and I assume that you are going to put a dollar value on that marshland, and then that corporation which is going to develop in whatever way, whether it be a pipeline, a tank

farm, or refinery on that marshland, will compensate the owner, which in this case I assume you mean is the State.

Are you looking at it from that point of view? It will be that dollar amount, is that correct?

Mr. WALLIHAN. We are looking to the State as the protector of the environment. The exact usage of the money is still in the planning stage, some possibilities are that such money could be used to create wildlife refuges or to enhance other parts of the environment.

If you do damage in one area, you can compensate in another area. Assessing the cost of the damage is, again, a point that we are studying right now. There may also be a need for provisions to compensate for third party damages.

Senator BIDEN. So that I don't dominate this, is it fair to state that your study is just underway, it is not completed yet, you don't have the dollar figures, and you are now fleshing out the skeleton in terms of what is to be protected and the dollar value to be put on it?

Mr. WALLIHAN. That's correct. Our study should be completed in October and ready for official publication or the Louisiana Deep Draft Harbor and Terminal Authority by January.

Senator BIDEN. Thank you. I won't pursue that.

Senator HOLLINGS. Go right ahead. I would like to get on that point, because it gets back to the Governor's principal point, because it makes the State the agent of the Federal Government.

Perhaps, and perhaps not—we don't know what in Congress would do—one thing that would deter the Congress is that kind of approach, where you put an  $x$  dollar figure on marshland, and say since you have destroyed that much land, you give them that much money. You can't recreate marshland.

You say you could use the money to create additional areas. How are you going to create marsh?

Mr. WALLIHAN. Some of the things that can be done is reestablishment of previous conditions after a pipeline is constructed. We have to maintain drainage. It can take years to reestablish the fill in marshland. At a tank farm site you may fill in some area of marsh. You can then create an area around the tank farm to enhance the immediate area, such as we use green belts around cities. It is not simply a question of saying that the developer has destroyed this much land and he therefore has to pay so much for that land.

The handling of oil is the factor which is causing environmental costs.

Senator BIDEN. With regard to the question of wetlands, and maybe the Chairman and I are a bit sensitive to this, I have never discussed this with the chairman, but on the east coast, we don't have a lot of marshland left, and it seems as though every biologist has spoken to say that the marine environment is the beginning of the food chain and the ecosystem, and there is no way you can replenish it. Once it is gone, it is gone.

I doubt if there is anybody out in the audience representing an oil company, I don't know why they would have an interest in these concerns, but were they there, I expect they would be willing to pay

my home State of Delaware just about any price at all for that marshland.

I cannot think of any dollar value we could put on the marshland that, for example, the Shell Oil Co., who wanted to put a large refinery in my State, which, unless you made it a billion dollars, wouldn't be willing to pay in order to develop that marshland.

So that we get to the central question of which some of us think—I speak just for me—I think that putting a dollar value on something like marshland has absolutely no relevance to the real issue at hand, and that is, are we going to maintain the absolutely essential parts of our environment so that we don't do to that which is left what we have done to much of that which we have lost. So that my children and my grandchildren don't have well heated homes and automobiles to drive, but, don't have any beach to go to or any fish to eat.

Granted, I am putting it in the extreme, but I don't see how you can put a dollar value on it.

Governor EDWARDS. We want to make certain they have gasoline to get to the beach.

Senator BIDEN. No. I don't. If we built mass transit systems, and quit putting \$73 billion over the last so many years into an interstate highway system, and so many billions at the State level, and had had a little enlightened policy here in Congress, and I say for God's sake, we have been backwards in our authorities. We are moving into the area of producing more automobiles, which take up—the estimates run to 50 percent of our refined gasoline to go into an automobile, when we should be putting several billion dollars now into a mass transit system.

You know, my children and yours would be able to get that mass transit system, which can be very personalized from the examples shown to us, and maybe have their beach left and not use one-tenth of the gasoline we are using now. What good is going to the beach if when you get there, you swim in an oil slick?

Again, granted, I am being unfair, because of the time.

Mr. MILLS. Senator, may I address to the specifics of your question? The oil company group which is proposing the development of this facility off the coast of Louisiana has optioned and is exercising an option on an area of land where the tank farm would be located which is presently physically removed from the normal function of the adjacent estuary system by a highway, and has been for the last 35 years.

The area upon which this tank farm would be located would not in any way interfere with the normal functioning of the estuary system.

Senator BIDEN. I agree. If it is already raped, then why not go the whole route. I don't think anyone here says we ought to try to protect land which has no value.

Mr. MILLS. This has been planned for.

Governor EDWARDS. Proper planning can prevent future degradation of the coastal area. There are enough areas, and there is enough limited amount of soil needed for this onshore facility. It can be placed in areas that are already lost.

Senator BIDEN. One further question, Mr. Chairman.

Governor, I obviously—you have obviously had an opportunity to read the administration bill here, S. 1751, and I ask you one general question.

Do you think in addition to the licensing change that you suggested within this legislation, that this legislation gives the Secretary of the Interior too much, or too little authority and discretion? How do you view this legislation vis-a-vis the grant of authority you are giving him under this bill?

Governor EDWARDS. I consider it adequate. I say that both as a governor of a State and as a former member of Congress. I think it is adequate, not over extensive. I think there should be a place for this authority. It matters not to us in what agency or department of the executive branch it is placed.

I think the Department of Interior is clearly a proper one, but other departments may also be just as proper.

Senator BIDEN. I submit you should really read this again and take a look at the advisability of giving such wide discretion to one man.

Governor EDWARDS. When you are moving into an area as new as this, someone with final authority should perhaps have a great deal of discretion in certain areas. We will, however, study all pending superport legislation to determine whether the discretion authorized under S. 1751 may not be too broad in some areas.

Senator HOLLINGS. If the Senator would yield, what the Governor is suggesting is that the State be granted a license for a further transfer and the State would then control the license and would then have the full discretion.

Governor EDWARDS. Subject to conditions imposed upon the original license to the State by the national Government.

Mr. MILLS. The amendments which we will submit to the committee subsequent to this hearing will, we believe, accomplish that purpose, and to some extent it addresses itself or they address themselves to the point you raise, Senator Biden.

Senator BIDEN. My concern is not so much what happens after the license is granted, but the fait accompli to begin with, the decision that there is going to be such a facility under certain conditions and licensing it initially. The transfer from that point on is of concern, but not the concern to which I have spoken here.

Governor EDWARDS. May I add a little bone here, Senator? All of the people involved in this business seem to be of one opinion, that the use of supertankers would minimize whatever the environmental impacts would be, compared to the use of numerous smaller tankers. You may find some small consolation in that.

Senator BIDEN. But it potentially intensifies the impact on the particular area. There may be less oil spills nationwide, but that which is spilled may be more concentrated.

Governor EDWARDS. That is why we emphasize the right of the State to have checkoff powers.

Senator BIDEN. Thank you very much.

Senator HOLLINGS. Senator Stevens.

Senator STEVENS. It is nice to see you again. Every time you appear, this friend of mine from South Carolina gets involved in discussion of who is showing leadership.

We are involved in the Coastal Zone Bill, and he criticizes the administration for the Land Use Bill. If the administration asked for the Coastal Zone Bill, then Senator Jackson would have criticized the administration.

Is this offshore development going to affect your State beyond 50 miles from the coastline?

Governor EDWARDS. Certainly it would to the extent that onshore facilities would be needed to exploit it. No matter how far out you go, you have to come into the State.

Senator STEVENS. There is more than a coastal zone involved. As far as my friend from Delaware, he says he is worried about the big supertankers, and we are going to spill more oil than we would from little tankers.

I am sure you are aware that the new supertankers have separate compartments, and we just passed a bill, an amendment to the pipeline bill that passed last week and I called up with the Senator from Washington that calls for double bottoms on these supertankers now.

So, I hope you can carry the message you just expressed, that there is less environmental risk with supertankers than there will be with the small one.

Governor EDWARDS. I think that is a pretty well accepted premise.

Senator STEVENS. I accept it. The Coast Guard does, and I think the EPA does.

Again, we get down to the question of who is involved in leadership these days. I have one question, and I would like to support your suggestion about the States' rights, or the States being the licensees, but I am worried about a one-stop environmental hearing for superports.

As I understand it, you suggest that the Federal Government license the States, and that the States have the right to pass that license on to a nonstate or nonfederal entity.

Is that your suggestion?

Governor EDWARDS. That is a theory.

Senator STEVENS. My understanding of the National Environmental Policy Act is that if we adopted that suggestion, at the time the Secretary of whatever it is, Commerce, or Interior, would grant a license to your State, there would have to be an environmental hearing. That would be a major Federal action.

Then when we got around to your issuing the license to a non-Federal entity and the Coast Guard would have to approve it, or the EPA would, that would be a major Federal action, and you would have two or more NEPA impact statements to comply with existing Federal law.

If you are going to make this suggestion, and I would be most willing to support it, I think you are going to have to help us work up support with the concept that this is a one-stop hearing and the time the first license is granted, all environmental impact has to be examined.

Governor EDWARDS. I think you make a good point, but I believe the language of the amendment would prevent that from happening by providing that the rights under the license be passed on by the State subject to whatever restrictions or requirements were placed on

the original license issuance. The State would not duplicate the one Federal hearing which would take place before construction, and not upon mere issuance of the license to the State.

Senator STEVENS. I like to think I am becoming familiar with the NEPA thing, because of our Alaska pipeline, but the alternative question to the superport, should we decide to put a superport in Delaware, and the Governor of Delaware would go along with it—

Governor EDWARDS. I do not envy your task.

Senator STEVENS. Let's just assume that Delaware wants it. You still are going to have to demonstrate to those people in Delaware who do not want it—the people in Delaware who don't want it are going to attack it in court, and they are going to say there is a viable alternative in Louisiana.

Don't forget, at the time you try to lease your tideland, the people who opposed the Alaska pipeline and said there was a viable alternative, and that is the development of Alaska's North Slope resources—they are the same people who are opposing development of those resources.

I think you have a good suggestion, but I think it is going to be tougher than you realize to have the Congress say first, that an EPA hearing is the NEPA hearing for the whole superport question, and I think you are going to have to draft the amendment and make certain that it does that, and as such it would be an amendment to the National Environmental Policy Act.

Mr. MILLS. What our amendments envision and call for would be that that entity, whether it be the State itself or the transferee under the license which is going to physically construct the facility would be responsible for furnishing the environmental impact statement which is, I believe, what NEPA calls for at the present time.

Senator STEVENS. I think that was a mighty fine suggestion, but with the Alaska pipeline, that would have meant the pipeline authority would have held the impact hearings, and if you expect us to get that vote the other day in the Senate on the basis of a hearing conducted by the proponents of the pipeline, the companies themselves, I think you are dreaming, because we were suspect just because we were agreeing with them, and they were the ones basically suspect from the very beginning. I think you are biting off more than you can chew in that suggestion, because the people who want to put up that deep port, that superport, are going to be the very people that my good friend from Delaware is going to be the most suspicious of.

Senator BIDEN. Me?

Governor EDWARDS. The State has an interest, more than the National Government, in my judgment, and those who disagree could make certain what is done on the coastal areas is done without undue violence to the coast.

The States would be afforded the opportunity of getting a piece of paper which would have in the little wet palms, and then go to an appropriate sublicensee and say "All right, if we can get together on the economic and environmental problems, we can work this out for you to build a superport."

We think the best of every world is served in that.

Senator STEVENS. My State has almost half the coastline of the

entire United States, and I couldn't agree with you more. But I don't think you can do it unless you are willing to fight for an amendment to NEPA, because any Federal action that is considered a substantial Federal action requires an impact statement. Even appointing the State of Louisiana or Alaska as the agent for the Department of Interior to conduct the hearings could be interpreted by the courts as a major Federal action.

Governor EDWARDS. It is possible we could provide for the hearings at the time the State makes the application and let all interested parties get their problems resolved there and provide in the law that the State could transfer the license subject to whatever conditions are imposed by the hearing.

I think you make a valid point, and we will give it further thought and try to work it out. We do recognize the need to pass the obstacle.

We are going to have to find some way to get the environmental impact statement approved by the appropriate Federal agencies to get the action, and we do recognize it.

Senator STEVENS. I invite your attention to what we are trying to do on the power siting problem, a one-stop environmental hearing.

Everyone has a chance to be heard then, everyone has a right to attack that in court, but once that one-stop hearing is completed, the NEPA requirements are over. Unless you do that, you will never get superports.

Again, I hope you convey our best wishes to your lovely bride, we did enjoy having the lady in the Senate.

Governor EDWARDS. Thank you. I appreciate that very much.

Senator HOLLINGS. Senator Scott?

Senator SCOTT. Thank you, Mr. Chairman.

Let me add my welcome to our former colleague in the House.

You know, listening to the Senator from Delaware, I am always reminded that reasonable people differ, and I am just poles apart from the remarks that the distinguished Senator has made, and I am for using Louisiana oil, for using Alaska oil, I am for solving this energy crisis that we have, and looking at every place we can find, whether we are talking about solar energy or petroleum or anywhere in between this sort of thing.

I think we have to use a rule of reason with regard to our environment, and yesterday I was remarking that sometimes it seems to me that some of these superenvironmentalists are not as reasonable as they might be. I don't want to reduce our standard of living.

Governor EDWARDS. If they just weren't too comfortable, it would be easy to deal with them.

Senator SCOTT. Yesterday, it seemed to be so pertinent. Now, as I understand, you suggest even a licensing by the Federal Government to the State and then let the State supervise the operation of the superports. Is that the gist?

Governor EDWARDS. That is basically correct, Senator.

Senator SCOTT. I try to read, and I apologize for not being here, I did have other things to do. I am certainly glad to have your suggestions on this. I feel that the committee would like to have any suggested amendments that you have so we can consider them.

As you know, we never have a perfect bill when it starts out, and we try to go through the committee procedure of considering all reasonable alternatives. I just welcome you here and welcome your suggestion.

Governor EDWARDS. Thank you, Senator. I appreciate that.

Senator HOLLINGS. Governor, what provision was made for public hearings under the environmental protection plan of the Louisiana Superport Commission or authority?

Mr. MILLS. If I may, Mr. Chairman, the State statute which created the superport authority and wrote in the requirements for the establishment of the environmental protection plan calls for this State agency to operate under our Administrative Procedure Act in the State of Louisiana, which in turn calls for State agencies before promulgating rules of procedure to conduct public hearings. This environmental protection plan will be a rule of procedure which will operate, or be operated by, this agency.

As a result, public hearings will be held immediately upon the completion of a draft of the plan itself, which we envision will be some time in November.

The act calls for the promulgation following public hearings no later than the end of January 1974, which is 18 months after the effective date of the act. The public hearings we envision will be in December of this year.

Senator HOLLINGS. I see. So you have not had the public hearings yet, and you cannot tell us what the public reaction has been in that sense.

Mr. MILLS. No. The data gathering and the preparation of the plan itself and its transfer [making] into legal rules of procedure, all this work was begun in January of this year.

Senator HOLLINGS. Under Louisiana law, what would be the penalty for oil spills?

Governor EDWARDS. We have several statutes, and one of them is as much as \$1,000 a day and each day being a separate offense, and injunctive relief is given to an EPA, which was created after I became Governor.

Of course, all damages have to be paid for by the company responsible for it. We also have criminal responsibility.

Also, the forthcoming environmental protection plan will provide sanction for oil spills related to superport operations.

Senator HOLLINGS. What are the criminal provisions, Governor?

Governor EDWARDS. Up to 10 years and fines up to \$5,000 a day, each day being a separate offense.

Senator SCOTT. If you would yield, I wonder if the Governor could tell us how many cases of cancer have been contacted in Louisiana because of oil spills?

Governor EDWARDS. None.

Senator SCOTT. We had testimony yesterday to the effect that oil spills might get into the fish and the people eat fish and they might get cancer. You don't know of any?

Governor EDWARDS. I can state positively that there are no known cases of cancer being contacted from oil spills in Louisiana, nor tuberculosis, or sunstroke.

Senator HOLLINGS. All right. Thank you very much, Governor. We express our appreciation for you and your people's testimony, and we congratulate you once again on the leadership you have given us in the coastal zone development field.

Governor EDWARDS. Thank you, Mr. Chairman.

Senator HOLLINGS. The committee will next hear from Hon. John W. Barnum, and Admiral Thomas Sargent of the Coast Guard.

I would like to make a point at this point in the record, namely that we have before us S. 2232, introduced by the Chairman, and distinguished committee chairman, Senator Magnuson, which in a capsule designates the U.S. Coast Guard as a licensing agency for the Federal Government superport.

That was introduced yesterday afternoon, and will also be considered at these joint hearings.

Mr. Barnum, Secretary Barnum, I should say, we welcome you and Admiral Sargent to the committee. We will be glad to hear from you at this time.

**STATEMENTS OF HON. JOHN W. BARNUM, UNDER SECRETARY, DEPARTMENT OF TRANSPORTATION, AND ADM. THOMAS R. SARGENT, VICE COMMANDANT, U.S. COAST GUARD; ACCOMPANIED BY ROBERT H. BINDER, ACTING ASSISTANT SECRETARY OF TRANSPORTATION FOR POLICY, PLANS AND INTERNATIONAL AFFAIRS**

Mr. BARNUM. Thank you very much.

I have on my left Robert Binder, who is the Acting Assistant Secretary of Transportation for Policy, Plans and International Affairs. He has been conversant with much of the work which is done on superports, and following my statement, he will be pleased to answer any questions you may have in the area.

We welcome the opportunity to appear before the subcommittee today to express the Department's profound interest in the subject matter under consideration—the development of deepwater ports and other offshore facilities—and to express our hope that we can be helpful to your three committees as you deliberate on the various legislative alternatives for such development.

The DOT is well aware of the importance of deepwater port development and of the complex safety, economic, natural resource, environmental, and transportation problems involved. Our responsibilities in the development and operation of deepwater ports are manifold.

The Secretary of Transportation is charged with the responsibility for development of transportation policies and programs and, therefore, is concerned with the location of deepwater port facilities in a manner that is consistent with and supportive to the other elements of the transportation infrastructure.

One of the most important considerations involved is the economic consequences of the facilities locations in relation to existing and projected transportation systems, including pipelines.

The Department is concerned about deepwater port facility loca-

tion as it relates to transportation industry fuel consumption costs, provision of transportation required to support and distribute refinery products, and the location of these facilities, attendant refineries, and distribution systems insofar as they affect the safety, convenience, and economy of existing transportation facilities and systems.

It may be expected that in the not too distant future the United States will be highly dependent upon offshore terminals and their associated transportation systems, pipeline, rail, motor, and vessel, to supply its energy needs.

Due to the vast amounts of resources which would be committed to the establishment of deepwater port facilities and the high degree of their dependence upon these associated transportation systems, the Department envisions that our involvement in the development and operation of deepwater port facilities will be ever increasing.

In addition, as you are well aware, the Coast Guard is the primary maritime law enforcement agency of the Federal Government. Furthermore, CG responsibilities within the ports of the United States also include merchant vessel safety, port safety, aids to navigation, and marine environmental protection as well as search and rescue.

Senator HOLLINGS. At that point, Mr. Secretary, it is very much emphasized in that portion of your statement, the ongoing responsibilities of your department and specifically the CG, and there is some misgiving, specifically the GAO, I think, and the National Academy of Engineering, about the Department of Interior's administration of the Continental Shelf Act.

While they have the responsibilities there, they just haven't brought any cases.

Considering on the one hand that the Department of Interior would license, and that would be about the end of it. Other than the CG and the DOT would have the ongoing responsibility for the very things you list here, namely vessel safety; port safety; aids to navigation; all the things that would occur which would immediately bring to bear upon the problem, the CG.

If the Congress determined that the DOT, specifically the CG, would be given the basic authority over deepwater ports, would your department accept this responsibility?

Mr. BARNUM. Yes; of course, sir.

As I will say later in my statement, I think the administrator's critical concern here is that this licensing authority be vested in a single agency.

I appreciate the remarks which the Chairman entered in the record yesterday, which I just had an opportunity to read this morning in connection with S. 2232. It is the administration's recommendations to the Department that the Department of Interior be the agency given this authority.

But as you indicated, we in the DOT and the CG in particular, will have an ongoing concern with whatever licenses are granted, and it would be acceptable to the administration if the Congress determined this would be an appropriate way to handle this legislation.

Senator HOLLINGS. Very good.

Thank you very much. You may proceed, please.

Mr. BARNUM. Thank you.

The Department of Transportation therefore fully supports the development of an adequate Federal statute respecting the development and operation of deepwater ports. The principal reason why Federal legislation is necessary is because it is contemplated that these ports will be established in the high seas, outside the jurisdiction of the States.

Except for this factor, these offshore ports will be substantially the same as any other port. The kinds of problems will be the same, and the regime of laws applicable to these offshore ports should be basically the same as has been found necessary over the years with regard to our conventional ports.

For these reasons, the Department favors provisions placing responsibility in a single agency, with requirements for consultations with appropriate Federal, State and local agencies. S. 1751 would achieve that result, and therefore we would urge your committee to give it favorable consideration.

As I have indicated, the department supports the application of appropriate existing Federal statutes to the deepwater port facility. Effective regulation of the offshore ports will require the application of these statutes to the terminals themselves and to activities directly associated with their use and operation.

Also, other activities conducted in the vicinity which interfere with or impose a threat to their use and operation must be regulated in a manner consistent with international law.

To the extent that any questions may exist as to the application of specific laws and regulations, the effectiveness of the imposition and enforcement of requirements relating to safety and environmental protection will be hampered. Therefore, the legislative jurisdictional statement by which the listed laws are applied to deepwater ports and all activities connected with their use and operation should be clear.

As a final point I should note that determinations should be made in the legislation relating to offshore terminals concerning the application of civil and criminal laws and the creation of civil police authority.

As you are aware, State and local legislation govern most of the activities existing in ports. Consequently, Federal jurisdiction is limited in scope. Therefore, if Federal law is to be applicable in an offshore area, the equivalent of these State and local measures must be provided.

In this connection, we feel that if adjacent State law is assimilated, the statute should provide a mechanism to maintain the civil law up to date. This is not presently the case with regard to Federal enclaves or the Outer Continental Shelf.

While the current State criminal laws are assimilated, the civil law is not. This produces anomalous and undesirable results.

The department and the Coast Guard were asked by the subcommittee to prepare answers to certain questions for the record.

Mr. Chairman, this completes my prepared statement, and we will

attempt to answer any questions you or the other committee members may have.

Senator HOLLINGS. It will be included in the record.

Mr. BARNUM. Thank you, Mr. Chairman.

Senator HOLLINGS. I could elaborate on the last comment. We had an oil spill in the gulf some 4 or 5 years ago and it caught fire. It stretched 8 miles in one direction and approximately 3 miles in the other.

What was the functional responsibility of the Coast Guard over that oil spill?

Admiral SARGENT. At that time, Mr. Chairman, that was before, of course, the present bill was enacted, and the Coast Guard merely endeavored to coordinate all actions on the part of the, I believe at the time, the Shell Oil Co., to put out the fire and cut off the flow of oil.

Senator HOLLINGS. Union Oil I think it was.

There was a 910-count indictment that I think was finally settled, and that kind of thing. Who brought those charges? Was it the Coast Guard, the Department of Interior, or what agency of Government?

Admiral SARGENT. I think the Justice Department, acting on their own.

Senator HOLLINGS. It just strikes me forcibly that the Coast Guard was more or less the lead agency with respect to all the responsibilities and all the attendant features of the development of a superport other than just granting a license.

I yield to my colleague here. Senator Biden?

Senator BIDEN. Thank you, Mr. Chairman. I have six or seven very specific questions, and I don't know to whom they should be directed. Whoever is most competent to respond, I would appreciate your answering.

In the Coast Guard's testimony before the Interior Committee last year on deepwater ports you indicated that military defense of one of these ports would mean expenditure of money and effort and manpower by the Coast Guard. Can you give us an idea of the military defense of a deepwater port, and in what way this would differ or be more difficult than the defense of a normal harbor installation?

Admiral SARGENT. Actually, defense has a different connotation than I would put on it at the present time. Defense of this country, of course, is up to the Department of Defense, and specifically the Navy in offshore areas of that nature.

At the present time I would envision that the Coast Guard would be involved principally in the prevention of pollution and the enforcement of Federal laws at these facilities.

I don't see the need for any more defense, if you will, than what we have, say, off the shores of the gulf coast.

Senator BIDEN. So that you don't see any alteration as required in our military defense?

I was going from last year's testimony. I wasn't suggesting that you had the primary and sole responsibility for military defense, but unless I am mistaken, you raised the question during hearings on this subject last year of military defense and the need for additional

effort, manpower and money. It is my understanding that the Coast Guard position at that time was that the Coast Guard would need some of this extra money and manpower, I assume either I am incorrect in my research or you have changed your position.

Admiral SARGENT. I don't think I have changed positions particularly, but it is definite the Coast Guard might need additional funds and manpower to assure enforcement of Federal laws at these superports. How much and how many, of course, would depend on the extent of these superports.

And in regard to the defense, I might say that if a single point mooring was involved, for instance, as a superport facility, very little defense would be necessary.

If, of course, you were going to install a very elaborate superport with docking facilities and support, this would very generally, then, be an extension of the United States territory into international waters and would then require probably a review of defense responsibilities.

Senator BIDEN. Again, unless I am mistaken, some parties envision just such an elaborate facility, not necessarily in the gulf coast or not necessarily on the Atlantic coast, but I have heard it postulated by some people.

Again, in your testimony last year, you indicated that new deepwater port development required new, sophisticated safety and navigational devices to handle traffic in all weather under all conditions. Can you give us your current views on what systems would be required and some idea of what they might cost?

To refresh your recollection—and I am quoting from last year's testimony, you said that the new deepwater port complexes would require highly exacting positions due to grounding or collision. An all-weather traffic system could overcome the adverse weather factors. The Coast Guard would have to establish new safety, search and rescue units, and so forth.

That comes from the Coast Guard testimony on page 160 of the Senate Interior Committee Deepwater Port Policy hearings last year. Can you fill that in for us? It looks like a pretty complex thing.

Admiral SARGENT. It isn't as complex as it may sound, however. The Coast Guard has made additional studies in this regard. What we envision with deep draft tankers are sea lanes along the coast, a very definite knowledge of where these vessels are, so that we can keep their schedules and keep them separated, and an electronic navigation system, such as Loran-C which is already in existence, by the way, along the coast. This would allow the accurate positions of these vessels within the sea lane separation scheme.

We also envision Coast Guard surveillance and, of course, assistance by private enterprise, in the mooring of these supertankers.

These tankers can run up to 89 feet in draft. They must run offshore. Accurate charting would be needed and an accurate navigation system required on each of these vessels.

We do have the authority.

Senator BIDEN. Has your outfit estimated any of the costs involved here? How much Federal taxpayers' money would be needed to be given to you in order to facilitate your handling the job that you envision? Do you have any idea of that?

Are we talking about millions, billions, thousands?

Admiral SARGENT. We are talking not billions, no, sir. I am talking in the neighborhood of probably \$2.5 million over a period of two or three years to implement it, and perhaps another \$1 million to continue it each year. This is for personnel.

Now, if there is an intention to install superports on the west coast of the United States, a review of the navigational facilities on that coast must be made.

Senator BIDEN. You said you had some updated studies. Would you be able to make those available for the committee for inclusion in the record with the Chairman's permission?

Senator HOLLINGS. Yes.

Admiral SARGENT. I will endeavor to. I am not sure they are finished yet.

[The following information was subsequently received for the record:]

The Vessel Traffic System Issue Study has not, as yet, been completed.

Senator BIDEN. To provide the navigation facilities you have discussed, would you need authorization from Congress similar to that given to the Coast Guard to install such systems in the Puget Sound area?

Admiral SARGENT. We need an authorization to make any capital improvement. This would come through the usual budgetary program.

Senator BIDEN. So we would have to take action similar to that in the Alaska pipeline legislation to give you that?

Admiral SARGENT. The authority could be done through our regular Coast Guard authorization bill.

Senator HOLLINGS. Yes.

Senator BIDEN. In the study of the North Atlantic port sites, the Corps indicated the Coast Guard can be doing research on containing oil spills in the area, and it says containment and cleanup techniques are used to control spills and prevent them from spreading. These devices have been used at sea for large spills. With the exception of the newest boom developments, no presently available booms are effective in containing oils other than in calm seas.

The report goes on to say that this is an area of ongoing research and better containment devices are likely to be developed.

First of all, do you agree with the Corps' statement and if you do, do you think that we are developing better oil spill containment procedures?

Admiral SARGENT. Yes, sir, I agree in substance with the Corps' statement. However, I would like to give you an update, if I may.

We have at the present time approximately 1,000 feet of prototype barrier resulting from our research and development efforts. We have procurement efforts under way at the present time as a result of our R. & D. efforts, and we expect delivery of 15 systems to commence in the spring of 1974. We will site these at strategic ports.

These are deepwater systems, so that we could contain a deep-water oil spill.

Senator BIDEN. What is new about that?

Admiral SARGENT. These systems will be transportable by ship, by aircraft, and capable of effectively containing oil in 3 to 5-foot seas, 20 knots of wind, and able to withstand 8-foot seas and 40 knots wind.

Senator BIDEN. Are these portable? You get notice of a spill and you head to the site?

Admiral SARGENT. We can take them out in aircraft, drop them, with a vessel on the way at the same time, and tow it around the spill to contain it.

Senator BIDEN. I assume you have more detailed studies indicating that. Could that be made available?

Admiral SARGENT. Yes, we can furnish them for the record.<sup>1</sup>

Senator BIDEN. Are you familiar with the lightering operations which take place in many places, including the mouth of Delaware Bay, to get up to Philadelphia?

Admiral SARGENT. Only slightly, sir.

Senator BIDEN. We heard a lot of significant colloquy here about how much safer than lightering operations in the open sea the superport would be to accommodate oil moving up the Delaware River to refining areas near Philadelphia. We are told it is significantly safer to go the deepwater port route.

Do you agree with that?

Admiral SARGENT. Yes, sir. I do, because spillage comes from transfers. This is our greatest danger. If you have only one transfer point at sea, and you can pipe it ashore to storage facilities, then there is only one place where the spill could occur. Off-loading two or possibly three times increases the possibility of the spill.

Senator BIDEN. Mr. Chairman, I have no more questions, but I have taken a lot of time. My other questions are specific, as these are. May I submit them for the record.

Senator HOLLINGS. If you can, I am sure Admiral Sargent would answer them.

Senator Johnston?

Senator JOHNSTON. You say you can handle 3 to 5 foot seas. Most seas in the Gulf or in the Atlantic are heavier than that, aren't they?

Admiral SARGENT. In the Gulf, no. It depends on where you are and what weather you have. In the North Atlantic, there may be times when for a single point mooring type of offshore facility, you couldn't make a transfer for a day or two. This can happen.

Senator JOHNSTON. You mean you couldn't make the transfer because it is too difficult to get them together, or because of the oil spill problem?

Admiral SARGENT. Because you couldn't moor to the buoy. This has happened even in the Mediterranean, where they do a great deal of offshore transfers. However, the Coast Guard could regulate under the Ports and Waterways Safety Act, as to whether it was safe or feasible to moor to these offshore ports and systems.

Senator JOHNSTON. Are you confident that we now have the technology to handle most oil spills?

<sup>1</sup> See p. 248.

Admiral SARGENT. Yes, sir, if we govern the actions of the offshore offload program. Yes, sir, I think we do.

Senator JOHNSTON. Given the unexpected, when you have a collision?

Admiral SARGENT. With the unexpected, for example, we will have problems.

Senator JOHNSTON. If the *Torrey Canyon* broke up out there around the buoy, could you clean up the oil?

Admiral SARGENT. If you had a *Torrey Canyon*, at the present time, no, but I hope to by next fall.

Senator HOLLINGS. That was used, and it wasn't refined, and would cause us greater trouble.

Admiral SARGENT. Yes.

Senator BIDEN. Mr. Chairman, may I ask, what is going to happen between now and next fall?

Admiral SARGENT. By then, we should have our 15 systems of deepwater containments.

Senator BIDEN. The technology is available now, but you just don't have it yet?

Admiral SARGENT. It is available, and by that time, I think we will have it.

Senator JOHNSTON. Can you demonstrate that?

Admiral SARGENT. We have some demonstrations off the west coast at the present time, and we can certainly brief you at any time on the systems, Senator.

Senator HOLLINGS. We will get that briefing, and we appreciate it.

Senator Scott?

Senator SCOTT. Thank you, Mr. Chairman.

Admiral, let me ask you a couple of questions and then go to the Secretary.

I am not too familiar with international or admiralty law. It has been a long time, anyway, since I studied it, and when we are talking beyond the 3-mile limit for the construction of these superports, is there any problem with regard to American jurisdiction or supervision under the law of nations on that, or perhaps the Secretary could address himself to that.

Do we have any problems, if we legally enforce our own jurisdiction, or as far as it is concerned, when we go beyond the 3-mile limit for the construction of these superports?

Admiral SARGENT. Senator, I think I can answer to a certain extent. I am not a lawyer, of course.

We do have a bill right now, S. 1734, which contains, amongst many things for the Coast Guard, an extension of our aids to navigation authority beyond the territorial waters of the United States.

Senator SCOTT. As you know, Admiral, we don't make these laws unilaterally, unless we are willing to go to law to enforce them, and I was just wondering if there is any international agreements under which, and frankly, I am not knowledgeable in this field. I have had a course on admiralty law and I am a lawyer, but it has been 35 years, and I am just asking, as I understand, it is contemplated that these superports would be constructed beyond the 3-mile limit.

Now, with that in mind, does your country have jurisdiction, is it recognized under international law that you could completely supervise, as Americans, superports beyond the 3-mile limit?

If you don't know, please say so, but I think it is something that if there is any doubt in the minds of other members of this committee, it is something we should look into to be sure that we have that jurisdiction.

Senator HOLLINGS. The Administration takes the position that it is a reasonable use of the high seas permissible under treaties. Of course, we have the Law of the Sea Conference going on right now in Geneva, preparatory to the Santiago Conference, which members of this committee will be attending.

At the present time, I only know of Belgium, which is building one 20 miles out and it has been considered with the United Nations, the law of the sea, and with the U.S. position, as one of reasonable use of the seas.

These will be beyond the 12-mile limit, as I understand it. I didn't mean to preempt the answer. I am yearning for information in anything you can tell us about it.

Senator SCOTT. I know the Secretary was looking at papers. Did you have an answer that you would like to give the committee?

Senator HOLLINGS. Or Mr. Binder, who is a lawyer.

Mr. BINDER. I am a lawyer, Senator.

Mr. BARNUM. Mr. Chairman, and Senator Scott, there is a convention that has general applicability in this area. One of the suggestions has been that by making it, or by declaring that the deep-water port facility and the immediate adjacent area would constitute a roadstead, that would give us jurisdiction.

Senator SCOTT. Are you saying under present international law, we do have the jurisdiction over a superport that would be projected beyond the three mile limit? I am talking about present law, not prospective law, and I hope the distinguished chairman is correct. It will resolve any differences, and I am aware that some nations claim jurisdiction well beyond the limits that we claim, but is there any problem that you see here on this?

Mr. BARNUM. I believe there is not a problem, but I would like to get from the Department of State, the leader of our delegation to the Law of the Sea Conference, a clear statement that would respond to your question and submit it to the committee for inclusion in the record.

Senator HOLLINGS. Fine.

[The following information was subsequently received for the record:]

In response to Senator Scott's inquiry, the Department on August 21, 1973, requested from the State Department a clear statement for inclusion in the record.

The State Department responded by forwarding a copy of the statement presented to your Subcommittee on October 2, 1973, by Mr. John Norton Moore, Chairman of the NSC Interagency Task Force on the Law of the Sea. It is the State Department's opinion that Senator Scott's question is answered in Mr. Moore's statement.

Senator HOLLINGS. The Convention of the High Seas itself is the other convention that you didn't mention.

Senator SCOTT. Let me ask, Admiral, would it be your testimony, and I know we talked to the Senator from Delaware, and the Senator from Delaware spoke about oil spills. Is it your testimony that the construction of these superports would tend to minimize oil spills, or is that an unfair interpretation? Would it tend to reduce or increase, or would it have any effect upon oil spill?

Admiral SARGENT. On the overall, Senator, if you used offshore deepwater ports, you would normally, then, use deep-draft tankers, tankers of 250,000 tons on up. In that case, there will be a reduced number of transfers and a reduced number of small tankers.

Senator SCOTT. Is it correct to assume that you are saying the construction of these superports would tend to minimize or to reduce the oil spills?

Admiral SARGENT. Yes, sir, I think they would.

Senator SCOTT. Mr. Secretary, you spoke from time to time about the administration.

Now, is it fair to assume that all of the administrative agencies that the present administration does support the construction of these superports? There is no known disagreement among the various federal agencies on this?

Mr. BARNUM. Not to my knowledge, Senator.

Senator SCOTT. How many Federal agencies would be involved to your knowledge in the regulation of these superports? We spoke a few minutes ago about the Department of the Interior, and the Department of Transportation, and is the Coast Guard now a part of the Department of Transportation?

Mr. BARNUM. Yes, sir.

Senator SCOTT. Some years ago they were under Treasury, and they have been kicked around. We all love you.

Mr. BARNUM. We have not kicked the Coast Guard around.

Senator SCOTT. I am glad to hear that. But how many Federal agencies would be involved?

Mr. BARNUM. The Coast Guard would be involved. That is the Department of Transportation.

We would also be involved by virtue of the office of pipeline safety.

Senator SCOTT. That is still under the Department of Transportation?

Mr. BARNUM. Yes, and obviously what connect the superport to the shoreside facilities would come within the jurisdiction of the office of pipeline safety.

Senator SCOTT. I mean outside the Department of Transportation. You have one unit and you have a Secretary that resolves any differences you would have. I would hope this is true. What the other departments, then, Department of Transportation and the Department of Interior, as best you know?

Mr. BARNUM. I think we ought to treat it in two parts. What agencies would have any jurisdiction? I think the EPA would be one, and the Council on Environmental Quality.

The legislation that your committees would now promulgate, of course, would decide which agencies should have licensing or other authority over the activities of the superports.

**Senator Scott.** Mr. Secretary, you were here, I believe, when we had the Governor of Louisiana testify and heard his testimony. Now, as I understand, he was suggesting that under Federal guidelines that we have these superports licensed by the States. Would you have any comment? Would you support this concept, or would you care to comment on it?

**Mr. BARNUM.** No, we would not support that concept. We believe the licensing and the regulation of superports is something that can most effectively be given to the Federal Government.

**Senator Scott.** How does that tie in with the announced policy of the administration of returning power to the States and to the people? This is something our President has spoken of, and I am a very ardent supporter of the President, but I hear many say this from time to time, and how does this tie in?

Is the Federal Government the only one that is able to control things of this nature?

**Mr. BARNUM.** No, but I don't think each State would wish to have its own Coast Guard. This does contemplate State being licensed for superports, and I don't think we want to be in a situation where we have 20 superports around the perimeters of the coast.

**Senator Scott.** We had testimony yesterday from the White House, from Russel Train, the head of the White House Agency on the Environment, and—

**Senator Hollings.** He is to be appointed head of EPA today.

**Senator Scott.** Oh, he is to be appointed today. I have lost my train of thought here for some reason, Mr. Chairman, and let me just yield back the balance of my time.

**Senator Hollings.** I apologize. I didn't mean to interrupt you.

**Senator Scott.** I didn't mean to be critical of the Chair, but for some reason, the question I was going to ask—

**Senator Hollings.** You are getting into the State relationship and the Federal relationship, and, of course, if I could comment at this time, Mr. Secretary, you have been very, very helpful, but the last paragraph in a sense, or one of the last ones relative to the uniformity of the States' civil statutes, we would have to throw that ball back to you. You have to go back to OMB and testify.

That was exactly the concern of the Department of Transportation and the others who attested to a 4 year period on coastal zone management. We finally got the act, but it is not funded.

Therein, you build in the Federal principles and the Federal guidelines on a voluntary basis at least in the initial stage, and one of the minor things is a uniformity and the updating of the civil statute of the several coastal States to fit in these problems and new approaches to them develop.

I wasn't being political with my distinguished colleague from Alaska, but it was a matter of principle of law here. We have a law on the books not funded. But we have no authorization and no law, we have allocated by OMB \$20 million, and it is not the law yet.

We started the year off, and I think President Nixon was accurate and correct in trying to hold spending down to \$268 billion. I support him in it. I think one of the best ways I know is to cut back on the already authorized measures, certainly not go on funding things that are not even in the law.

Mr. BARNUM. That is good advice, Mr. Chairman.

Senator JOHNSTON. Mr. Chairman, I would like to ask two questions, and, if you would like to research and give the answer in writing, that is fine.

First of all, without a specific statement in the legislation that would preempt the question, would a State have the right to tax the throughput of the superport? That is, the adjacent State?

Mr. BARNUM. I would like to submit that in writing.

Senator JOHNSTON. Second, what would be the power of the State to regulate the activities of the superport, specifically, within the 3-mile limit? Who would have the primary authority to license pipelines and to regulate them? Should the Federal Government grant the permits for pipelines, and could they grant to the State the power to expropriate? I believe there is something specifically in the Outer Continental Leasing Act of 1953 relating to these matters.

I wish you would give us a definitive statement, as best as you can, on what the residual power of the State would be to regulate. We will either want to supplement that authority or take that authority away. I am particularly interested in the power of the State to tax.

Mr. BARNUM. We will supply that answer, also.

[The following information was subsequently received for the record:]

The Outer Continental Shelf Lands Act (the "OCS Act") 67 Stat. 462, declares that ". . . the subsoil and seabed of the outer Continental Shelf [i.e. submerged lands lying seaward and outside of the boundaries of the adjacent state] appertain to the United States and are subject to its jurisdiction, control, and disposition. . . ." The Constitution and laws of the United States are made applicable by the OCS Act to all structures erected on the outer Continental Shelf for the ". . . purpose of exploring for, developing, removing, and transporting resources therefrom. . . ." State taxation laws are expressly declared not to apply to the outer Continental Shelf. The civil and criminal laws of each adjacent state in effect as of August 7, 1953, are declared to be the law of the United States for those areas of the outer Continental Shelf adjacent to that state, to the extent they are applicable by their own terms and are not inconsistent with other Federal laws and regulations.

It is clear from this declaration of Federal interest and control that deep water ports and other structures located upon the outer Continental Shelf are not subject to the jurisdiction, control and regulation of an adjacent state.

The Submerged Lands Act (the "Lands Act"), 67 Stat. 29, defines the seaward boundaries of the coastal states and declares that the ownership and all control of submerged lands within those boundaries is vested in the adjacent state, subject only to certain specified reservations of Federal authority. One such reservation of authority is that such lands continue to be subject to a Federal navigational servitude and also to regulation by the United States for the constitutional purposes of commerce, navigation, national defense and international affairs. The rights retained by the Federal government under the Lands Act do not, however, include general proprietary rights or the right to control the use and management of such submerged lands except in those limited areas specified. Thus, deep water ports and related pipeline facilities located entirely within the "seaward boundaries" of a coastal state would be subject to primary state regulation.

All interstate pipeline facilities utilized in transporting commodities from the outer Continental Shelf across submerged lands lying within the boundaries of an adjacent state would be subject to that state's taxing authority for the portion of the pipeline facilities lying within that state the same as if the pipeline were located on dry land. The Federal Constitutional limitation against undue burdens on interstate commerce would apply, however, to the taxation of interstate shipments of commodities by pipeline which transverse the seaward boundaries of a coastal state.

The Federal government exercises safety regulatory authority over pipeline facilities utilized in the interstate transportation of both liquid and gaseous commodities other than water. Such authority applies without regard to whether the pipeline facilities are located within the seaward boundaries of a state or upon the outer Continental Shelf. Federal safety regulatory authority over gas pipelines pursuant to the provisions of the Natural Gas Pipeline Safety Act of 1968 (82 Stat. 720) is more extensive than in the case of liquid pipelines as it extends to pipelines not used in interstate commerce but whose use has an affect on such commerce. Liquid pipelines must be utilized by carriers engaged in interstate commerce to be subject to Federal safety regulation under the provisions of the Transportation of Explosives Act (18 USC 831-835).

At the present time pipeline facilities are located and constructed upon the outer Continental Shelf pursuant to an OCS lease or an OCS pipeline right-of-way granted by the Secretary of the Interior under provisions of the OCS Act. The Secretary of the Interior is charged with the responsibility for awarding such leases or pipeline right-of-way and also the promulgation of such rules and regulations as he determines to be necessary to provide for the prevention of waste and the conservation of natural resources on the outer Continental Shelf.

Senator SCOTT. Mr. Chairman, if I might, I would make one concluding remark.

I would hope that the Department of Transportation and all of our Federal agencies would give some credence to the suggestion of the President's of returning powers to the States, because I frankly don't believe that the President intended to just give lip service to this, and frankly, I am somewhat impressed with the statement of the distinguished Governor from Louisiana, the remarks that he made, and I would hope our report out, would give friendly consideration to his testimony.

But speaking as a long time government employee of 33 years, sometimes we don't carry out the suggestions from our leadership, and we are talking about the President of the United States, who is over the Department of Transportation.

Thank you, Mr. Chairman.

Senator HOLLINGS. Thank you very much, Senator.

Thank you, Mr. Secretary and Admiral Sargent, and you, too, Mr. Binder. We appreciate your presentation here this morning. We will look forward to your submitting those questions and getting those answers that you will bring back to the committee.

[The following information was subsequently received for the record:]

#### OFFICE OF THE SECRETARY

##### DEEPWATER PORT POLICY

*Question 1.* Describe briefly and in general terms those functions and responsibilities of your department, agency or office and the statutory basis thereof, which would have a bearing on the development and operation of U.S. deepwater port facilities; (a) onshore and (b) offshore.

*Answer.* The Department of Transportation's responsibilities in the development and operation of deepwater ports are manifold. These facilities would necessitate increased Coast Guard involvement; additional navigational aids must be developed and maintained; safety regulations must be enforced, and oil spills alleviated.

The DOT has responsibility for insuring the reliability of pipeline systems from the deepwater port terminal to the shore, to the refinery and ultimately to the consumer. In light of these responsibilities, and with the knowledge that national transportation needs currently account for about 50 percent of U.S. petroleum consumption, the Department of Transportation is keenly interested in deepwater port issues.

The Department of Transportation (DOT) jurisdiction over offshore liquid pipelines derives essentially from the Transportation of Explosives Act (18 U.S.C. 831-835) as amended by the Department of Transportation Act (49 U.S.C. 1651 et seq.). Under these statutes, the DOT has authority to establish regulations for the safe transportation of hazardous materials, petroleum, and petroleum products by pipeline in offshore areas. Such regulations relate to carriers engaged in interstate or foreign commerce.

In addition, the DOT has a significant responsibility in the anti-pollution area relating to water quality in the navigable waters of the United States.

Although the DOT has safety responsibility and authority over offshore transportation-related facilities, both in the navigable waters within the States' boundaries and on the OCS, it has an interface for non-transportation-related oil facilities with the Environmental Protection Agency in the navigable waters and with the Department of the Interior on the OCS.

DOT safety regulations implementing the statutory authority for the transportation of hazardous materials, petroleum, and petroleum products were developed primarily for pipelines on land. However, they are applicable with certain pro-forma modifications to offshore pipelines. The DOT is now actively working in conjunction with the EPA to develop the regulations required under the Water Pollution Control Act of 1972 for the prevention of oil discharge in the navigable waters of the United States.

At the same time, the Department is working with the Department of the Interior to develop uniform standards which will not only provide for pipeline safety but also meet the Interior requirements for prevention of waste and conservation of natural resources of the OCS.

To the extent that deepwater ports will be involved with handling liquified natural gas (LNG), the DOT has jurisdiction over the transportation of such gas by pipeline under the authority of Natural Gas Pipeline Safety Act of 1968 (49 U.S.C. 1671 et seq.). In addition, under the National Environmental Policy Act of 1969 the DOT must consider the transportation-related environmental impacts of deepwater ports. Transportation-related environmental impacts of deepwater port development and operation must be compatible with the Department's existing procedures. Finally, laws pertaining to land based activities of the DOT's operating administrations which are related to deepwater port development and operation, must be coordinated therewith or expanded to cover such development and operation.

**Question 2.** In carrying out the function and responsibilities described above, what programs does your department, agency or office administer which involve specific knowledge and technological or administrative skills especially applicable or relevant to the development and/or operation of deepwater port facilities; (a) onshore (b) offshore?

**Answer.** The Secretary of the Department of Transportation has certain regulatory authority over natural gas pipelines under the Natural Gas Pipeline Safety Act, 49 USC 24. This Act provides for the promulgation and enforcement of safety requirements. The standards apply to "the gathering, transmission or distribution of gas by pipeline or its storage in or affecting interstate or foreign commerce . . ." with an exception for the gathering of gas in rural areas.

Section 834(a) of the Explosives and Other Dangerous Articles Act (18 USC 831-835), as amended by the Department of Transportation Act (49 USC 1651-1659), authorizes the Department of Transportation to ". . . formulate regulations for the safe transportation within the United States of explosives and other dangerous articles . . . which shall be binding on all carriers engaged in interstate or foreign commerce which transport . . . dangerous articles by land. . ." Pursuant to the authority contained in this section, the Department has issued safety regulations concerning the design, construction, testing, operation, and maintenance of liquid pipelines and pipeline facilities within the United States including those located upon the seabed and seabed of the Outer Continental Shelf and in the navigable waters of the United States, and utilized by carriers engaged in interstate or foreign commerce.

**Question 3.** What laws does your department, agency, or office administer which could be expected to require almost continuous and consistent involvement in the development and operation of deepwater port facilities (a) onshore, (b) offshore?

**Answer.** Those cited in response to question No. 2.

**Question 4.** Describe briefly those programs administered or responsibilities carried out by your department, agency or office which, either statutorily or functionally, require coordination with: (a) Other federal government entities; (b) Regional, state or local government entities; and (c) Private or public parties, organizations or institutions.

**Answer.** The pipeline safety regulatory program administered by the Office of Pipeline Safety (OPS) has the overall responsibility for the development and enforcement of Federal safety standards covering the 1.4 million miles of natural gas pipelines and for the safety and antipollution of 434,000 miles of pipelines transporting liquid hazardous materials.

This program requires close coordination with the Department of Interior concerning the use of Federal lands including offshore oil and gas production, the Federal Power Commission on economic and safety matters relating to interstate gas pipelines, the Corps of Engineers on water crossings and shore lines, the Environmental Protection Agency on water pollution, and the U.S. Coast Guard on matters relating to offshore and ship terminal facilities.

The Natural Gas Pipeline Safety Act provides for the States to participate in the gas pipeline safety regulatory program. As a result, this program involves a close association with the States including the administration of Grants-in-Aid. The safety program also interfaces with local governments and private organizations on subjects relating to pipeline safety.

**Question 5.** Outline briefly and provide the status of any studies, investigations or other actions taken by your department, agency or office alone or in cooperation with other federal entities, which relate to the development of deepwater port facilities.

**Answer.** The studies and investigations undertaken so far by the DOT can be divided into two broad categories: economic and environmental.

#### *Economic studies*

In response to a White House Domestic Council task assignment in August 1972, the Office of Policy and Plans Development undertook a study of the economic aspects of Refinery-Deepwater Port Location. The model developed by the Department of Transportation to test the transportation cost effects of alternative superport and refinery location scenarios is a simple heuristic model making use of distance for allocation of refinery supplies to satisfy demands.

As now developed for PAD's I-III (The 38 States east of the Rockies), the model uses 12 refinery districts to supply 406 different demand zones (zones are either SMSA's or contiguous rural counties).

There are two kinds of refinery outputs in the model: (1) pipeable products, and (2) non-pipeable products. Pipeable products may be moved from refinery centers to demand zones by truck, barge, intercoastal tanker or pipeline. Non-pipeable products can move only by the non-pipeline modes. The model permits barge and intercoastal tanker delivery only to those zones with water access.

The model requires inputs of refinery supply and zonal demands which are balanced by loading one or more refinery districts with enough imported products to make regional supply and demand equal. The model operates by having each refinery district supply the nearest demand zone. When all twelve districts have supplied the nearest zone, a second round supplies the second most proximate zone, etc., until all refinery capacity is exhausted. The model then begins sub-routines which determine the lowest cost transport method for each refinery district to supply its assigned demand zones. A unique feature of the model is a separate sub-routine which requires the model to aggregate all tonnage going in the same direction and assign pipeline costs commensurate with the tonnage notionally moving to or through the zone. As a result of this sub-routine, the model roughly replicates the U.S. pipeline system in the region and comes reasonably close on recent annual volumes of intercoastal tanker movements.

In addition to the post-refinery transportation costs the model also accounts for crude input shipping costs from:

- (1) Domestic sources: (a) Alaska; (b) Other domestic.
- (2) Western Hemisphere: (a) Canada; (b) Venezuela.
- (3) Middle East (Persian Gulf).

Briefly the model outputs are:

- (1) Notional refinery district hinterlands.
- (2) Notional volumes by two-product groups between 12 refinery districts and 406 demand zones.
- (3) Mode of transport and cost/bbl between supply and demand centers.
- (4) Total costs of petroleum product distribution in the 38-State region.
- (5) Total transportation costs for supplying crude oil to the refineries and distributing the products to demand zones.

So far the model does not include the Mountain States or the Pacific Coast and does not include crude oil costs. These elements can easily be added since the model is heuristic and additional cost factors only require the addition of sub-routines to account for them.

Seven superport locations (Machiasport, Me.; Long Beach and Raritan Bay, N.J.; Cape May, N.J., and Henlopen, Del.; Bayou Lafourche, La., and Freeport, Texas) are tested for 1975, 1980 and 1990. The interim results assume only one superport location will be used; however the model will be used to test combinations of superports in subsequent work.

A draft report on interim results was prepared in March 1973. The model is flexible enough to allow other agencies to use it for other purposes. The following ongoing uses of the model are representative of the model's capability:

(a) The Council on Environmental Quality is using the DOT model to study the economic aspects of Refinery-Deepwater Port Dispersion along the East and Gulf Coasts of the U.S.

(b) The U.S. Army, Corps of Engineers is using the model to optimize refinery-deepwater port locations in the 38 state area East of the Rocky Mountains.

(c) The Bureau of Land Management of the Department of the Interior is considering using the DOT model to study the economic aspects of alternative outer continental shelf leasing policies for oil exploration.

(d) The model is presently being expanded by the DOT staff to include the 48 contiguous states; refinery operating costs; multiple deepwater port scenarios; and a more comprehensive set of location alternatives. The final DOT report is expected to be available for public distribution by September 1973.

#### *Environmental studies*

The DOT, Coast Guard developed a sophisticated stochastic model to estimate the magnitude and frequency of oil spill probabilities as an input to the environmental aspects of the Domestic Council's tasks. A number of technological and operational modifications for the tanker and deepwater port operations as well as for the transfer of oil from the port to on-shore locations were postulated and oil spill probabilities were determined under each postulate. The results of this effort were delivered to the Council on Environmental Quality.

*Question 6.* In summary, what have the results of such studies or investigations led your department, agency or office to conclude and/or recommend as a matter of public policy concerning the development of U.S. deepwater port facilities?

*Answer.* A number of major interim conclusions reached as a result of our studies so far as listed below. These results are closely related to public policy concerning the development of U.S. deepwater port facilities.

(a) If the past trend of no-planning to meet the challenges of energy demand in the Mid-Atlantic continues in the future, the energy problem of the future will not be related only to a small area of the U.S., but will spread across the whole country and reach those areas that were recently considered safe, energy-wise.

(b) There is a clear compatibility of environmental and economic objectives in matters related with deepwater ports. To support this rare and highly significant conclusion the following facts are provided:

It is both environmentally and economically desirable:

(i) To have deepwater ports in the U.S. rather than using existing ports to receive the projected crude oil imports.

(ii) To have the deepwater port as far off-shore as possible rather than in on-shore areas.

(iii) To have a single point mooring (SPM) system rather than a sea-island or platform in many geographical locations.

(iv) To use a pipeline to transfer the crude oil from the deepwater port to on-shore locations rather than barges and tankers.

(v) To have multiple deepwater ports rather than a single one.

(c) There is a clear need to coordinate decisions related to deepwater port location and operation and decisions involving future locations of refineries.

(d) In terms of transportation costs, refinery location is a significant factor affecting the least cost superport location. However, superport location does not affect the least cost refinery location.

(e) The transportation cost saving offshore attributable to a superport can be more than offset by the dissaving due to uneconomical location of refineries. Therefore, without determining future refinery growth patterns at different areas, it makes no economic sense with respect to total transportation costs to study the least cost superport location.

*Question 7.* In light of such conclusions or recommendations as may have been cited in response to the question above, what specific actions (including additional studies or investigations) do you recommend the federal government undertake with respect to the development of deepwater ports?

The most urgent action for the Federal Government is to enact legislation giving the responsibility of licensing deepwater port construction and operation to a Federal Agency.

Additional studies are needed in the environmental area on operational and technological aspects to reduce potential oil spills and to improve existing methods in containment and recovery of oil spills. In the economic area additional investigations are needed to determine the overall impact to the national economy of alternative locations and the transportation and distribution system requirements of deepwater port development. Also on-shore environmental and secondary economic impacts of deepwater port development need further study.

*Question 8.* What role would you view for your department, agency or office in the accomplishment of such further actions? (Refer to previous responses whenever applicable.)

*Answer.* The DOT through the technical expertise in Coast Guard and in the Office of the Assistant Secretary for Environment, Safety, and Consumer Affairs is capable to play a major role in the safety, distribution, and environmental aspects of deepwater port development. On the other hand, the staff in the Office of the Assistant Secretary for Policy, Plans, and International Affairs have already demonstrated to other agencies their technical capability by playing a major role in studying the economic aspects of deepwater port location.

In short, the DOT expects, and is ready to be a major resource agency and play a significant role in future actions related to deepwater port development and operation.

#### U.S. COAST GUARD

##### DEEPWATER PORT POLICY

*Question 1.* Describe briefly and in general terms those functions and responsibilities of your department, agency or office and the statutory basis thereof, which would have a bearing on the development and operation of U.S. deepwater port facilities; (a) onshore and (b) offshore.

*Response 1.* (a) Onshore: Functions and responsibilities of the Coast Guard which would have a bearing on the development and operation of U.S. deepwater port facilities onshore include the following:

(1) A major role of the Coast Guard in the development and operation of deepwater port facilities located onshore or offshore rises from the authority conferred by the statutes listed in items (1) and (2) of the answers to question 3a below. Under these statutes, the Coast Guard would, among other things, manage vessel traffic, arrange for port security and port safety, promulgate and administer regulations designed to protect the marine environment in the area, enforce legal requirements relating to discharges of oil and other hazardous substances from facilities and vessels, administer and enforce vessel equipment requirements relating to safety, and assure that adequate vessel pilotage requirements are adopted and enforced.

(2) Pursuant to the statutes listed in item (3) of the answer to question 3a, the Coast Guard establishes aids to navigation and regulates their establishment by other persons or entities, requires fixed structures to be provided

with lights and other signals, and may recover the cost of marking sunken vessels or other obstructions. It may be expected that both these Coast Guard functions will be involved in the development of an onshore deepwater port facility and, later, during its operation.

(3) As with any port area within which a large number of vessels of varying types and sizes may be expected to operate, there will be a need to provide for the enforcement and administration of the laws relating to marine inspection, vessel documentation and numbering, vessel manning standards, cargo stowage and handling, and loadline requirements. The applicable statutes are listed in items (4) and (5) of the answer to question 3a below.

(4) After the deepwater port facility has been constructed, and perhaps even during its construction, there may well be occasions where the Coast Guard will be called upon to perform law enforcement and rescue services under the authority conferred by 14 U.S.C. 89 and 88. It should be expected that the greater portion of law enforcement activity will be conducted by local and other federal agency units. However, the Coast Guard may be called upon under 14 U.S.C. 141 to assist these authorities in the performance of these tasks.

(5) It is not unreasonable to consider the possibility that, during or after the development of onshore deepwater port facilities, bridges over navigable waters of the United States may have to be constructed to provide for increased over land transportation service capability which will be required.

Under the statutes listed in item (8) of the answer to question 3a listed below, the Coast Guard: (1) issues permits for new bridge construction and alterations, (2) administers the statutes relating to the removal of obstructive bridges, and (3) regulates the operation of drawbridges. It is worthy of note that an "environmental review" is conducted pursuant to the directions of the National Environmental Policy Act in connection with the issuance of bridge construction and alteration permits.

(b) Offshore: Functions and responsibilities of the Coast Guard which would have a bearing on the development and operation of U.S. deepwater port facilities located *offshore*.

The functions and responsibilities listed in items (1) through (4) of the answer to question 1a would be applicable to offshore facility development and operation.

It should be emphasized, however, that the Coast Guard would have a much greater role in planning for and the development of these facilities when they are to be located outside the territorial sea. This is occasioned by the absence of state authority to provide port planning consideration inputs into the development of these sites. In this absence, the federal government must provide for these considerations itself. The Coast Guard's present statutory authority, if made applicable to offshore facilities, will go far in filling this gap. It should further be noted that, stemming from the lack of state authority to provide for law enforcement at these offshore sites, the Coast Guard may be expected to provide a greater level of law enforcement capability at these locations.

**Question 2.** In carrying out the function and responsibilities described above, what programs does your department, agency or office administer which involve specific knowledge and technological or administrative skills especially applicable or relevant to the development and/or operation of deepwater port facilities; (a) onshore and (b) offshore?

**Response 2.** In general, the Coast Guard programs described in response to question 1, above, all require specific knowledge and technological skills especially applicable and relevant to the development and/or operation of deepwater port facilities both onshore and offshore. Our law enforcement, merchant marine safety, port safety, aids to navigation, and marine environmental protection programs are clearly examples of programs requiring these technological skills. Within the marine environmental protection program, the Coast Guard's National Strike Force Team with elements located on the East, Gulf, and West Coasts is uniquely relevant to the proposed activities of the deepwater port facilities.

**Question 3.** What laws does your department, agency or office administer which could be expected to require almost continuous and consistent involvement in the development and operation of deepwater port facilities; (a) onshore and (b) offshore?

**Response 3. (a) Onshore:** Laws administered by the Coast Guard which could be expected to require almost continuous involvement in the development and operation of deepwater port facilities onshore include the following:

(1) Relating to port security, port safety, and environmental quality including anchorages, traffic management and vessel control:

i. Section 7 of the Act of March 4, 1915, as amended, 33 U.S.C. 471

ii. The Act of Sept. 15, 1922, as amended, 33 U.S.C. 472

iii. Title I of Public Law 92-340, 33 U.S.C.A. 1221 et seq.

iv. Title II of the Act of June 15, 1917, as amended, 50 U.S.C. 191

v. Public Law 92-63, 33 U.S.C.A. 1201 et seq.

(2) Relating to the discharge of oil and hazardous substances, regulation of marine sanitation devices, and regulation of material handling:

i. Section 311 and 312 of Public Law 92-500, 33 U.S.C.A. 1321 and 1322

ii. The Act of August 30, 1961, as amended, 33 U.S.C. 1001 et seq.

iii. Title I of Public Law 92-532, 33 U.S.C.A. 1401 et seq.

(3) Relating to the establishment and regulation of aids to navigation, structure and obstruction marking and other signals:

i. 14 U.S.C. 81

ii. 14 U.S.C. 83

iii. 14 U.S.C. 84

iv. 14 U.S.C. 85

v. 14 U.S.C. 86

vi. Section 15 of the Act of March 3, 1899, 33 U.S.C. 409

(4) Relating to marine inspection, marine casualty investigation, the carriage of dangerous cargo, and vessel safety and manning:

i. Title 52 of the Revised Statutes of the United States and statutes amendatory and supplemental thereto (this would include, but not be limited to, R.S. 4417a, as amended, 46 U.S.C. 391a; Public Law 92-75, 46 U.S.C.A. 1451 et seq.; and sections 10 through 13 of the Act of June 20, 1874, as amended; section 15 of the Act of March 4, 1915, as amended, sections 1 and 2 of the Act of September 4, 1870, 33 U.S.C. 361 through 365)

ii. Title 53 of the Revised Statutes of the United States and statutes amendatory and supplemental thereto.

(5) Relating to the establishment and regulation of loadlines for vessels:

i. The Act of March 2, 1929, as amended, 46 U.S.C. 88 et seq.

ii. The Act of August 27, 1935, as amended, 46 U.S.C. 88 et seq.

(6) Relating to the enforcement of the laws of the United States:

i. 14 U.S.C. 89

(7) Relating to the saving of life and property:

i. 14 U.S.C. 88

(8) Relating to the construction and regulation of Bridges over navigable waters of the United States:

i. Section 9 of the Act of March 3, 1899, as amended, 33 U.S.C. 401

ii. The Act of March 23, 1906, as amended, 33 U.S.C. 491 et seq.

iii. The general Bridge Act of 1946, as amended, 33 U.S.C. 525 et seq.

iv. Section 5 of the Act of August 18, 1894, as amended, 33 U.S.C. 409

v. The Act of June 21, 1940, as amended, 33 U.S.C. 511 et seq.

(b) Offshore: Laws administered by the Coast Guard which could be expected to require almost continuous involvement in the development and operation of deepwater port facilities offshore include all the items in response 3(a) above, except 3(a)(8).

**Question 4.** Describe briefly those programs administered or responsibilities carried out by your department, agency or office which, either statutorily or functionally, require coordination with: (a) Other federal government entities; (b) Regional, state or local government entities; and (c) Private or public parties, organizations or institutions.

**Response 4.** Essentially all Coast Guard programs applicable to the development and operating of deepwater port facilities require considerable coordination with federal, state, local and private entities and parties.

Examples of these programs in each category include:

(a) Other federal government entities: Coast Guard port safety and law enforcement, merchant vessel safety, marine environmental protection, and aids to navigation programs require coordination with numerous federal agencies such as the Corps of Engineers, Environmental Protection Agency, Maritime Administration, Labor Department and Federal Communications

Commission. While certain enabling legislation requires coordination with appropriate federal agencies, the Coast Guard has found that coordination with other affected federal agencies has identified other agency concerns and minimized program conflicts.

(b) Regional, state and local government entities: In program areas where regional, state and local government entities have an identified interest, coordination with appropriate representatives has been conducted. This is especially true in the port safety and marine environmental protection area. The development of the National Contingency Plan was possible only through the close coordination with appropriate regional, state and local government entities. Again, certain of our enabling legislation requires consultation with those interest groups.

(c) Private or public parties, organizations or institutions: In addition to numerous private or public parties, organizations and institutions with which we consult, almost daily, in one form or another, the Coast Guard through its Marine Safety Council has established a number of industry advisory committees. The membership of these committees includes a cross section of the private sector industry, organizations and institutions as appropriate in each case and has provided an excellent formal forum for consultation.

*Question 5.* Outline briefly and provide the status of any studies, investigations or other actions taken by your department, agency or office alone or in cooperation with other federal entities, which relate to the development of deepwater port facilities.

*Response 5.* In responding to your request of April 14, 1972, outlines and abstracts of several studies, which though not in all cases specifically applicable to deepwater ports, address many problems which deepwater ports will have in common with other ports.

(a) The studies which were completed and included in that report are as follows:

(1) *Oil Pollution Liability and Financial Responsibility.*—A report to the President and the Congress, December 1970, U.S. Coast Guard.

This study dealt with liability and financial responsibility for vessels and both onshore and offshore facilities.

(2) *Control of Hazardous Polluting Substances.*—October 1970, U.S. Coast Guard, a report and study submitted to the Congress by the President.

A major conclusion of this study was, “. . . but our major effort must be placed on prevention of spills. . . .” The broad objective of the study was to determine methods and measures for controlling hazardous substances to prevent their discharge, the most appropriate measures for enforcement and recovery costs if removal is undertaken by the United States.

(3) *Hazards of LNG Spillage in Marine Transportation.*—February 1970, Prepared for the Department of Transportation, U.S. Coast Guard, by the U.S. Department of Interior, Bureau of Mines.

This study group, in examining LNG spillage under varying conditions, observed small scale explosions upon pouring LNG onto a water surface. This observation generated follow-on efforts to observe the phenomenon more closely and to pursue cause and effect relationships.

(4) *LNG—Water Explosions.*—May 1972, National Academy of Sciences, National Research Council, prepared for the U.S. Coast Guard.

The study concluded that LNG—Water explosions are flameless explosions related to superheat conditions. It concluded further that the physical violence resulting from a superheat-limit explosion is minor compared to one supported by combustion or chemical decomposition.

(b) The following study was reported as ongoing in the 1972 reply to your query and has now been completed:

(1) *Supertanker Environmental Study.*—This interagency study looked at many aspects of supertankers and deepwater ports, drawing conclusions in the subject discussed in the outline of tasks (attached).

(c) Additional studies of importance to a consideration of deepwater ports cover other subjects.

(1) *Vessel Traffic System Issue Study.*—U.S. Coast Guard with assistance from Computer Science Corporation, June 1973.

This study designed a methodology for evaluating the need for Vessel Traffic Management in specific geographic areas which can include ports and inland or offshore waterways. It further discussed government and private

roles in Vessel Traffic Systems, methods of Vessel Traffic management, hardware capabilities, legal ramifications, data needs, and other subjects.

(2) *Spill Risk Analysis*.—an ongoing study. The current phase of the study is being performed by Operations Research, Inc. It is part of a proposed 7-year plan to develop a comprehensive spill risk analysis methodology which will be compatible with such other systems as the Chemical Hazards Information Reporting Systems, the Pollution Response Center, Vessel Traffic System development, Merchant Vessel Casualty Reporting System, and Marine Safety Regulations. An outline of the 5 phase effort is attached.

(3) *Radionavigation Aids Study*.—This contractual study performed for the Coast Guard by Polhemus evaluated several navigation systems for the coastal influence where all the deepwater ports will be located and recommended Loran C as the system of choice considering area, accuracy requirements and cost.

**Question 6.** In summary, what have the results of such studies or investigations led your department, agency or office to conclude and/or recommend as a matter of public policy concerning the development of U.S. deepwater port facilities?

**Response 6.** The only study for which the Coast Guard provided a direct impact to issues leading to a public policy on deepwater ports was the Super-tanker Environmental Study. In general, we concurred with the findings of the study, e.g.: that offshore sites provided the least potential for environmental damage; that at the present, pipelines are the most economical and environmentally safe means of transshipment of oil from a deepwater port to shore; that pollution controls and cleanup capability are required; that offshore terminals will be developed with private capital; and that offshore ports are primarily transshipment terminals.

Beyond this study, the other studies provided applications for all ports, including deepwater ports. In these areas, public policy recommendations are no different than for coastline ports, e.g.: that Vessel Traffic systems be established when they can be shown to prevent casualties and environmental damage; that safety and economic considerations must balance to meet the needs of both the government and the private sector; that the interface between the marine mode and other modes of transportation must be a significant factor in future port development; that limits of liability are satisfactory for existing onshore and offshore facilities; that in the future, risk analyses will provide better information on how to make vessel movements through ports safer; and that to date, the hazards of LNG movement do not preclude shipment using existing technology.

In the area of legal ramifications of offshore ports, the Coast Guard has recognized that the impact of such developments on the upcoming Law of the Sea conference must be considered. We are actively participating in activities on both sides of this discussion.

**Question 7.** In light of such conclusions or recommendations as may have been cited in response to the question above, what specific actions (including additional studies or investigations) do you recommend the federal government undertake with respect to the development of deepwater ports?

**Response 7.** Based on general knowledge of the numerous studies and reports made on the subject, the Coast Guard feels that an adequate federal statute dealing with the development and operation of deepwater port facilities is required. The requirements established by this federal legislation, in all probability, will lead to the identification of topics which must be studied by a number of federal, state and local agencies. The Coast Guard, because of its responsibilities in maritime law enforcement, port safety, merchant vessel safety, aids to navigation and marine environmental protection as well as search and rescue, will be vitally interested and involved in any federal actions planned in connection with deepwater port facilities. Details of this projected involvement are discussed in response to Question 8, below.

**Question 8.** What role would you view for your department, agency or office in the accomplishment of such further actions? (Refer to previous responses whenever applicable.)

**Response 8.** Throughout all the responses to the questions above, the Coast Guard has identified program responsibility in maritime law enforcement, port safety, merchant vessel safety, aids to navigation, marine environmental protection and search and rescue. Assuming that any federal statute would

include provisions which would make applicable the existing federal laws of the United States to the deepwater port facility, the Coast Guard program responsibilities listed above and including, in certain cases, the Bridge Administration program, would reflect considerable Coast Guard involvement.

Although any request for the establishment of a deepwater port facility will undoubtedly include the rationale for site selection and the complete plans for site development and operation, for purposes of clarity, the deepwater port facility concept can be reviewed in three functional stages: site selection, site development, and facility operation.

#### *Site selection*

The evaluation of deepwater port facility sites should include consideration of the safety, environmental and security elements of U.S. national interests. Safety and environmental factors must be balanced with other considerations in site selection. Navigational patterns, feasibility of establishing aids to navigation, vessel maneuvering characteristics, necessity for maritime pilots, vessel traffic control patterns, etc., also are some of the necessary ingredients to a proper site evaluation.

With respect to safety and environmental factors, the Coast Guard should be consulted in the review of site selection so as to ensure minimal navigational interference in approaches, sea lanes and possible structures in the vicinity, fishing, and other uses, as well as hazards to the environment.

#### *Site development*

Site development of the facility should include the design and construction of the structure, transfer systems and/or storage systems. The Coast Guard is concerned with assuring that such design and construction meet minimum safety and environmental standards.

Because of essential safety and environmental protection responsibilities, the Coast Guard is especially concerned in the review and approval of design for cargo transfer and storage systems, if any.

#### *Facility operation*

For clarity the facility operation can be divided into several distinct elements: approach area operation, vessel operation, cargo transfer operation, cargo storage, and cargo movement ashore.

Examples of the Coast Guard responsibilities in each of these elements are:

(a) Approach area operation: Coast Guard authorities would be extended to include a review and authorization for any aids to navigation system, either visual or electronic, required along the approach route. Special considerations of appropriate vessel traffic systems including communication systems would require evaluation as well as requirements for pilots, assistance by other craft, and other ship handling assistance.

(b) Vessel operation: Appropriate construction standards for vessels utilizing deepwater port facilities as well as communications equipment, navigational equipment, manning standards, special requirements for pilots and vessel maneuvering assistance will require detailed review by the Coast Guard.

(c) Cargo transfer operation: The regulations detailing pollution prevention measures dealing with Vessels and Oil Transfer Facilities published in the Federal Register on 21 December 1972 by the Coast Guard would be applicable.

(d) Cargo storage: Should cargo be stored at the site, safety and environmental considerations of the transfer to and from storage and in the storage itself would have to be appropriately evaluated.

(e) Cargo movement ashore: If planned by vessel or barge, considerations similar to (b) and (c) above would be applicable. If by pipeline, safety and environmental considerations should be evaluated by appropriate Federal agencies, including the Coast Guard.

(f) General Considerations: Coast Guard maritime law enforcement responsibilities extended to the superport and vicinity would include authority to conduct investigations, make searches, seizures and arrests for the prevention, detection, and suppression of violations of the laws of the United States. By appropriate regulation, the Coast Guard would have the authority to impose civil penalties, detain vessels, constrain facility operations or refer specific cases to the cognizant federal court.

[The following information was referred to on p. 232:]

The Coast Guard is currently continuing the advanced testing program of its high seas oil containment system. Since the high seas system tests which were conducted during the summer of 1972, modifications to further improve containment effectiveness have been completed. Currently, the air droppability features of the system are being conducted and evaluated.

Two recent reports concerning the high seas oil containment system are attached.

ATTACHMENT No. 1

Paper Number SPE 4204

SOCIETY OF PETROLEUM ENGINEERS OF AIME, 6200 NORTH CENTRAL EXPRESSWAY,  
DALLAS, TEX. 75206

[This is a preprint—Subject to correction]

OIL SPILL CLEANUP OPERATIONS

(By Cdr. W. E. Lehr, USCG)

This paper was prepared for the Second Biennial Symposium on Environmental Conservation presented by the Evangeline Section of the Society of Petroleum Engineers of AIME, to be held in Lafayette, La., Nov. 13-14, 1972. Permission to copy is restricted to an abstract of not more than 300 words. Illustrations may not be copied. The abstract should contain conspicuous acknowledgment of where and by whom the paper is presented. Publication elsewhere after publication in the Journal of Petroleum Technology or the Society of Petroleum Engineers Journal is usually granted upon request to the Editor of the appropriate journal provided agreement to give proper credit is made.

Discussion of this paper is invited. Three copies of any discussion should be sent to the Society of Petroleum Engineers office. Such discussion may be presented at the above meeting and, with the paper, may be considered for publication in one of the two SPE magazines.

ABSTRACT

The general requirements for responding to offshore oil spills are discussed. Limitations on cleanup equipment resulting from environmental conditions are described. Current concepts to contain and recover oil, their stage of development, and the salient advantages and disadvantages of each concept are identified.

INTRODUCTION

Each oil spill presents a unique problem to cleanup personnel. The proper response is dictated by a large number of variables. Obviously the location of the spill relative to logistic support bases and the availability of suitable cleanup equipment, support vessels, and skilled personnel determine the kind of response that can be furnished. Not so obvious, but equally important, is the availability of disposal sites for recovered oil and water, and the proximity of wildlife refuges, recreational beaches or other areas that require special protective measures.

The most critical factors, however, are related to the quantity and type of oil released, and, the on-scene environmental conditions. To a large extent they determine the performance limits of all cleanup equipment or techniques. This is particularly true for combating offshore spills.

Although there had been a substantial low level interest in the problems of oil spills for many years, the sinking of the tanker Torrey Canyon in 1967 focused attention on oil spill cleanup. None of the mechanical equipment systems or chemical treatment techniques available proved successful for combating the spilled oil. They either broke up under rough water conditions or suffered unacceptable degradation of performance when confronted with the combination of rough water and widely dispersed emulsified oil.

### CLEANUP REQUIREMENTS

At this point it may be useful to summarize the requirements for an effective spill response system. The procedure for responding to all spills is similar. First, the source of the oil must be secured. Coincidentally the oil on the water surface must be controlled. Then the spilled oil must be recovered. And finally, the recovered liquids and oil fouled debris must be disposed of.

For discussion purposes, only steps two and three—spilled oil control and recovery will be examined.

Typically an offshore spill is caused by a tankship accident or a drill platform catastrophe. Both can result in the release of massive quantities of oil at some distance from shore side support facilities. Cleanup equipment must be capable of harvesting, processing, and storing large volumes of fluid. It must perform effectively under a variety of sea conditions and be able to survive passing storms intact, resuming recovery operations as soon as conditions permit.

All equipment (containment booms, recovery devices, and support equipment such as oil/water separators and temporary storage) should be highly mobile. The unpredictability of time or place of an offshore spill suggests that response equipment be pooled at central storage sites. However, the quick spreading nature of spilled oil dictates that cleanup equipment, particularly containment booms, be deployed as quickly as possible. Additionally, on scene weather can be expected to furnish difficult working conditions for cleanup personnel. The necessity for field changes or extensive modifications to fit response equipment to available surface craft should be held to a minimum. To summarize, all response equipment should be self-sufficient, facilitate operation from a variety of ships and boats, and be suitable for rapid delivery to the spill site.

### OIL MOVEMENT

At the outset of cleanup operations the spilled material must be contained, or concentrated to as thick a layer as possible. Except for a few heavy crudes and residual fuels, oil rapidly spreads on a water surface forming a very thin film. As an example, laboratory developed theories for calm water spreading indicate that a 1000 barrel spill of light crude (sp.gr. of .85 and kinematic viscosity of  $6 \times 10^{-5}$  ft. per second) will cover 3,000,000 square yards to a mean depth of .001 inch within 24 hours.(1) Since all mechanical devices and chemical treatment techniques suffer severe reductions in efficiency as oil thickness becomes progressively thinner, it is doubtful that any known cleanup procedure can be successfully applied to a widely spread oil spill. Obviously surface currents, wind, and sea state also effect the spread and distribution of oil. Oil will drift down wind at about 3% of the wind speed.(2) It will be transported down current and in the direction of movement of the wave trains. A characteristic effect of wind and waves is the creation of relatively thick windrows, or strings, of oil. During recent major spill cleanup operations concentrated on recovering these windrows. Here the procedure was to tow recovery devices at the apex of two containment booms. The booms were towed in a Vee configuration to herd and concentrate the oil in the apex and improve recovery efficiency.

In any event, whether to control spread or facilitate sweeping operations, some kind of containment barrier is a fundamental necessity.

### CONTAINMENT REQUIREMENTS/LIMITS

With few exceptions, available containment booms are unsuited for use at sea. They are not strong enough to survive rough water, or, have poor oil retention ability because of poor wave following capability and upright stability. Theoretically these limitations are amenable to correction through proper utilization of hydrodynamic and structural design theory, and, physical model testing.

Unfortunately the oil retention ability of all floating booms will be severely limited by water current velocity. During normal cleanup operations some water current is highly desirable. The current will pile the oil against the

upstream face of the barrier, thickening the oil layer. This, in turn, can enhance the efficiency of oil harvesting equipment. Unfortunately if the current exceeds a certain velocity, unacceptable quantities of oil will be swept under the barrier. The current induced failure mechanism occurs in two modes. (3) One occurs in the immediate vicinity of the upstream face of the barrier, and is called "Drainage" failure. The other occurs some distance upstream of a barrier, at the leading edge of the contained slick. This mode of failure is called "entrainment" failure.

The mechanism of "drainage" failure can be described in terms of oil density, water current velocity, and barrier draft expressed as a non-dimensional densimetric Froude number. Experiments with many combinations of these parameters has established that the onset of drainage failure occurs at a constant Froude number of about 1.2. This means that the designer should be able to eliminate drainage failure by increasing barrier draft as necessary to meet the anticipated current velocity.

The "entrainment" failure mode is another matter however. It is caused by the shearing off of particles of oil at the leading edge of the slick. The particles are then entrained in the water where they can be carried under the barrier. For very low current speeds (less than .75 feet per second) very little entrainment occurs and oil losses are minimal. As current speed is increased, greater numbers of particles will be entrained. Since the oil particles are buoyant they will rise and reattach to the slick, if the water current is relatively low and the distance between the headwave and oil barrier is great enough. At current velocities of about 1.5 feet per second, massive quantities will begin to be swept under the barrier and unacceptable oil losses will occur.

The entrainment failure mode poses a severe problem for oil spill cleanup operations. It means that successful containment of oil can only be accomplished at sweeping vessel tow speeds of one knot or less unless special operating procedures are followed. The significance of this speed restriction can be appreciated within the context of vessel maneuverability. Most ships cannot maintain the fractional speed control needed to ensure 1 knot or less relative velocity between a towed barrier and the surrounding water. Further, with such low speeds, steering control is nearly impossible under flat calm conditions, much less in a seaway.

Special operating procedures may offer a partial solution. One is to tow (or position) containment barriers at shallow angles (about 25% or less) to the direction of water flow. The idea is to redirect the surface layer of oil and water to a central collection point rather than restrain the oil against an obstruction placed normal to the flow. Some success with this technique has been reported in actual practice, (4) and in full scale field tests. (5) Care must be taken however to ensure that the barrier maintains a smooth, relatively straight line. Any cusping or sagging along the barrier can be a point for entrainment losses.

Another special procedure has been proposed. It recommends that a barrier be allowed to drift down wind and down current. (6) In concept the barrier would be laid in a U-shape at the edge of a slick. The ends of the barrier would be fitted with sea anchors to slow its drift. In this fashion oil would be naturally transported into the barrier while at the same time the relative velocity between barrier and water current would be held below one knot. To my knowledge this concept has not been tried in an actual spill situation.

Fortunately the normal wind driven water currents at sea should be low enough to permit mooring a barrier in place for effective containment of an oil slick. Thus if a barrier can be emplaced before an oil spill has been allowed to disperse, containment can be accomplished.

One other mechanism for reduction in a barrier's containment efficiency should be pointed out. It is caused by excessive motion of a barrier as a result of wave action. When an oil barrier surges, rolls, or heaves it sets up local velocity fields. These tend to cause localized washing of contained oil under the barrier. A successful oil containment barrier must be as transparent to sea waves as possible to minimize such losses.

## CONTAINMENT EQUIPMENT

Most containmen schemes demonstrated to date provide floating booms to surround, or concentrate, spilled oils. Two exceptions are pneumatic barriers and chemical films.

*Pneumatic barriers* use a curtain of air bubbles emitted from a submerged pipe to contain oil. The plume of rising bubbles creates a circulatory velocity pattern in the water adjacent to the plume. At the surface and upper water layers a counter current is produced. The counter current is intended to stop the flow of oil past the bubble plume. Unfortunately the retention ability of the pneumatic barrier is adversely effected by both wave action and free stream velocity. Both tend to displace the rising plume and its associated velocity field, allowing oil to be transported past it. Other disadvantages are related to lack of portability and high power requirements. A distinct advantage of the pneumatic barrier is that it does not restrict the free passage of surface vessels. These devices have been used with some success in areas with little sea and current action.

*Chemical booms*, also known as piston films or chemical herders, have recently been demonstrated. These "booms" seek to create a monomolecular film on the water surface whose spreading pressure exceeds that of spilled oil. They can then effectively compress oil into a small area in a relatively thick film. Chemical booms appear to work in thin films. They are limited by thick oil layers and high oil viscosity. There is also some concern as to the integrity of the herding film under the influence of wind and waves. Further, its effect on various recovery techniques, should they inadvertently be prewetted by the herding film, needs consideration. Nevertheless the chemical boom can, and is being utilized to assist in cleaning up oil, particularly small harbor spills.

*Mechanical containment* by floating booms is the primary method of controlling oil spills. Floating booms are of three general types: Multiple tube, Float and skirt, and Fence. They are made of various materials, come in various sizes, and provide for either mooring in place or towing. Following are brief descriptions of the floating booms:

*Multiple Tube.*—Multiple tube type barriers consist of two or more continuous, fabric tubes. At least one of the tubes is pumped full of sea water for ballast. The other tube(s) are inflated with compressed air for buoyancy. Strength is provided by the tube fabric and/or an integral tension line laid up in the joint between tubes. Experience with this type of boom is very limited at the present time. However some success has been reported in Britain.(6) It would appear that motion response as well as provisions for adequate strength and intermediate attachment points will be the most demanding considerations in this type of boom. A potential advantage of the continuous, multiple tube boom should result from its ease of deployment. In theory it could be paid out from a storage reel on a support ship, inflated and be in service in short order.

*Float and Skirt.*—Float and skirt barriers consist of buoyant floats from which a ballasted skirt is suspended. The skirts may be rigid or flexible. Ballast may be provided by chain or lead weights attached to the bottom of the skirt. Location of the anchor or two points for this barrier appears critical if it is to be used in fast currents. They should be placed at the bottom of the skirt.(5)

Figure (2) illustrates a recently developed float and skirt type barrier. It is an exceptionally large structure, designed to survive 20 foot waves, 60 knot winds and 2 knot currents. The special feature of this boom, aside from large size, is the location of a bottom tow cable (tension member) suspended 8½ feet below the waterline. The boom is reported to have successfully contained oil during recent tests in 6 foot waves, 20 knot winds, and water currents to 1¼ knots.(7)

*Fence Type Barriers.*—Fence type barriers consist of rigid or flexible, vertical panels supported by buoyant floats attached to the sides of the "fence" panels. Waterplane area and location of the primary tensile strength members are critical to ensure upright stability and desired motion response in surge, heave and sway.

Figure (8) is an example of a "fence" type boom. It was developed by the Coast Guard and reflects concentrated laboratory and theoretical analysis concerning motion response, strength, and oil slick fluid mechanics. The prototype is of nylon reinforced neoprene with a draft of 27 inches and a freeboard of 21 inches. Buoyancy is furnished by 36 inch long by 14 inch O.D. air inflated, horizontal tubes spaced every 66 inches along the barrier and extending on both sides. The most significant feature of the barrier is the use of a nylon rope attached to the barrier by bridle lines. The nylon rope is the primary strength member. By placing it outside the barrier, wave following ability of the barrier is enhanced and motion response is reduced, improving overall containment effectiveness. Design performance goals are: Contain oil in 20 mph winds and 5 foot seas; Survive in 40 mph winds, 10 ft. seas and 2 knot currents; suitable for air delivery to a spill site; and provide an integral mooring system, yet be towable by surface craft on scene. The prototype was tested at sea with 26,000 gallons of soybean oil last spring. The tests were a success. The boom has adequate strength, excellent wave conformability, and good motion response. It effectively contained oil as required by the design goals. From a technical standpoint the tests also validated laboratory results and yielded data on oil loss rates relative to current speed and wave conditions.

Another fence type boom that has been used with some success at past spills is the so-called Navy boom. This fence type boom is constructed of 4x8 shees of  $\frac{3}{4}$ " marine plywood buoyed by four 55 gallon drums attached to each sheet. In the past Navy booms have been built near a spill site and towed to the scene. They have been successfully used in up to 3 to 4 foot waves.(4)

#### OIL RECOVERY EQUIPMENT

Existing methods for "cleaning up" a contained spill can be grouped in one of two categories—chemical treatment techniques or mechanical recovery devices.

Chemical treatment techniques include additives to foster burning oil on water surface, treatment of sand or other material to make it hydrophobic and oleophobic so that it will agglomerate oil and sink it, and application of emulsifiers to breakup and disperse oil films. None are looked upon with favor at the present time. Oil can in fact be burned at sea. However complete destruction of an oil slick can not be accomplished. Too much heat is lost to the ocean to sustain combustion. Further the pall of black smoke that is created due to the inefficient combustion process is unacceptable.

Total treatment by either sinking or chemical emulsification is prohibited in the U.S. for ecological reasons. For completeness it should be noted that a sinking process has been demonstrated in full scale.(8) In addition the British government has developed, and is using, a total cleanup system based on dispersant chemicals.(9)

Greatest emphasis has been placed on mechanical recovery devices. In considering performance criteria for recovery devices several parameters in addition to the general requirements for survivability, mobility, etc. must be considered. Mechanical systems must be relatively insensitive to wave action. That is they should sustain high recovery efficiency (ratio of oil to oil plus water) over a wide range of sea conditions. Furthermore they must retain recovery efficiency over a range of oil viscosities. Not only will the types of spilled oil vary, but the spilled material will rapidly age through natural vaporization of the lighter fractions. Aging, along with emulsification through wave mixing of oil and water, produces a product with considerably increased viscosity. (An ability to handle highly viscous fluids has other implications—particularly on the capacity of the transfer pumping system that supports the recovery device.)

Considerable amounts of sea weed, straw, sorbents, or other debris will also be encountered during cleanup operations. They can interfere with certain recovery techniques or choke transfer equipment unless special precautions are built into the cleanup system.

Following are short descriptions of the typical recovery system concepts.

**Sorbent Systems.**—Sorbent materials may be used in several ways to develop a recovery system. In one system sorbent material is broadcast over a slick and allowed to sorb oil. The oil soaked material is then collected and

depending upon the sorbent, the sorbent will be squeezed to remove oil and rebroadcast, or the oil laden material will be disposed of. Classically straw has been used to cleanup oil spills in this way. Unfortunately these past cleanup efforts have had to rely on hand labor to retrieve oil soaked straw. This has proven to be both time consuming and costly. Further, although straw is cheap and readily obtained, it becomes waterlogged and does not have high oil retention ability. Newer concepts have been proposed to improve on the sorbent broadcasting system. These concepts provide for the use of polyurethane foam to be broadcast, recovered, cleaned, and reused in a totally mechanized process.

The two other types of sorbent systems utilize continuous belts. One style consists of a floating rope of sorbent material that is freely deployed on the water surface. The belt is drawn through an oil slick, picking up oil. It is brought aboard a support vessel, passed through squeeze rollers to remove recovered oil and then redeposited on the water surface in a continuous operation. The other type of belt system may be likened to a conveyor. Here an endless belt of sorbent material is permanently mounted in a special recovery vessel. The lower end pierces the air-oil-water interface while the upper end passes through squeeze rollers aboard the recovery vessel.

Oil viscosity and interfacial tension between oil and sorbent critically effect the performance of sorbent systems. As a result recovery efficiency can vary considerably for different types of oil. An advantage of all sorbent systems is their relative insensitivity to sea induced motions.

*Free Vortex Devices.*—If a propeller is rotated a short distance below the water surface it will create a vortex flow. Because of the density difference between oil and water, oil will collect in a depression in the center of the vortex flow. Theoretically the pocket of oil can be removed with a pump suction. Problems inherent to the concept are related to stability of the vortex "pocket". Waves tend to destroy the vortex or displace it relative to the centerline of the suction head. Additionally the depth of submersion of the propeller and its rotational speed are critical. They must be set to prevent drainage of the collected oil through the propeller. Solution of these problems through proper hardware design could make the free vortex a viable concept for offshore oil recovery. The French government has reported successful tests at sea in 5 foot waves with an experimental free vortex device.(10)

*Inclined Plane.*—This concept capitalizes on the "drainage" failure mode previously discussed in regard to oil containment barriers. It tries to foster controlled drainage down an inclined plane. Particles of oil are then collected in an open bottom tank as they rise back to the water surface. The critical parameters influencing the effectiveness of the inclined plane concept are the surface properties of the oil, its specific gravity, and water current velocity. All influence the length of the capture tanks needed to collect the oil particles. Fig. (4) illustrates an inclined plane recovery device developed under an Environmental Protection Agency grant. To date this concept has been applied with some success during tests in sheltered waters. A sea going version is now being constructed under the auspices of the American Petroleum Institute to test its utility in the open ocean.

*Skimming Weirs.*—In this concept a weir is placed near the surface to remove the top layer of water and oil. The weirs may be fixed in height or adjustable to vary the layer of water ingested. The primary problem in using skimming weirs at sea has been degradation of performance because of wave action. Most weir type devices do not adequately follow waves. As a result the weirs do not stay positioned at the most effective depth below the water surface. Weirs have a distinct advantage however in that their recovery efficiency (volume of oil recovered to total volume of oil and water recovered) is little effected by oil properties.

*Rotating Drums.*—Rotating drums can also be used to recovery oil. Oil will adhere to a metal drum or series of discs when rotated through an oil slick. The oil that is picked up is scraped from the metal surfaces and collected aboard a support vehicle. Rotating drum units have been constructed for use in calm water situations in the past. Experience with these units and laboratory tests indicate that drum rotational speed, oil viscosity and drum size influence recovery rate. Generally recovery rate will increase as these parameters are increased. Laboratory tests also indicate that recovery efficiency is

insensitive to immersion depth. Thus a rotating drum system should be able to tolerate the motions of a sea-going support vessel.

Coast Guard research and development is continuing detailed examination of the free vortex and conveyor type sorbent belt concepts. In addition two, seagoing experimental prototype recovery systems are being constructed. They will be under test at sea within the next year. One prototype is based on the rotating disc drum concept. The other is a wave conforming boom weir. Design goals for Coast Guard development efforts are to: Recovery 2000 gpm of oil over a range of refined oils and crudes; Maintain efficiency in 20 mph winds, 5 foot seas and up to 2 knot currents; Survive intact in 40 mph winds and 10 foot seas; Suitable for integration into and use with a high seas boom; and capable of air transport to the nearest seaport with ship delivery to the spill rate.

#### CONCLUSIONS

I have not discussed several other important aspects of the cleanup problem. These are operational planning, training of cleanup personnel, and the conduct of a cleanup operation. All are vital to ensuring proper response to an offshore spill. I have emphasized response equipment because they are the keystone of cleanup operations.

Over the past several years there has been considerable world wide effort, by both industry and government, to develop effective ocean spill cleanup techniques. Many cleanup schemes have been proposed, and, quite a few have been reduced to practice. Unfortunately most have failed when used at sea. Progress has been made however. Laboratory and field experience has provided information on the behavior of spilled oil. The effects of environmental conditions on the performance of various cleanup concepts are now more clearly understood. Finally, practical experience at past spills is being used to determine the most effective operational techniques for using cleanup equipment.

NOTE: The opinions or assertions contained herein are the private ones of the writer and are not to be construed as official or reflecting the views of the Commandant or the Coast Guard at large.

#### REFERENCES

1. Fay, J. A. and Houtt, D. P. "Physical Processes in the Spread of Oil on a Water Surface"; USCG R&D Report No. 714107/A/001, Contract No. DOT-CG-01, 381-A; July 1971
2. O'Brien, J. A. "Oil Spreading on Water from a Stationary Leaking Source"; NCEL Progress Report 70-1; November 1970.
3. Wicks, M. "Fluid Dynamics of Floating Oil Containment by Mechanical Barriers in the Presence of Water Currents"; Proceedings Joint Conference on Prevention and Control of Oil Spills; API/FWPCA, New York; December 1969.
4. Berry, W. L. "Pollution Control Aspects of the Bay Marchand Fire"; 46th Annual Meeting, Society of Petroleum Engineers of AIME; paper No. SPE3581; October 1971.
5. Newman, D. E. "The Use of Booms as Barriers to Oil Pollution in Tidal Estuaries and Sheltered Waters"; Hydraulics Research Station, Wallingford, U.K.; Report No. EX464; November 1969.
6. BP Research Centre, "Anti Pollution Equipment Development"; Personal Communication with T. B. Addington-Smith, Bridgewater Bros. Holdings Ltd., Surrey, England. June 1972.
7. Cunningham, G. R.; Evon, J. E.; and Chung, J. S. "The Design of an Effective Pollution Containment Barrier for the Open Sea"; 4th Annual Off-shore Technology Conference. Paper No. OTC 1610; May 1972.
8. "Report on an Oil Control Trial in the North Sea"; Rykswaterstaat, Harbour Mouths Division, Hook of Holland, Sept. 1971.
9. "Instructions for using the WSL Dispersant Spraying Equipment"; Warren Spring Laboratory, Stevenage, U.K.; Report No. SBN 900780-539.
10. Personal communication with Mr. O. LeFouchex, CNEXOS, Paris, France.

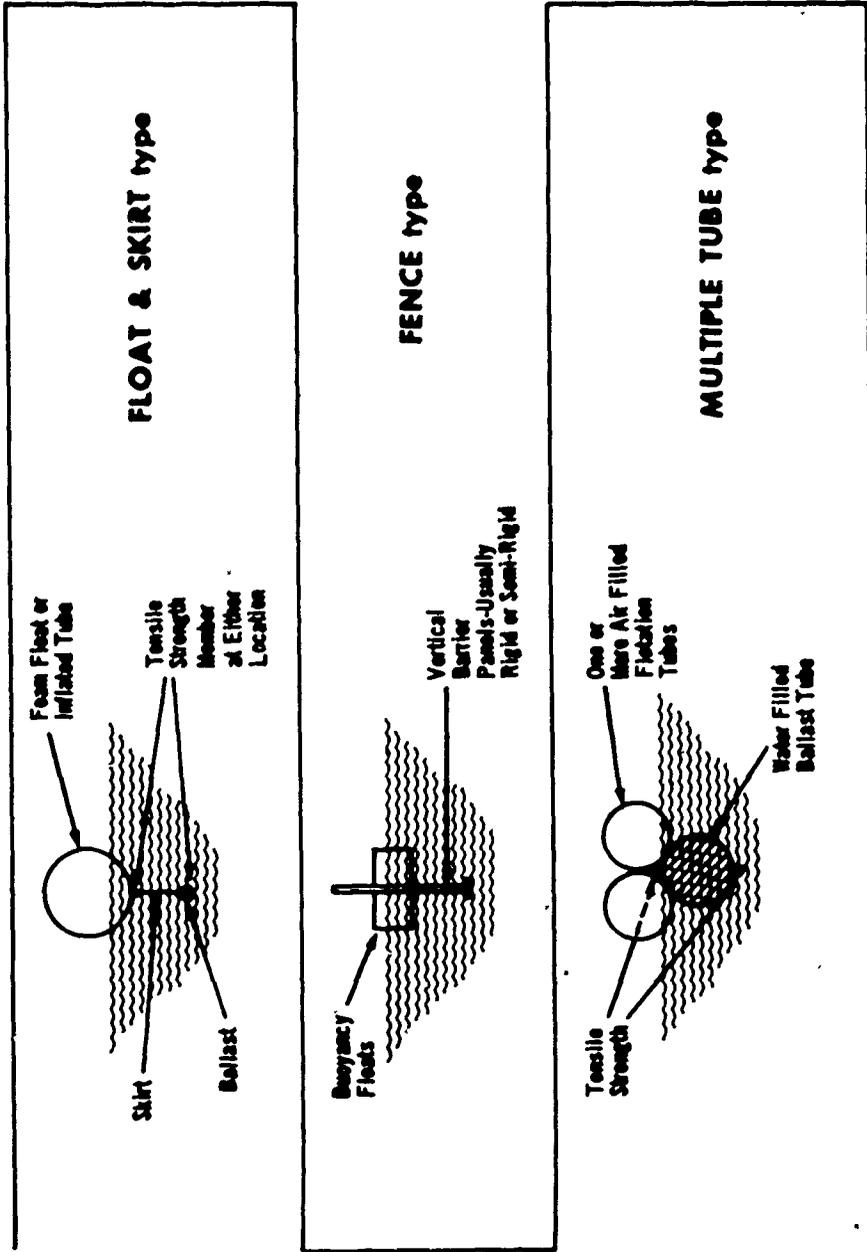


Fig. 1 - Typical mechanical barriers.

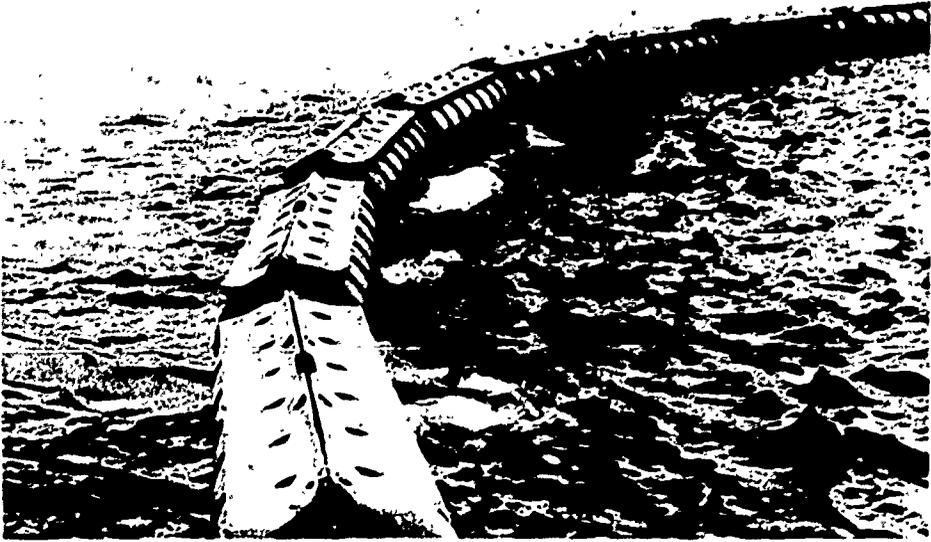


Fig. 2A - Bottom tension barrier being deployed for test (photo courtesy Humble Oil & Refining Co.).

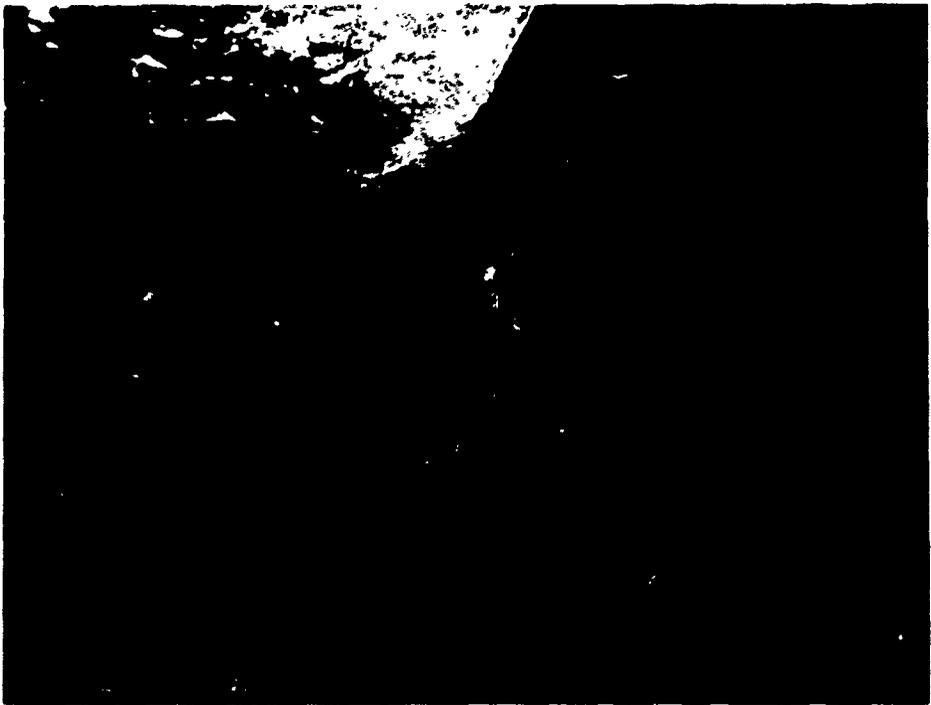


Fig. 2B - Underwater view of skirt and bottom tension arrangement (photo courtesy Humble Oil & Refining Co.).

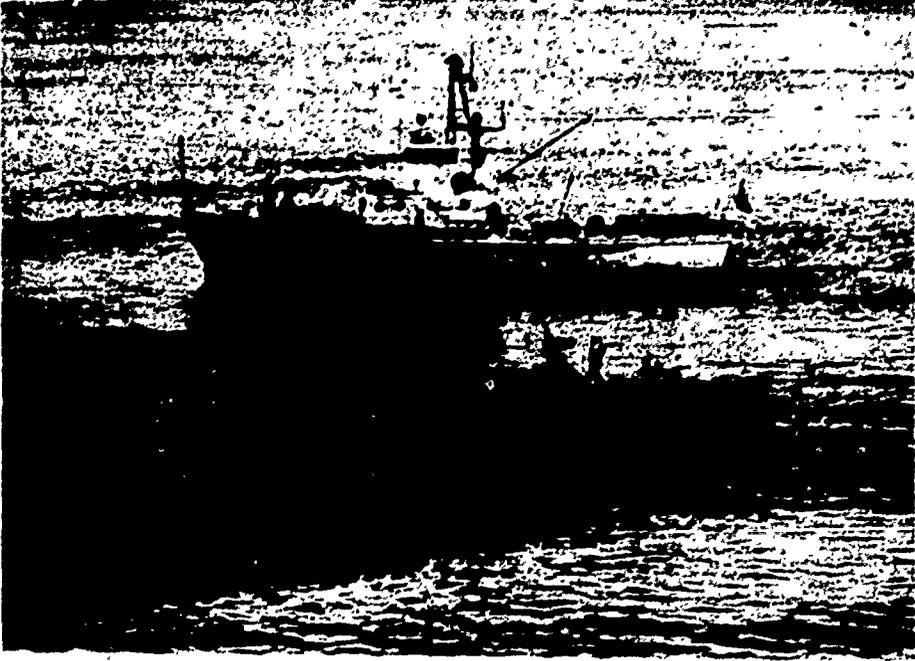


Fig. 3A - Coast Guard barrier during calm water tow test with soybean oil to determine oil loss rate as a function of current speed.

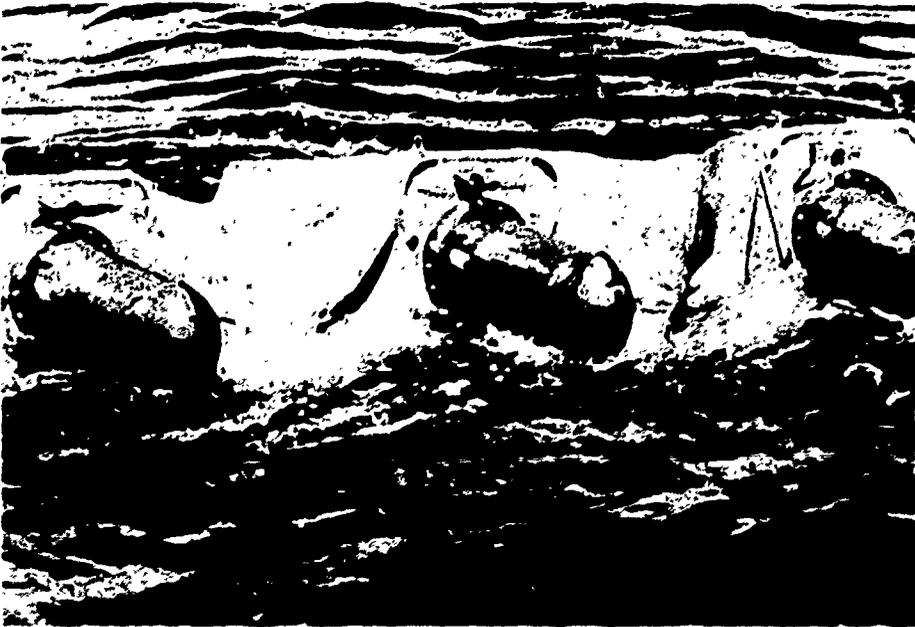


Fig. 3B - Closeup of Coast Guard barrier during high speed tow for tensile strength.



Fig. 5 - *DDP 300* oil spill containment barrier in Boston harbor.

## ATTACHMENT NO. 2

### OIL SPILL CONTAINMENT SYSTEM DEVELOPMENT AND TESTING PROGRAM \*

(Commander R. N. Abrahams, U.S. Coast Guard, and E. R. Miller, Jr.,  
Hydronautics, Incorporated, Laurel, Md.)

#### ABSTRACT

*The high seas oil containment system has been under development by the U.S. Coast Guard since 1969. The development effort is now nearing completion. A prototype high seas oil containment barrier and interim air delivery system has been constructed. Full size high seas field testing both with and without oil has been conducted.*

*A brief review of the containment barrier design features and development program is presented. A major part of the development program involved field testing. The procedures and instrumentation used for the field tests are described. The results from the oil containment tests in calm water and waves are presented in detail with qualitative and quantitative data on oil loss mechanisms and rates. Conclusions are presented, and the work remaining is reviewed.*

#### INTRODUCTION

The oil containment barrier is part of a group of special hardware being developed by the U.S. Coast Guard to combat large offshore oil spills. Other elements in this group are an Air Delivery Antipollution Transfer System (ADAPTS) and air transportable high seas oil harvester. These three systems are designed to reduce the quantity of oil released, control the spread of any that is released, and to remove oil from the surface of the high seas.

The seagoing oil containment barrier system has been under development by the Coast Guard since 1969, and the effort is now nearing completion. The

\* The contents of this paper reflect the views of the authors, who are responsible for the facts and data presented herein. The contents do not necessarily reflect the official views or policy of the Department of Transportation. This paper does not constitute a standard, specification or regulation.

objective of the development program is to design a fully engineered high seas qualified oil containment barrier system capable of maintaining its integrity under various environmental conditions. The principal components of the oil containment system consist of the containment barrier, ancillary moorings and an air delivery system. The design goal for the containment barrier is to be effective in five foot seas, 20 mph winds, to survive ten foot seas, 40 mph winds and to be capable of being effectively deployed on scene four hours after notification of a spill incident.

Analysis of past oil problems identified several desirable features that were designed into this oil containment system. These general requirements include a seagoing capability that provides efficient performance in a rough water environment, system transportability, ease of deployment, and compatibility with other response systems.

The light-weight containment system reflects these constraints in its design. The containment barrier is a fence having a draft of 27 inches and a free-board of 21 inches. Buoyancy is provided by inflatables spaced every 5½ feet along the curtain length. An external tension line, bridled at three points to the barrier curtain at each inflatable station, provides the primary strength of the barrier. The curtain material, a nylon reinforced neoprene, is strong enough to withstand local wave induced loads. A curtain slack retainer line, attached to the curtain at each inflatable station, assures proper inflatable spacing when stretched. This complex design was necessary in order to insure the barrier's ability to follow the sea surface. Indeed, the barrier has demonstrated good conformance to the sea surface, remaining upright in waves in excess of ten feet. The ability of the barrier to follow the waves results from a reduction of seaway induced loads on the barrier curtain. This is accomplished by transmitting the accumulated sea forces through the bridle lines to the external tension line. The barrier when lightly stressed is responsive in heave and roll due to the action of the sea on the attached inflatables. In addition to transferring the curtain loads, the lower bridle line prevents the barrier curtain being pushed over by water currents. In the manner, the need for compensating curtain hold-down weights is eliminated. A further reduction in barrier sea induced loading stresses is provided by the mooring system. Under maximum design sea conditions, long swell periods, the mooring system permits the barrier to move with the water. This eliminates 90 percent of the long period swell load.

Mooring systems that can be air delivered have been developed for 200 and 600 foot depths of water. Their specially designed package utilizes the mooring line spool for storage and deployment of the anchors. After deployment the spool provides a buoyant float to which the barrier tension lines are attached. An air delivery container (ADC) system has been designed to deliver the ADC packaged barrier by parachutes from a Coast Guard C-130B. Two ADCs can be carried in one sortie. After ADC delivery on scene it can be towed to the desired mooring point and attached to the mooring float. Barrier deployment is accomplished by towing the ADC. This technique has been tested in seas exceeding five feet.

In summary, the high seas containment barrier has been designed with adequate flexibility to conform to the sea surface. The barrier is relatively light weight and suitable for rapid air delivery and ease of deployment on scene.

#### BARRIER DEVELOPMENT

Preliminary studies were commenced in 1969. The purpose of these studies was to describe the nature of the problem and to establish a range of operational and survival conditions necessary to define adequate barrier performance. Most barriers to that time had been designed for protected waters. It became apparent that to design a barrier to survive severe sea-induced dynamic loadings was a difficult problem. In order to define the problems and potential solutions, a series of studies and tests were undertaken.

An engineering study to describe the forces and motions in a barrier was completed. The objective of this study was to provide an analytic tool to better understand the stresses on a barrier in a seaway. A mathematical model having 27 variables was developed. Physical model tests were conducted which, in part, validated the mathematical model. The model was used to provide information for preliminary barrier design. The results of previous model tests had described oil loss in terms of non-dimensional values.

Additional information was required to quantify the leakage rates in currents and to more clearly describe the limitation imposed by a wave field on oil retention. Tests to define current and wave limitations on oil retention in non-dimensional form were conducted as a logical continuation of the initial forces and motions work.

A concept development study was undertaken in order to develop a satisfactory preliminary design suitable for prototype fabrication. Theoretical analysis and subscale model tests were conducted to produce a conceptual barrier design of adequate strength, wave conformance and oil retention capability. This conceptual design included studies directed towards a total barrier system and recognized the interfaces imposed by delivery, deployment, mooring and retrieval considerations. Initial studies indicated that a concept based on a physical barrier had the lowest development risk. Candidate barriers were selected to be used in the concept research and engineering studies. The research conducted described the fluid mechanics of an oil film contained by a barrier, the volume of oil held, and the effects of waves sloshing around the barrier. Forces acting on the candidate barriers were also determined by model tests that were conducted in calm water and with regular sinusoidal waves. The results of these experiments were reduced to non-dimensional form and theories were developed to describe the results. Two computer simulations were used to provide an analytic model to more accurately predict and optimize barrier dimensions and strength requirements. Strength calculations were made to describe notch and stress concentrations. To identify areas of design improvement and material strength requirements. These results were applied in the engineering studies to the candidate concept to formalize and optimize the barrier design.

In the spring of 1970, field tests were conducted with a 1/7 scale model barrier. The objective of the field model test series was to verify dynamics as predicted by engineering studies and modeled in the tow basin. Tests were conducted to evaluate deployment, towability, and mooring of the model barrier. The action of wind-created waves as well as artificially-simulated waves was observed on the large scale experimental model. Tensiometer readings were observed when the barrier was towed and moored. The field test observations conformed closely to laboratory work and were in accordance with predictions. It was concluded on a basis of these tests that a full-scale prototype would be hydrodynamically stable under maximum design conditions. The barrier was also tested with oil in order to evaluate its retention capability and to compare the results of the field test with laboratory models. Soybean oil was chosen for this test as well as later full-scale tests. The model barrier contained oil and created a pool two to five inches thick in currents of 0.5 to 0.7 ft./sec. The model barrier conformed well to the surface of the water and no wave or other leakage was observed. The results of this mini-field test program were very satisfactory. They demonstrated a good correlation between the previous model tests and engineering studies, and indicated experimentally, that this barrier would meet the design goals. The detailed theoretical studies, and laboratory analysis were evaluated as having demonstrated the potential success of the design concept and that developmental risks associated with a full-sized scale-up of the experimental barrier were low.

The detailed design of the containment barrier and the various subsystems such as air delivery, mooring and retrieval was completed. To assist in this detailed design development, additional engineering studies were conducted to select barrier materials and to test the strength of several of the sub-assemblies. Model tests were conducted to verify some of the data taken during the mini-field test and to insure that the detailed design of the barrier provided sufficient strength and damage redundancy. Upon completion of the detailed design, two 1000 foot elements of experimental prototype barrier were fabricated. The detailed design had been fully engineered, based on model tests, engineering studies and a mini-field test, and was judged to be high-seas qualified.

Paralleling the detailed design of the prototype barrier, model tests of an explosive anchoring system were conducted. A detailed design was developed and a prototype system fabricated. Full-scale tests of the mooring system failed to demonstrate its effectiveness. It was judged an excessive period of time would be required to develop a suitable explosive anchor. This would result in a delay in other system components that must await resolution of

the mooring system uncertainties. A reevaluation of the requirement for an explosive mooring system was made. It was concluded to temporarily abandon the explosive anchoring concept in favor of conventional Danforth anchors. The conventional system is to be delivered separately from the barrier container, and requires surface support in order to make up the barrier tension line connection.

#### OBJECTIVES OF FIELD TEST PROGRAMS

After careful evaluation, it was concluded that full-scale field testing of the experimental prototype was essential in order to evaluate the developmental effort, and to qualify the system for the high seas. A principal field test objective was to demonstrate that the experimental prototype barrier performed satisfactorily in a seaway. Initial tests were designed to demonstrate the deployability, strength and stability of the barrier in calm water. Other tests demonstrated the barrier's strength, stability and wave conformability in rough water. A third series of tests demonstrated barrier ability to contain oil in various sea and current conditions. Another objective of the field test program was to validate previously developed laboratory modeling procedures used to predict barrier performance. This included validation of the research conducted during the development effort and additional work that had been undertaken to broaden knowledge in special areas such as the studies to determine the effects of the combined forces of waves and currents on a containment barrier. Validation of the studies to understand the fluid mechanics of oil films was expected, as well as description of oil loss mechanisms associated with currents and waves. Full scale data were desired for a "Figure of Merit Study" whose objective was to evaluate barrier performance from easily described barrier response characteristics.

#### PRELIMINARY FIELD TESTS

Barrier field tests were conducted near Cape Hatteras, North Carolina and Tampa, Florida. These areas were selected as a result of studies conducted to review the suitability of candidate sites. Primary factors considered in site selection were the probability of obtaining the desired test environmental conditions, an area where adequate facilities and resources were available, and the impact of the tests on the local ecology. A scenario plan was made that detailed the tests to be conducted, identified test participants and scheduled each test event. Briefings were conducted to insure each participant understood what they were required to do in order to meet the test objectives. To execute these test plans, services were required from fourteen commercial and Coast Guard vessels, three Coast Guard helicopters and several miscellaneous small craft. In all, about 450 to 500 people were involved in the test program.

The scientific requirements of the tests were identified early in the program to permit adequate time to develop the required instruments and test equipment. In order to measure the motions of the barrier in a seaway, special instruments that could be barrier-mounted were designed and fabricated. These unique instruments measured the heave of the barrier as well as the relative currents of the water going past the barrier. The data were recorded on tape and later analyzed. Barrier roll was measured using photographic techniques. A special wave measuring buoy was also designed and fabricated so that sea conditions during tests could be evaluated. This free floating device recorded the data on tape for later analysis. Tests with oil presented additional problems because recovery of the oil had to be accomplished. A special skimmer system was invented and fabricated for the test. The skimmer system was designed to work with and be compatible with the experimental prototype barrier. Designed recovery rate was 12½ tons of soybean oil per hour. In addition, special underwater photographic techniques were used to identify the mechanisms of oil loss. An underwater sled, Pegasus, was equipped with a 16mm camera. The sled "flew" a pre-scheduled program. Hand-held cameras were also used to study special details. These techniques permitted identification and documentation of several mechanisms of oil loss.

The barrier design was based on good engineering analysis and application, however, several problems were identified during the test. These problems were of such a nature that modifications to the barrier were possible and were completed in the field. The curtain material between the inflatables was observed to sag and dip into the water in low current conditions and the struc-

tural "V" struts that supported the inflatables "listed". The problem was studied, and it was concluded that the center of gravity would have to be lowered in order to eliminate the inflatable torsional list. This was accomplished by relocating the inflatable bottles from the top of the "V" strut to a position below the inflatable. In addition, 5½ pounds of lead weights were added to the bottom of each "V" strut. The sagging of the curtain material was eliminated by installing wooden battens between each inflatable. Several different combinations of battens were installed and in later tests, each combination was evaluated against the other. It was observed that the installation of multiple battens between inflatables did eliminate curtain sag. It was also observed that in waves additional damping of barrier motions resulted due to an unforeseen coupling of twist and stretch related to the action of the battens. This increased the barrier ability to remain upright in a seaway. In a high current field, the barrier was observed to rise out of the water. This was not an entirely unexpected or undesirable effect because it enabled the barrier to be self-load-relieving. It was decided, however, that the lower bridle line should be shortened so that the barrier would not relieve, and would remain upright in currents to three knots. The bridle tuning procedure was also completed during the field change modification period.

These field tests demonstrated the strength and stability of the experimental barrier, its ability to contain oil in various sea and current conditions, and provided qualitative identification of oil loss mechanisms. Preliminary verification of the modeling procedures that had been used to predict barrier performance was obtained. Several areas of barrier design improvement were identified and completed. These initial tests results were very encouraging, but because the sea conditions during the tests were not severe enough, the experimental barrier was not judged to be fully high-seas qualified. It was decided to do more testing.

#### FIELD TESTS AT POINT CONCEPTION

An extensive analysis of environmental data conducted by the Coast Guard showed that the area off Point Conception, California was the most suitable location for the tests. This was because of the high probability of occurrence of the sea conditions needed for the survival tests and containment tests in waves as well as calm water. This range of sea conditions was available because of the ability to seek varying degrees of shelter behind Point Conception.

The objectives of the Point Conception field tests were to obtain quantitative and qualitative data on the oil containment performance of the barrier in currents up to two knots, and wave heights of five feet, and to determine the ability of the barrier to survive in seas up to a significant height of ten feet. In order to satisfy the objectives, it was determined that the following types of data were required:

- barrier towing speed (current);
- wave height;
- contained slick, area, volume and thickness;
- oil loss rate;
- underwater photography of the oil loss mechanisms;
- barrier motions relative to the water surface; and
- loads in the main tension line.

It was decided to conduct the containment tests with refined soybean oil. This oil has the necessary advantages that its physical properties are similar to those of petroleum products, but that it is not harmful to marine life and biodegrades in a short time. Its properties are similar to a typical crude oil and No. 4 fuel oil.

The field tests were conducted under the direction of U.S. Coast Guard personnel with major contractor support. Johns-Manville, Incorporated, the Prime Contractor, retained Hydronautics, Incorporated as a sub-contractor to develop test techniques and instrumentation for the oil containment tests, to assist in the data collection and to analyze the results. A group from the Department of Ocean Engineering at MIT were contracted directly by the Coast Guard, as in previous tests, to obtain measurements of the sea conditions and barrier motions, as well as to make direct observations of the oil loss mechanisms. In addition, the Marine Science Institute of the University of California at Santa Barbara was contracted by the Coast Guard to coordinate

and analyze the results of ancillary aircraft remote-sensing experiments coordinated with the containment tests.

The detailed test scenario was prepared which presented the test objectives, procedures and detailed instructions for all units involved in the tests. The basic test plan consisted of a time sequence of test events for each day. Each event consisted of a test condition characterized by the barrier towing speed and the barrier opening. In order to familiarize all personnel with the test procedures, and to develop speed of execution, dry runs were conducted prior to all tests.

The tests took place, as scheduled, during the first two weeks of March 1972. The task force for the tests consisted of the U.S.C.G. cutters *Venturous*, *Walnut*, *Red Birch*, *Point Hobart*, the commercial tug *Pacific Saturn*, an oil barge and miscellaneous small craft, and a photographic helicopter from Coast Guard Air Station Los Angeles. The barrier was deployed in heavy sea conditions on March 2, 1972 and taken under tow in a "U" configuration by *Walnut* and *Red Birch*. The sea condition did not improve as forecast so the survival tests were conducted on March 2 and 8, 1972, Figure 1. It was



Figure 1: Survival Tests Off Point Concentration.

observed that several bridle lines had failed. The barrier was recovered, but barrier damage was generally limited to broken battens, and bridle lines and curtain chafing.

A replacement barrier was flown in from the East Coast, deployed from the *Walnut* on March 7, and a dry run was conducted. The first oil containment test was conducted on March 8 in calm water. The required sea condition for the containment tests in waves did not develop until March 10. The final containment tests was conducted on this date.

#### TEST TECHNIQUES AND INSTRUMENTATION

Similar test procedures were used in the oil containment tests conducted on March 8 and 10, 1972. The barrier was towed in a "U" configuration by the U.S.C.G. cutters *Walnut* and *Red Birch* at a speed of about  $\frac{1}{2}$  knot. An oil barge was towed in the mouth of the "U" between the two cutters. At the start of the test, refined soybean oil was pumped overboard from the barge and collected by the barrier. Containment tests were conducted by towing the barrier at various speeds and gap openings. On the eighth the barge remained in the mouth of the "U" during the tests. On the tenth, the barge was removed after spilling the oil because of the sea conditions.

It is estimated that a total of 25,000 gallons of soybean oil was spilled on the eighth, and 12,750 gallons was spilled on the tenth.

On the eighth, the sea conditions were calm, with the wind speed less than ten knots. On the tenth, the significant wave height, generated by a local

wind of 12 to 18 knots, was estimated to be two feet. In addition to this, swells were presented with an estimated significant height of eight feet and a period of ten seconds.

During the oil containment tests, measurements and observations were made to determine the oil loss mechanism, the oil loss rate and the slick geometry. These included underwater still and motion pictures, aerial still and motion pictures, and measurements of the thickness of the contained slick and of the slick in the barrier wake. In addition, measurements were made of the towing speed, barrier motions, wave height, and loads in the tension line.

#### *Oil loss mechanism*

The oil loss mechanisms and their relative importance were determined by underwater photographs taken by diver teams. These consisted of 35mm color photographs taken with sequence cameras and 16mm motion pictures. In the test planning, specific areas were identified for extensive photographic coverage. These included the region directly behind the headwave, the intersection of the headwave and the barrier, the inflatable elements on the barrier, and the area under the bucket of the barrier. The series of photographs were identified by frequent photos of the diver's watch, and the locations were determined from identifiable points on the barrier.

#### *Oil loss rate*

Oil losses from the barrier were determined by monitoring the slick thickness in the wake behind the barrier. Thickness measurements were made by means of oleophilic sorbent blankets of 80 ppi fully-reticulated polyurethane foam. These blankets were cast upon areas of "typical" slick, allowed to remain for 20 seconds, and then recovered. Oil absorbed by the blankets was then extracted by a mechanical wringer and stored in polyethylene jars for later analysis. Calibrations for the sorbent blankets were based on laboratory data obtained in calm water.

The calibration procedure also showed the necessity for allowing the recovered oil to separate from water recovered during the extracting process.

The major quantity of escaped oil lay within a slick less than 40 feet in width. Estimates of the escaped oil wake cross-section shape are shown in Figure 2. These cross-sections were based on actual measurements made at

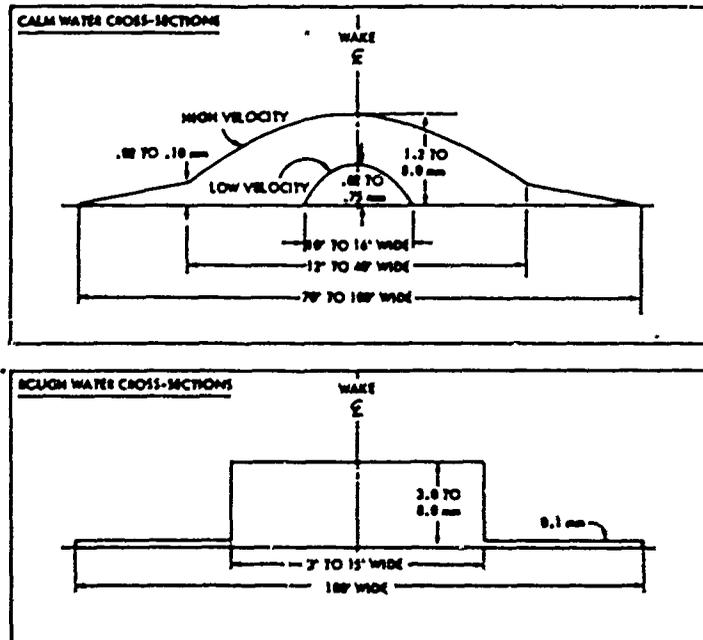


Figure 2: Cross-sections of Oil Slick in Barrier Wake.

various positions across the wake, and the knowledge that an undisturbed slick section should assume a "lens" shape, which can be approximated by a parabolic curve. A significant difference appeared to exist between the escaped oil slicks in calm and rough water, as can be observed in Figure 2. The calm water slick appeared to be of a "lens" section, relatively wide, with a very thin "edging" of light oil droplets. In waves, the main portion of the escaped slick was very narrow, almost constant in section thickness, and surrounded by a thin slick of width approximately equal to the contained-slick headwave dimension. The computations of lost oil rates were based on the two slick cross-sections shown in Figure 2.

Figure 3 shows the process of collecting the data from a 26 foot motor whale boat.

#### *Slick geometry*

Slick thickness was measured by a Diver Photo Team. The measurements were made against vertical scales supported by five floats, commonly referred to as "ducks". The ducks were towed in a string with ten-foot spacing between them. The large surface area of the floats caused them to respond well to the free surface of the slick in waves. Their draft was less than  $\frac{1}{4}$  inch. Thus, the local thickness of the oil slick was closely approximated by the distance between the bottom of the duck and the oil-water interface, which was viewed on the scale by the divers and photographed for later analysis.

The thickness values obtained represent averages for each duck for about a minutes' (real time) observation. The thickness generally varied by about  $\pm$  one inch during an observation. Values were from both the divers' debriefing and from readings of 16mm films taken by the divers. The thickness readings at the highest speeds on both spill days are subjective, since heavy entrainment obscured the oil-water interface. In these cases, the thickness is probably over-estimated, since the entrained droplets appeared to be nearly solid oil.

Measurements of slick planform were obtained from aerial photographs. The scale in each photograph was determined with some object of known length near the contained slick, e.g., a 26 foot whale boat, several sections of the barrier, or the U.S.C.G. *Venturous*. The slick length L (from barrier apex to leading edge) and the slick width W (at the leading edge) were measured directly. The area A was obtained by planimeter.

#### *Barrier towing velocity*

Test velocity was monitored at four stations. Chip logs were employed aboard the USCGC *Walnut*, USCGC *Red Birch*, and the barge *Pacific Saturn I*, and additional measurements were obtained with a General Oceanics Flowmeter mounted below the barge *Pacific Saturn I*. These data were compiled by Ensign W. Chang of the U.S. Coast Guard, and "average" barrier velocity versus time curves generated on the basis of the four velocity measurements. These average velocities, plotted in Figure 4, were used in all data reduction operations. Actual time was used throughout the test program to relate the data collected.

#### *Barrier tension line loads*

The average loads in the barrier tension line were monitored and recorded at 15 minute intervals during the survival and oil containment tests by means of dynamometer in the tow lines.

#### *Barrier motions*

The relative heave motion and surge velocity at the barrier were measured at several points on the barrier by instrument package developed by the MIT, Department of Ocean Engineering. Each package contained a propeller-type current meter, a capacitance-type wave height gage and a tape recorder.

#### *Wave height*

The wave height was measured during the oil containment tests by a wave buoy developed by the MIT Department of Ocean Engineering.

## OIL CONTAINMENT TEST RESULTS

*Oil loss rates*

Time histograms of the oil loss rates, based on wake thickness and width measurements described above are given in Figures 5 and 6 for the calm and rough water test days. Event numbers and nominal barrier velocities are identified, although the actual velocities used in the computations are based on Figure 4. The loss rates of Figures 5 and 6 provide integrated total oil losses of 23,168 and 12,337 gallons respectively. The time histograms of Figures 5 and 6, combined with the oil spill schedule were used to generate Figures 7 and 8, in which time histories of the contained slick volume are shown.

Barrier oil loss rates are shown as a function of velocity in Figure 9, where the data points represent the average loss vs. velocity plateaus for the steady-state portions of the various events of each test day. These data indicate some reduction in the loss rate at smaller gap openings. The rough water data show higher loss rates at low velocities and lower total loss rates at higher velocities. The differences in the total loss rates at 400-foot and 250-foot barrier openings, and the anomalous behavior of the total loss rate in rough water, indicate that some physical dimensions of the slick influence the loss rate. The review of loss mechanisms, which is presented below, indicates that the losses are due to the entrainment of droplets from the headwave region and the inflatable elements of the barrier. Thus, it is logical to normalize the loss rate on the basis of a characteristic linear dimension of the slick. The transverse width of the headwave was selected as a suitable linear dimension, and the resulting normalized data are presented in Figure 10. This figure presents the "specific loss rate" in gallons per minute per foot of headwave as a function of barrier speed. The transverse width of the headwave was obtained from the aerial photographs. The observed effect of rough water on the data is discussed in the following section.



Figure 3: Wake Shed during Oil Spill (event 3) of 8 March 1972.

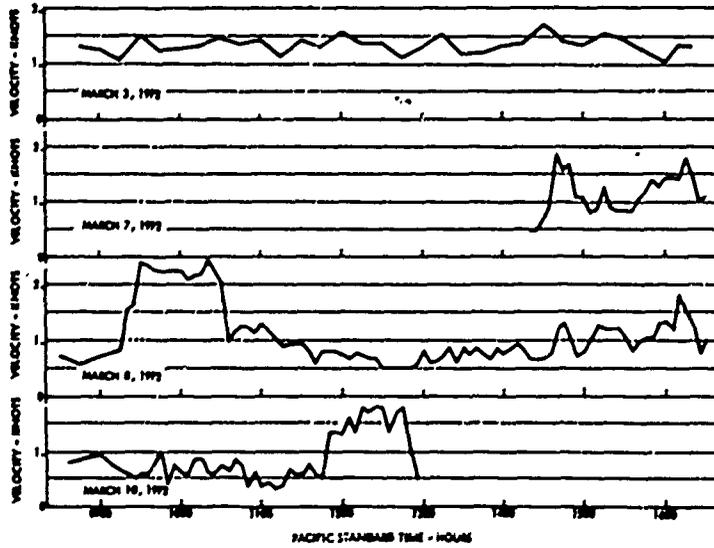


Figure 4: Average Barrier Tow Velocity.

*Oil loss mechanisms*

The mechanisms by which oil escapes from the containment barrier were determined by reviewing the underwater and aerial still and motion pictures. The oil loss rate also provides some information about the oil loss mechanism. In the discussion which follows, the steady-state loss mechanisms are described for calm water and then rough water.

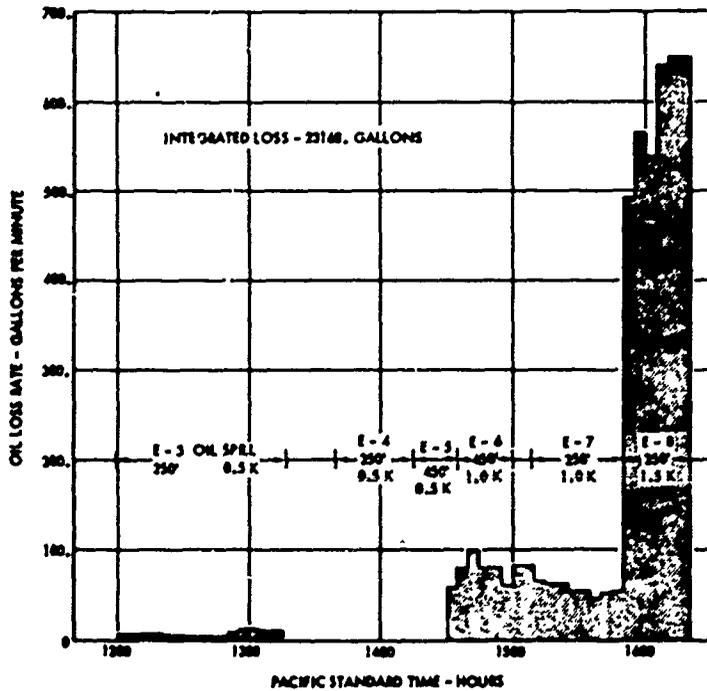


Figure 5: Oil Loss Rates - Calm Water Test of 8 March 1972.

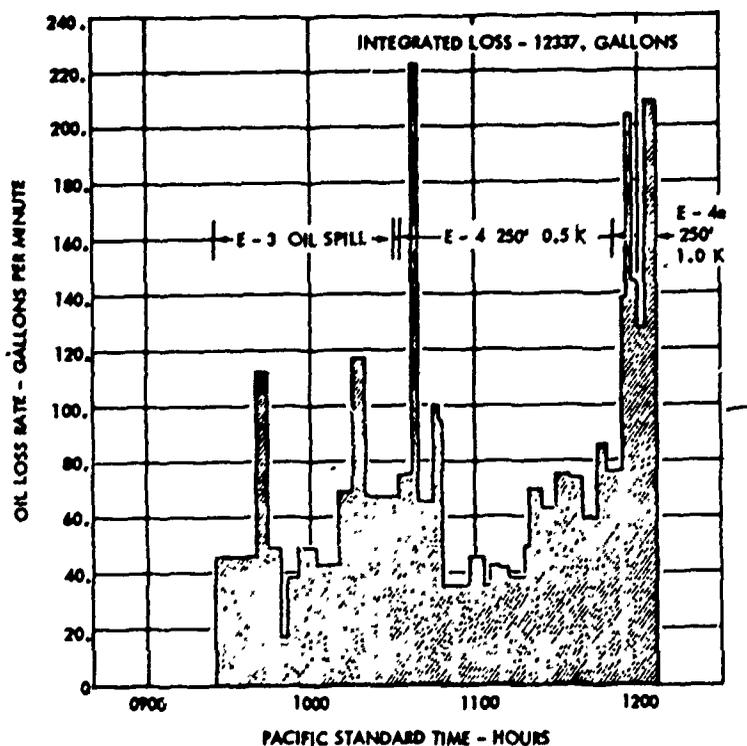


Figure 6: Oil Loss Rates - Rough Water Tests of 10 March 1972.

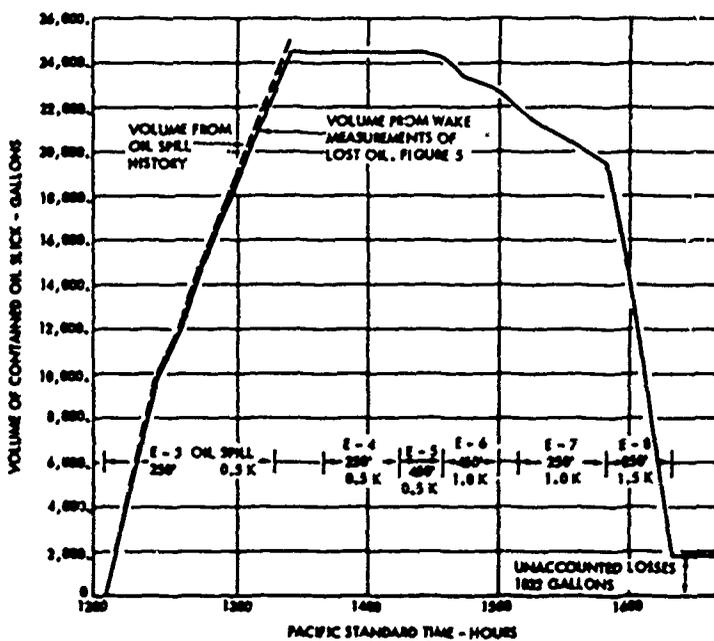


Figure 7: Contained Oil Volume - Calm Water Test of 8 March 1972.

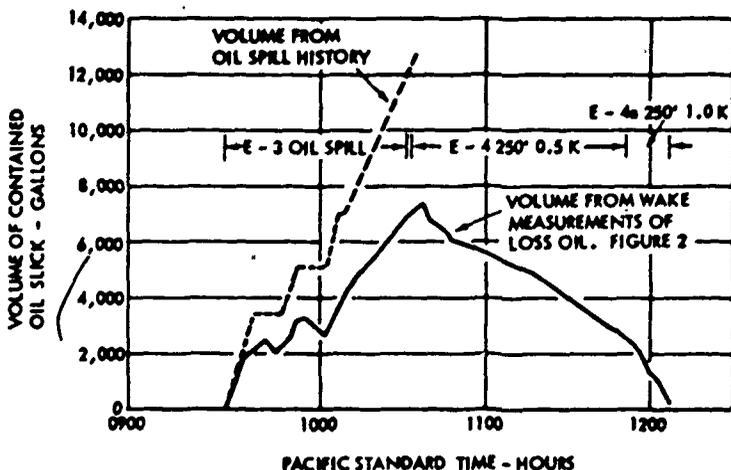


Figure 8: Contained Oil Volume -- Rough Water Tests of 10 March 1972.

#### *Calm Water*

In calm water in a steady-state condition, the oil loss rate is a strong function of speed. In the speed range of 1.2 to 1.3 ft/sec. the total loss rate was measured as less than 1 GPM, or about 0.02 GPM per inflated element. The underwater photographs show that this loss is due to agitation caused by movements of the flotation bags. This motion generates oil covered water droplets at the oil water interface. Some of these droplets are occasionally driven far down into the water column by bag movement, and then swept under the barrier by the relative current. The oil covered water droplets are multi-cellular with a diameter of about 0.5 inches. Each droplet contains very little oil. An analysis of still photographs taken just behind the headwave at a speed of 1.2 to 1.3 ft/sec., indicate droplets are generated at the headwave at a rate of about 0.05 GPM per foot of headwave. These droplets seem to be pure oil with a diameter of about 0.25 inches. They are not entrained deeply in the water column, and rapidly rise back up to the oil-water interface. Figure 11 shows an aerial photograph of this condition. The low loss rate is shown by the very small oil slick in the barrier wake.

As the speed was increased to about 1.8 ft/sec. the total loss rate increased to 50-70 GPM and the specific loss rate to 0.4-0.5 GPM per foot of headwave. The underwater motion pictures clearly show that the oil loss is due to oil droplets which are generated at the headwave. Under the slick, these droplets extend to a depth greater than two feet. Some of the droplets rejoin the slick and the remainder are swept under the barrier by the relative current. Indirect estimates of the percent of droplets lost were made from the total loss rate data and droplet information rate calculations. These indicate that at 1.8 ft/sec., for this test, about 50 percent of the droplets formed at the headwave were lost. It is difficult to determine from the underwater motion pictures whether droplets are formed along the interface aft of the headwave. There are no scenes which clearly show the formation of droplets along the interface. It appears that even if droplets are formed along the interface, the numbers are small relative to those formed at the headwave under the sea conditions experienced during these tests.

The motion pictures of the air bags show that droplets are not generated by their movements at this speed. This seems to be due to the increased thickness of the slick at the bags, which effectively places the oil-water interface below the bag surface. Thus, the bags do not contribute to the oil loss at this speed.

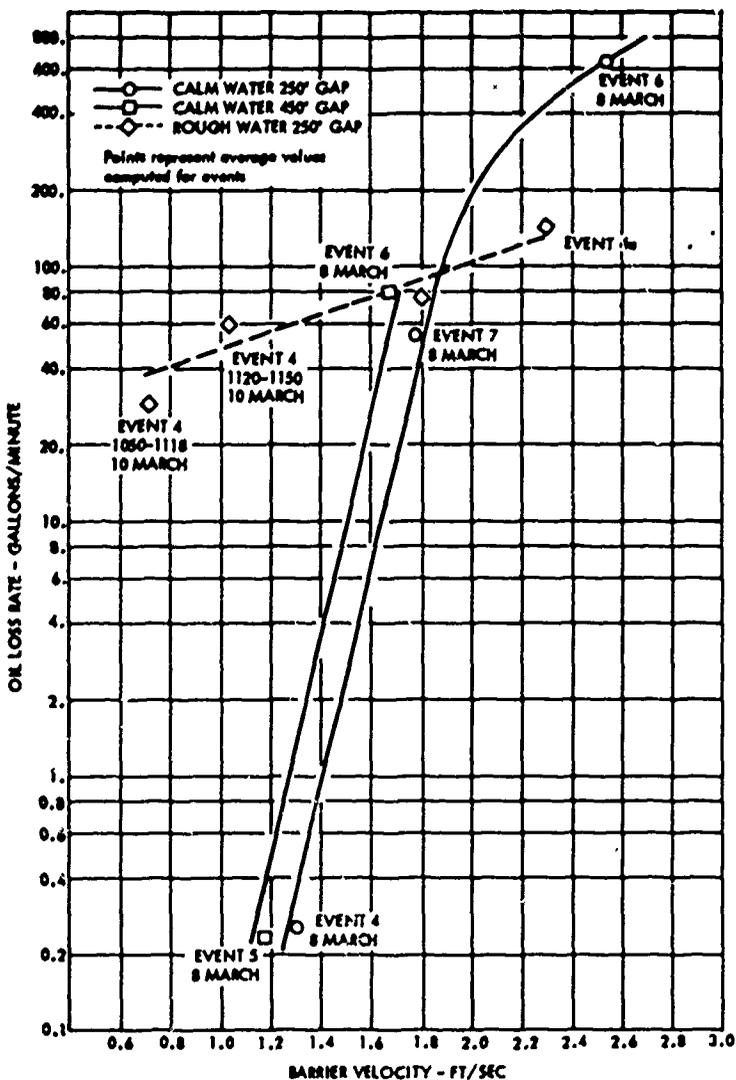


Figure 9: Oil Loss Rate vs Velocity – Steady State Operation.

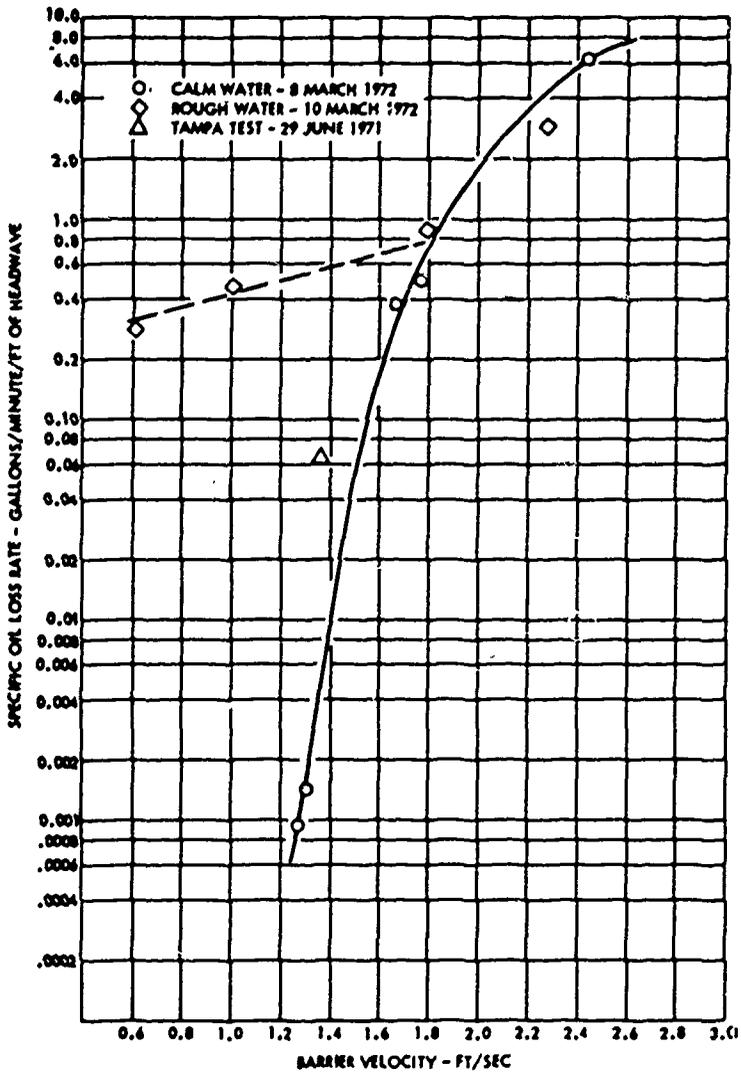


Figure 10: Specific Loss Rate vs Velocity – Steady State Operation.



Figure 11: Contained Oil Slick at 14:13 March 8, 1972. Towing Speed = 0.8 Knots, Contained Volume = 24,250 Gallons, Loss Rate < 1.0 GPM.



Figure 12: Contained Slick at 14:56:30 March 6, 1972. Towing Speed = 1.0 Knots, Contained Volume = 22,000 Gallons, Loss Rate = 75 GPM.



Figure 13: Contained Oil Slick at 16:09:30 March 8, 1972. Towing Speed = 1.6 Knots, Contained Volume = 9400 Gallons, Loss Rate = 680 GPM.

Figure 12 shows an aerial photograph of this condition. The increased loss rate, compared with Figure 11, is evident in the increased slick seen in the wake. In the calm water tests, the highest speed averaged about 2.4 ft/sec. The total loss rate increased to about 650 GPM and the specific loss rate to about 6.5 GPM per foot of headwave. Underwater still and motion pictures were taken of this condition. These show that the oil loss is due to the complete entrainment of oil droplets formed at the headwave. Very few, if any, of the droplets formed are able to rejoin the slick. The thickness of the slick at the barrier does not exceed the draft of the barrier. Thus, the loss at this speed is not due to drainage of the slick.

Figure 13 shows an aerial photograph of this condition. The great increase in the loss rate is shown by the conditions in the wake.

#### SUMMARY

In calm water under steady conditions, there are two oil loss mechanisms. At low speeds (1.2 ft/sec.) the motions of the air bags cause small oil losses. At higher speeds (1.8 to 2.4 ft/sec.) the oil loss is due to the entrainment of droplets formed at the headwave. At these speeds the oil slick is thick enough that the motions of the bags do not cause losses. Drainage failure was not observed within the speed range tested.

#### *Rough water*

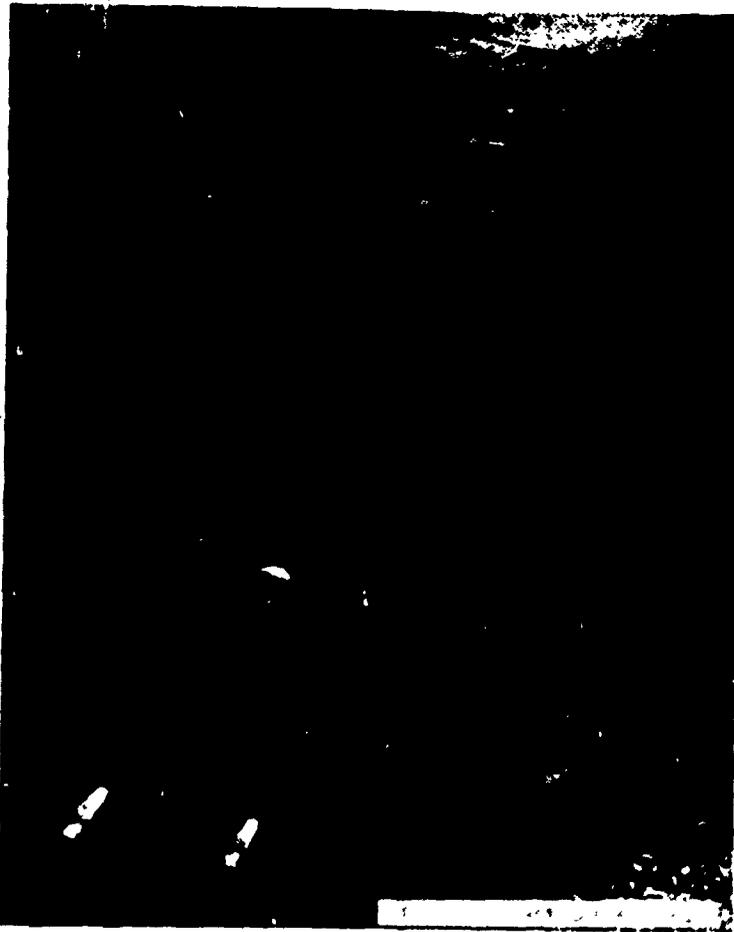
The rough water tests were carried out with a maximum contained volume of about 6000 gallons as compared with the calm water tests, in which the maximum contained volume was about 24,000 gallons. During these tests, the local wind of 12 to 18 knots resulted in a chop with a significant wave height estimated to be two feet. Also, there was a swell with a significant height of eight feet, and a period of ten seconds.

Underwater pictures were taken for steady conditions at speeds of 1.0 and 2.2 ft/sec. At the higher speed, only motion pictures were taken. However, loss rate data were obtained at additional steady speeds. At an average speed of 1.0 to 1.1 ft/sec., the total loss rate was about 70 GPM. The underwater pictures indicate the losses are from two sources. The waves cause large motions of the air bags. This generates large clouds of droplets at the oil-water interface. These droplets are driven down into the water column by the bags and are carried under the barrier by the relative current. The droplets are oil covered water droplets with little buoyancy so that they are driven deeply (almost ten feet) and rise slowly.

The other source of oil loss is the periodic generation of droplets at the headwave. These droplets seem to be caused by the superposition of the orbital velocity in the well on the steady current. The amplitude of the orbital velocity in the swell was about 2.5 ft/sec. A qualitative estimate from the photographs is that about half the loss is due to the action of the air bags. A review of the motion pictures taken from the surface indicated that less than one percent of the loss could be due to splash over the barrier.

A portion of the test was carried out at an average speed of about 0.6 ft/sec. At this time, the total loss rate dropped to about 40 GPM. No underwater photographs were taken during this period. Because of the lower speed, the slick area was larger and the average slick length larger. As a result, it may be expected that entrainment of droplets from the headwave would decrease. This is due to the generation of fewer droplets at lower speeds and the increased rise time available. However, the motions of the air bags, which are caused by the waves, are not greatly affected by the relative current speed. Losses due to motions of each air bag should be about the same, and the total loss should increase because of the larger number of air bags in the (larger) slick. This is consistent with the data which show the total loss at 0.6 ft/sec. is about 60 percent of the loss at 1.0 ft/sec. Thus, it is assumed that the major loss mechanisms at a speed of 0.6 ft/sec. is the motion of the air bags.

Figure 14 shows an aerial photograph of the barrier. The total loss rate is about the same as for the calm water day condition shown in Figure 13.



**Figure 14: Contained Oil Slick at 10:59:30 March 10, 1972. Towing Speed = 0.4 Knots, Contained Volume = 5700 Gallons, Loss Rate = 35 GPM.**



Figure 13: Contained Oil Slick at 12:00:15 March 10, 1972. Towing Speed = 1.4 Knots, Contained Volume = 1300 Gallons, Loss Rate = 200 GPM.

At the end of the rough water test, the speed was increased to about 2.2 ft/sec. At this speed, the total loss rate increased to about 150 GPM or 3.0 GPM per foot of headwave. Underwater motion pictures were taken of this condition. These motion pictures show that the loss mechanism was by massive entrainment of droplets formed at the headwave. The specific loss rate is about the same as in the calm water test at similar speeds. Thus it must be assumed that the waves and swell are relatively less important at high speeds. Figure 15 presents an aerial photograph of the barrier at this speed. The increased loss rate is illustrated by the increased oil volume in the wake.

#### SUMMARY

In the rough water test under steady conditions, the loss mechanisms are the entrainment of droplets formed by the motions of the air bags, and of droplets formed at the headwave. These are the same mechanisms present in calm water except that their relative importance is changed. In this test at low speeds (0.8 ft/sec. and less), the loss is all due to the action of the air bags. At intermediate speeds (1.0 to 1.2 ft/sec.) about 60 percent of the loss is due to the motion of the air bags, and 40 percent is due to droplets from the headwave formed by the superposition of the swell orbital velocity in the average current. At high speeds (1.9 ft/sec. and above), the losses are due to massive entrainment of droplets from the headwave. The waves and swell do not seem to significantly increase the specific loss rate relative to calm water at this speed.

#### CONCLUSIONS AND REMAINING WORK

The tests at Point Conception were completed in March 1972, with all principal objectives having been realized. The operational limits of the barrier, oil containment effectiveness, barrier strength and the ability of the barrier to survive on the high seas were defined. The barrier effectively contained and thickened the oil, thus fulfilling a necessary requirement for high seas oil harvest. Several mechanisms of oil loss were described. The major mecha-

nisms of oil loss in calm water conditions with current was entrainment of the oil from the slicks' leading edge, and, in wave conditions with light currents from droplets formed by motions of the barriers' buoyancy inflatables.

The tests indicated that a major oil loss resulted from motions of the inflatables.

A model and engineering study has since demonstrated the feasibility of eliminating the inflatables from the oil side of the barrier curtain. A detailed design was made and a representative segment of a one-sided barrier was fabricated. High seas tests to evaluate its strength and stability will shortly be conducted. Paralleling the work to "clean up" the barrier by changing the inflatables were design changes to overcome minor structural failures observed during the survival testing. These structural changes were incorporated into the new prototype segment of barrier. Development of the air delivery container (ADC) is progressing, and initial drop tests are expected to be completed this spring. In addition, the experimental barrier mooring system was fabricated, and will be field tested during the same time period.

Several immediate follow-on efforts have been identified. These include a field test of the complete barrier system to insure all its components' compatibility. In addition, the requirements for a field test of the containment system with the experimental prototype oil harvesters are being evaluated. Lastly, development of a high-speed delivery system to augment the air delivery and be compatible with all pollution response equipment is being studied.

A longer range and high priority objective is to develop a device to control and recover oil in high water currents up to ten knots. Research programs are presently underway to evaluate candidate devices.

Senator HOLLINGS. The next witness this morning will be H. Clayton Cook, General Counsel of the Maritime Administration.

We welcome you, Mr. Cook, to the committee, and we will be glad to hear from you at this time.

**STATEMENT OF H. CLAYTON COOK, JR., GENERAL COUNSEL,  
MARITIME ADMINISTRATION, DEPARTMENT OF COMMERCE**

Mr. Cook. Mr. Chairman and members of the subcommittee: I appreciate this opportunity to appear before your committee to testify on the need for deepwater port facilities and in support of S. 1751, the administration's bill, which would authorize the Secretary of the Interior to license and regulate the construction and operation of deepwater port facilities.

On April 18, 1973, the President submitted his message concerning energy resources to the Congress. In that message the President proposed this legislation to provide authority for the Secretary of the Interior, after consultation with other concerned Federal agencies and State governments, to issue licenses in waters beyond State jurisdiction for the construction and operation of deepwater port facilities.

The President recognized that the development of ports has historically been a responsibility of State and local governments and the private sector.

Senator JOHNSON. If I may interrupt the witness, since Mr. Cook is the General Counsel of the Maritime Administration I think it would be appropriate to address the same questions to him.

I may have to leave before he finishes and if we could get that information it would be helpful.

Mr. Cook. I would be pleased to give a written response to your question.

[The following information was subsequently received for the record:]

A review of legal authorities indicates that the States might under certain conditions impose taxes on the throughput or the pipelines used to carry it from the deepwater terminals. In addition, Congress might by legislation enlarge upon those conditions under which states have such authority.

Mr. COOK. However, since States cannot issue licenses beyond the 3-mile limit, the President proposed this legislation to authorize the Department of the Interior to issue such licenses. The President stated that "licensing would be contingent upon full and proper evaluation of environmental impact and would provide for strict navigation and safety, as well as proper land use requirements."

Under the terms of S. 1751, a license will be issued to any U.S. citizen, domestic corporation, State or local government after the Secretary of the Interior has determined that the applicant is financially responsible and has demonstrated an ability and willingness to comply with all applicable laws, regulations, and conditions; that the construction and operation of the proposed deepwater port facilities will not unreasonably interfere with international navigation or other reasonable uses of the high seas; and that the facility will minimize or prevent any significant adverse environmental effects. Prior to issuing any license the Secretary is required to consult with the Governors of adjacent coastal States to insure that the facility and its directly related land-based activities would be consistent with the States' land use planning programs.

The license required by S. 1751 would be in addition to permits or licenses which may be required under existing legislation from other Federal agencies. However, the proposed bill provides a mechanism whereby all Federal permits or licenses necessary for the construction and operation of the deepwater port facility will be handled through a single application filed with the Interior Department. That Department will ascertain the other Federal agencies which have the responsibility and jurisdiction under existing law for aspects of the construction and operation of such terminals. Interior will not issue a license under the act until it has been notified by such agencies that the application meets the requirements of the laws which they administer.

The Department of Commerce concurs in the administration's determination that energy and land use considerations of the deepwater port facilities are primary. Within the administration the Department of Interior has primary responsibility for energy matters, and, as well, the responsibility for the licensing of offshore structures, such as drilling and production platforms and oil and gas gathering pipelines, and, under proposed legislation, for coordination of State land use planning.

Senator HOLLINGS. Mr. Cook, at this particular point we are reading on and on. It strikes me that you continually refer to land use planning which is yet to be a law, whereas all of this is going into the coastal zone area and the Coastal Zone Management Act is the law, and one proudly written into law by President Nixon last October and you don't refer to that.

You talk about the primary responsibility of the Department of Commerce being one of coastal zone planning and development, but you say the Department of Commerce concurs in land use considerations and on and on down the line.

Why do you avoid the phrase "coastal zone planning and management"? What is the Department's position on coastal zone management?

Mr. Cook. Senator. I think the Department's position is that the coastal zone management is an important concern. The representatives from NOAA, who will make their presentation immediately after mine, will speak to that with somewhat more accuracy than I can insofar as NOAA administers the Coastal Zone Management Act.

Senator HOLLINGS. This statement of yours had not been what they called sanitized by OMB to delete reference to the coastal zone and substitute therefor land use?

Mr. Cook. I wouldn't phrase it that way, Senator.

Senator HOLLINGS. There is land use used over and over and the land to be used, the coastal zone, is one of the primary responsibilities. You are pressed for time and so am I, but you say "With the States' land use planning program," we haven't gotten the States into that at all. They are not in the land use planning. They are having a very difficult time, some of them, and Louisiana was an exception, with the coastal zone planning, but if they can get just that portion zoned in that respect and plan for and develop, then they could probably move in, but you don't find the States of America coming forward in unanimity as they did no coastal zone, the Council of State Governments, the Governors themselves, the Association of Municipalities and right down the line, all supporting that coastal zone, because they could see just what we are talking about, superports.

You can take it that after the States of the United States don't want a national zone, and they don't have a State zoning law in their several laws, and yet we are talking here in the nebulous phrases of land use planning like we have it and it is on the books and everything else.

Did OMB review this statement?

Mr. Cook. Yes, sir, they did.

Senator HOLLINGS. That is all you have to answer. Thank you, sir. Go right ahead.

Mr. Cook. We believe, all factors considered, that the Department of Interior can probably best coordinate the energy, land use, and other considerations most relevant to deepwater port facilities to insure balancing of both onshore and offshore environmental effects.

Moreover, on June 29, 1973, the President announced a proposal to create a new Department of Energy and Natural Resources which would take charge of all of the present activities of the Department of Interior except for certain energy research programs, and which also would assume the energy and related natural resources responsibilities presently exercised by several other Federal agencies. Among these responsibilities are the duties of the National Oceanic and Atmospheric Administration, presently in the Department of Commerce, the planning and funding of the civil functions of the Army

Corps of Engineers and the pipeline safety functions of the Department of Transportation. If the President's proposal to create this new Department now pending before the Senate as Part A of S. 2135 is enacted into law, the Department will then exercise the present responsibility of NOAA for the conservation of marine resources and the development of coastal zone management programs, and the responsibilities of the Corps for the maintenance of harbor and channel depths in navigable waters of the United States.

These responsibilities are closely related to the development of deepwater port facilities and provide additional support for the administration's position that responsibility for licensing such facilities should be exercised by the new Department as the successor to the Department of the Interior.

The Department of Commerce has always been interested in the development of ports. Under section 8 of the Merchant Marine Act, 1920, the Maritime Administration, the successor agency to the U.S. Shipping Board, is responsible for the investigation of harbor and port improvements with the object of promoting, encouraging and developing ports which are adequate to handle our waterborne commerce. Consequently, the issue of deepwater port facilities has received serious examination within the Department.

Our concern stems in part from our responsibility for the promotion of efficiency and lower costs for transportation of commodities in U.S. foreign commerce, including the importation of petroleum.

For example, at world scale rates prevailing in mid-June, it would have cost approximately \$22.53 per ton to bring crude oil from the Persian Gulf to the United States east coast in a 54,000 dwt tanker, while the cost per ton in a 241,000 dwt tanker would have been only \$14.11. Based upon the current price of Persian Gulf crude of \$15.90 at the source, the \$8.42 transportation cost reduction for VLCCs represents a 21.9 percent savings in the landed cost of Persian Gulf crude.

Because of these and similar transportation economies, the Maritime Administration has been interested in encouraging the construction of Very Large Crude Carriers—VLCCs—since the beginning of this decade. In December 1969, the Maritime Administration granted title XI mortgage insurance for the first VLCC to be built in the United States and destined to fly the American flag, a 225,000-dwt tanker under construction at the Seatrain yard in Brooklyn, which was launched on June 30 of this year. On June 30, 1972, construction-differential subsidy was awarded for six VLCC's, including three tankers of 265,000 dwt, the largest ships ever to be built in this country. In June 1973, the Maritime Administration awarded construction-differential subsidy for three additional VLCC's, including two 265,000-dwt vessels which will be owned by Gulf Oil Corp. These will be the first American-built VLCC's to be purchased by a major U.S. oil company.

The nine VLCC's, for which construction differential subsidies have been awarded, will cost a total of more than \$615 million, and the Government's share of their cost, paid as construction-differential subsidy, is more than \$260 million.

These VLCC's cannot enter any of the existing gulf coast or

east coast harbors. If the United States is to be served by these vessels, deepwater port facilities must be developed.

Senator HOLLINGS. How many can they enter on the west coast? Just Seattle?

Mr. Cook. Fully loaded they are not capable of entering west coast ports, either. Somewhat lightened, they can enter the Puget Sound anchorage.

Levels of domestic energy production and usage fix the measure of required imports. To the extent that substantial imports will be required, given the transportation economies which exist, the issue is simply whether large tankers will unload their oil in the Caribbean or Canada prior to transshipment of petroleum, or refined products, to the United States in smaller vessels, or whether they will bring their cargoes directly to this country using deepwater port facilities.

If transshipment of petroleum or refined products from deepwater ports in the Caribbean is elected, many more visits by smaller tankers to the United States will be required in order to transport our petroleum imports. This transshipment will result in higher costs for imports of crude oil and refined products. It will also result in a substantial increase in the risk of environmental damage to our ports and waterways from oil spills, due to the increase in the number of visits by small vessels to our ports and the increase in port congestion which may result in collisions.

In January 1973, the Department of Commerce, in testimony before the Senate Interior and Insular Affairs Committee released a projection of estimated U.S. petroleum imports for 1975 and 1980 as set forth in the following table.

TABLE 1.—KENT AND SUSSEX COUNTIES

	1970 (actual)	2000	
		(Without port)	(With port)
Population.....	162,248	237,400	1,060,100
Total employment <sup>1</sup> .....	37,701	63,050	305,900

<sup>1</sup> Employment covered by employment security laws.

Mr. Cook. The 7.8 million barrels per day of petroleum which will be imported from the Eastern Hemisphere in 1980 could move in VLCC's directly to deepwater port facilities in the United States if they become available, or in VLCC's to a Caribbean or Canadian deepwater port for transshipment in smaller vessels to the United States.

If VLCC's are used to transport the crude oil directly to the United States, a fleet of 246 vessels will have to make 1,417 voyages to the United States from the Eastern Hemisphere. On the other hand, if the VLCC's transport the crude oil to the Caribbean and it is transshipped to the United States in 70,000-dwt tankers, an additional fleet of 119 small tankers will be required to make 5,062 voyages to the United States from the deepwater port facility, while the size of the required fleet of VLCC's will be decreased by only nine vessels.

We submit that the potential hazards to the environment, due to oil spills, will be greater if small tankers make 5,062 voyages to existing U.S. ports than if VLCC's make only 1,417 voyages to deepwater port facilities located several miles offshore and constructed with the necessary environmental safeguards.

The additional transportation cost of transshipping oil from Caribbean and Canadian deepwater port facilities is also significant. A recent report prepared by the Council of Economic Advisers and based on the collective efforts of an interagency group which included representatives of the Maritime Administration, NOAA, the Corps, the EPA, the Council on Environmental Quality, the Department of State, the DOT, the OMB, the Office of Emergency Preparedness, and the Coast Guard concluded that the cost savings resulting from an east coast U.S. deepwater port facility would range from 6.6 cents per barrel on a throughput of 2.5 million barrels per day to 16.5 cents per barrel on a throughput of 6.6 million barrels per day over transshipment via Canada and the Caribbean. If the deepwater port facilities are located on the gulf coast, the resultant savings, according to the study would range from 4.6 cents per barrel on a throughput of 4.175 million barrels per day to 18.2 cents per barrel on a throughput of 14.7 million barrels per day. The cost savings vary directly with throughput as the large fixed costs of construction are allocated to a greater quantity of oil. The location of deepwater port facilities in the Caribbean and Canada may also result in the establishment of new refineries and petrochemical complexes in those countries rather than in the United States. Such a development would result in the export of jobs from the United States and have an adverse effect on our balance of payments.

On June 29, 1973, the President reported that since his energy message of April 18, at least eight oil companies have made firm decisions to undertake significant domestic refinery construction projects. Within the next 3 years these projects are projected to increase U.S. refinery capacity by more than 1.5 million barrels daily—a 10-percent increase over existing capacity. We believe that one of the reasons for the undertaking of these refinery projects was the President's support for deepwater port facilities which was contained in the energy message.

Industry has recognized the need for deepwater ports for several years and a number of projects have been initiated by the major oil companies to develop superports at specific sites. The reaction of the coastal States has been mixed. For example, Delaware banned an oil transfer facility under its Coastal Zoning Act, while the Louisiana Governor appointed a "superport task force" to facilitate efforts to establish a deepwater port facility off the Louisiana coast.

While we recognize that responses may vary from State to State, we are hopeful that all citizens will recognize the need for deepwater port facilities, and the fact that the import of petroleum through such facilities is preferable, both economically and environmentally, to the import of petroleum in smaller ships using existing conventional port facilities.

Without regard to the nature of the State responses to proposed projects, however, industry has been unwilling to act until issues

concerning Federal jurisdiction beyond the 3-mile limit have been resolved. And, Federal jurisdiction is accordingly a necessity.

S. 1751 makes clear the Government's basic position. The proposed legislation would establish a uniform, coordinated procedure for licensing and regulating deepwater ports. The Secretary of the Interior or his successor, the Secretary of Energy and Natural Resources, will have prime responsibility and applicants will have only one place in the Federal Government to go for a decision.

Over the past 2 years the Maritime Administration has participated in and contributed to interagency economic and environmental studies of deepwater ports. These studies concluded that U.S. deepwater port facilities were environmentally and economically desirable. We have also considered the environmental aspects of deepwater terminals independently and in our recently completed environmental impact statement on the Maritime Administration's tanker program. Our analyses reinforce the basic interagency findings that deepwater ports are economically and environmentally desirable.

Various Government agencies, including the Maritime Administration, have studied several types of deepwater port facilities including monobuoys, sea islands and artificial islands.

The monobuoy is an offshore mooring point connected to mainland storage facilities by pipeline. Vessels connect to the monobuoy and are free to rotate around it while discharging their cargo. The monobuoy is the simplest and least expensive type of deepwater port facility receiving current serious consideration.

A ~~sea island~~ would be fastened by piles to the ocean floor. The vessels would be tethered on one side at bow and stern. The crude oil would be transferred from the tanker to storage facilities onshore by means of a pipeline.

An artificial island would be constructed by fill. Such an island would house storage facilities and could be used for dry bulk commodities in addition to petroleum if commercial needs dictated the construction of an island in this form. The artificial island would be the most elaborate and, generally, the most costly of the three alternatives.

Under the provisions of S. 1751, the determination as to the type of facility to be constructed is left to the private sector, subject only to the requirement that the construction of the facility be designed to minimize or prevent significant adverse environmental effects. At the present time industry appears to be most interested in developing one or more monobuoy deepwater port facilities in the Gulf of Mexico.

The Department of Commerce will continue to work closely with the Department of the Interior and industry to implement S. 1751 after it is enacted.

This concludes my statement, Mr. Chairman. I will be happy to answer any questions that you or members of the committee may have.

Senator HOLLINGS. That is excellent testimony, Mr. Cook. It fills in the record on the practical considerations that we have before the committee on the need for superports.

You also coordinated with the AEC.

You are talking about these islands. We have from the AEC the locating offshore, and one petition is now pending in New Jersey for a nuclear powerplant. Could that be combined, also with a superport—the port and the nuclear powerplant facility?

Mr. Cook. We have discussed the possibility of such a facility with industry groups, the FPC and the AEC. However, I am not sufficiently familiar with that project to speak to the practicality of its combination or coordination with a petroleum offloading facility.

Senator HOLLINGS. What is the added degree of safety in a fixed facility, namely an island, rather than the monobuoy?

I am speaking of environmental oil spills. Is one safer than the other, or what has been the experience from your testing?

As part of the Maritime Administration's research into deepwater oil terminal facilities, the environmental aspects of monobuoys and fixed island sitings have been the subject of extensive review. It is difficult to make an all-inclusive comparison of environmental desirability, however, since the suitability of different types of terminals will vary with the size of tankers that will be moored and the specific wind, wave and other environmental conditions found at a given proposed site. The planning of a safe, environmentally reliable offshore terminal facility requires a systems approach utilizing a knowledge of the handling characteristics and mooring and cargo equipment capabilities of the tankers that will use the terminal, and, in addition, the environmental conditions at the site. The oil industry's experience has shown the monobuoy to be a safe, reliable means for mooring very large crude carriers and for transferring cargo in moderate wind, waves and currents.

Senator HOLLINGS. Very good, sir. Thank you very much, Mr. Cook. We appreciate your contribution to these hearings.

If there is anything further you wish to add, you may do so.

Mr. Cook. No, sir. It has been a pleasure to be with you today.

Senator HOLLINGS. Thank you very much.

The committee will next hear from Robert W. Knecht, Director, Office of Coastal Environment, National Oceanic and Atmospheric Administration, Department of Commerce.

You are from the Office of Coastal Environment. Do you have anything to do with the Coastal Zone Management Act?

**STATEMENT OF ROBERT W. KNECHT, DIRECTOR, OFFICE OF COASTAL ENVIRONMENT, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE; ACCOMPANIED BY JAMES BRENNAN, GENERAL COUNSEL; WILLIAM ARON, DIRECTOR, OFFICE OF ECOLOGY AND ENVIRONMENTAL CONSERVATION; AND WILLIAM ROYCE, ASSOCIATE DIRECTOR, NATIONAL FISHERIES SERVICE FOR RESEARCH**

Mr. KNECHT. Yes, I do. I head the part of NOAA which is responsible for its implementation.

Senator HOLLINGS. Please introduce your associates there, and tell us what you have been doing.

Mr. KNECHT. Listening with interest this morning.

Senator HOLLINGS. You know we didn't give you any money, and how did you sneak around, and they got you in?

Mr. KNECHT I would be happy to comment on the program that we are undertaking.

Senator HOLLINGS. Would you please tell us?

Mr. KNECHT. First, I would like to introduce my colleagues. I have Mr. James Brennan, General Counsel of our organization; on my right, I have Dr. William Aron, Director of the Office of Ecology and Environmental Conservation in NOAA; and on his right is Dr. William Royce, who is Associate Director of the National Marine Fisheries Service for Research.

They will be happy to help to answer any questions you have for us.

I have a prepared statement which is brief, Mr. Chairman. Would it be appropriate for me to read that statement and then respond?

Senator HOLLINGS. You go right ahead; yes, sir.

Mr. KNECHT. I am pleased to appear here this morning to testify in support of the administration's bill to authorize the Secretary of the Interior to regulate construction and operation of deepwater port facilities, S. 1751.

This legislation would provide a means of regulating the offshore port facilities so urgently needed to provide for economical importation of oil supplies to meet the Nation's growing energy needs. While facilitating the construction of such ports, this legislation would also include mechanisms to provide for environmental protection.

In my testimony this morning, I would like to emphasize the role of the Department of Commerce's National Oceanic and Atmospheric Administration in assisting the implementation of this important legislation.

NOAA's role, like that of other agencies, will be centered around providing consultative service to the Department of the Interior. NOAA's role will be principally concerned with providing scientific information on the ocean environment, around its responsibilities for protection in management of fisheries resources, and around its new responsibilities for coastal zone management.

Senator HOLLINGS. At that particular point, Dr. Knecht, isn't that the case that only your department has those responsibilities right now, the capacity for oceanic research, ocean environment, the matter with respect to fisheries resources, and of course the Coastal Zone Management Act?

That is all within NOAA?

Mr. KNECHT. Yes, within the Department of Commerce, and I think no other agency has that particular combination of responsibilities.

Senator HOLLINGS. All right, sir.

Mr. KNECHT. The proposed legislation makes provision for considering environmental factors in licensing the construction and operation of deepwater ports. Among these provisions is section 103 (b)3 which requires the Secretary of the Interior to determine as a basis for awarding a license that the "proposed facility contains rea-

sonable safeguards against adverse environmental effects from the construction and operation of the facility."

Section 105(e) requires preparation of an environmental impact statement under the National Environmental Policy Act with the attendant safeguards of that process.

These determinations concerning the environmental impact of proposed offshore sites will require substantial technical and scientific information. NOAA, along with other agencies, notably the Coast Guard, EPA, and the Corps, will provide the Department of Interior with much of the necessary environmental information needed for decisionmaking.

One of the major environmental concerns related to artificial structures is the effect that such structures will have on living marine resources.

NOAA's National Marine Fisheries Service provides a central focus of understanding of fisheries and marine biology. NOAA is also engaged in extensive research on marine pollution, including additional responsibilities imposed by the recently enacted Marine Protection, Research and Sanctuaries Act.

NOAA's expertise with respect to the marine environment, however, is far broader than living resources. For example, NOAA components such as the National Ocean Survey and the Environmental Research Laboratories have extensive programs dealing with tides, current, and atmospheric effects on the ocean.

Thus we are able to determine if a site being considered for deep-water port facilities is one where discharge will be carried shoreward to damage shoreline organisms and to spoil coastal amenities.

I might say that the National Weather Service of NOAA also is very active in this field and clearly its competence and service program in ocean wave forecasting, forecasting storms and other disturbances on the oceans and in the coastal areas is a vital one to this general field.

Similarly, the expertise of NOAA in ocean dynamics could aid in siting artificial structures so as to minimize interference with bottom sediment transport, nutrient flow, and the ability of a body or area of water to assimilate pollutants.

Our NOAA fleet of oceanographic vessels provides unparalleled operational capabilities to undertake the necessary marine investigations. Our sea grant program, involving more than 100 institutions and some 1790 scientists and engineers, will also be a key resource and capability in any such endeavor. It represents a major national resource for investigating ocean-related problems of a wide range and nature. It is invaluable in the resolution of regional and local problems where the expertise of institutions directly associated with the area is available.

We have been able to draw upon this resource to provide knowledge which is essential in decisions relating to the management of coastal areas. For example, recently the Council of Environmental Quality requested NOAA, and we turned to our Office of Sea Grant, to conduct a study and analysis of the environmental problems which might be generated by deep draft tankers and offshore port facilities at specific sites off the coasts of the United States.

We delivered this report to CEQ in March. I think Chairman Train referred to some of those results yesterday in his testimony.

We are aware that the task of predicting environmental impact of proposed offshore structures can become a major one in future years—as the number of proposals increases. However, we believe that the resources within and available to NOAA provide a basic nucleus from which a national capability to accomplish this can emerge.

Consequently, under the administration's bill, NOAA will play a major role in assisting Interior in connection with offshore port facilities through the application of our particular capabilities to the siting problem in the areas of environmental science and technology.

Senator HOLLINGS. In other words, on the authority given under S. 80, those provisions under S. 80 which would direct NOAA, direct to them the responsibility here, you generally agree with those provisions, do you not?

Mr. KNECHT. I think those provisions refer to the kind of competence that I have just outlined here, yes, sir.

Senator HOLLINGS. All right.

Mr. KNECHT. In addition to providing this information to assist the Department of the Interior in meeting its regulatory requirements, we also expect to comment on these proposals in connection with our responsibilities for management of the Nation's marine fisheries resources.

Along with the Department of Interior we are already exercising such responsibility under existing law with respect to the effects of any artificial structure located on our coast through the Fish and Wildlife Coordination Act which requires such consultation.

This act applies when any Federal agency engages in activities involving issuance of license or permits which modify bodies of water in a way that could affect conservation of living resources.

Another important role for NOAA in relation to the deepwater port legislation stems from its responsibilities for administering the Coastal Zone Management Act.

Mr. Chairman, there will be important relationships between those State coastal zone management programs and implementation of the proposed deepwater port legislation. These relationships stem from the fact that deepwater ports can have significant secondary impacts on the regions in which they are located.

The refineries and petrochemical complexes usually associated with superports will require substantial quantities of land in the coastal zone. This point was also emphasized by Mr. Train and Mr. Horton in their testimony yesterday.

Such facilities require substantial water supplies. The population increases attracted to these complexes will exercise the demand for public services such as roads, schools and sewage facilities.

The best means of preparing for these impacts will be through effective State planning. With effective State planning, these secondary effects of offshore port development can be provided for in an orderly fashion.

Conversely, State plans and programs which do not provide for proposed offshore port development could pose major impediments to the construction of such facilities.

Senator HOLLINGS. What is your office doing to promote State planning?

Mr. KNECHT. Well, on that question, Mr. Chairman, shortly after the Coastal Zone Management Act was signed into law in October of 1972, we set up, within NOAA, a Coastal Zone Management task force to begin preparing guidelines anticipating the issuance of grants to States to begin the planning and the management process.

We also established a liaison network with each of the 30 coastal States and four territories in order to provide for information exchange flow in both directions.

We have now issued in draft form, the first set of guidelines in the "Federal Register" on June 13 of this year. Those guidelines are available for public comment through August 13, at which point, after suitable consideration by our office, they will become final.

As a part of our internal planning process within NOAA, we are designing our program in such a way as to make the provisions for grants to States beginning next July 1, that is to say, 11 months from now, in fiscal year 1975.

Senator HOLLINGS. That is both planning grants and construction grants as well?

Mr. KNECHT. We haven't completed the details concerning the nature of our request for funding, Mr. Chairman, but I think provisionally that it would include funding for both planning and operating programs.

Some States are quite well advanced as you know, and are urging that we complete this process at an early date and that we move quickly to establish guidelines that will describe the Federal approval process for State management programs.

The State of Washington has asked whether or not its present State legislation, the Shoreline Management Act, qualifies as a federally approvable program, and if it does, Washington will feel it is in a position to apply for grant money to operate the program, the planning having been completed.

Senator HOLLINGS. Suppose the Congress included \$20 million in the appropriations bill under consideration for 1973-74, could you use that wisely?

If that were signed into law here by the fall period, say September?

Mr. KNECHT. Of course, the fiscal year is already in progress, Mr. Chairman, and we are still in the process of completing and adopting the guidelines for grant applications, a step which we hope to take in the next 30 to 45 days.

After that step, we need to work up an internal mechanism for processing grant applications, a task which will take several additional months.

If moneys were to be available this fiscal year, I would think by early in the next calendar year we would be able to process grant requests and begin to assist States directly in a financial way. Whether enough time remains to use an amount of that magnitude, I am not certain. I would think that some of the \$20 million might well carry over into the next year, fiscal year 1975, and of course would still be available and useful.

Senator HOLLINGS. Have you seen an application from a State like California?

Have you seen what they encompass in their plan?

They could use the whole \$20 million, when you talked about the magnitude.

Mr. KNECHT. The law is written in such a way that there is a limit of 10 percent to any State in any one year. The States have been anticipating these funds since the time the act was first considered by the Congress. Therefore the States will be ready in a shorter time than might otherwise be the case.

Senator HOLLINGS. How many States would be ready?

Mr. KNECHT. We estimated perhaps 10 to 12 States might be ready on relatively short notice to apply for grant funds.

Senator HOLLINGS. Very good, sir. Thank you.

Go right ahead.

Mr. KNECHT. The administration's deepwater port facilities bill recognizes and makes provision for these relationships:

1. Section 103(e) of the proposed legislation provides that the Secretary of the Interior "shall consult with the Governor of any State off whose coasts the facility is proposed to be located to determine whether the operation of the facility and directly related land-based activities would be contrary to the State land-use planning program.

2. Section 112 provides "facilities connected to a deepwater port facility licensed under this act, such as pipeline and cables, which extend above and into submerged lands or waters subject to the jurisdiction of any State or possession of the United States, shall be subject to all applicable laws or regulations of such State or possession to the extent not inconsistent with Federal law or regulations."

The Coastal Zone Management Act of 1972 also contains important provisions relating to this area.

Senator HOLLINGS. I congratulate you on being able to include that statement. On one sentence you won out.

Mr. KNECHT. In summary, Mr. Chairman, NOAA expects to be deeply involved with the Department of Interior in the implementation of this legislation, which we believe will provide for protection of the coastal and marine environment while assisting the Nation to meet its growing energy needs.

I am pleased to say that we have already participated in initial discussions with that department concerning development of a program for implementing this legislation in a way in which our respective responsibilities and capabilities, as well as those of other Federal agencies concerned, can mesh most effectively.

Thank you.

Senator HOLLINGS. Mr. Knecht, would section 3 of S. 1751 have the effect of allowing States to control deepwater port activity beyond its jurisdiction?

That is section 111, I am sorry.

Mr. KNECHT. Section 111 appears simply to transfer Federal laws that apply to navigable waters to the deepwater port facility, and it

would appear to us that the Coastal Zone Management Act clearly applies to territorial seas.

I would like to ask Mr. Brennan, our general counsel, whether or not he agrees with my interpretation on that point.

Senator HOLLINGS. Yes, sir.

Mr. BRENNAN. Mr. Chairman, as was pointed out, this is a very sensitive and difficult area. As I look at the bill and the legislation that is currently on the statute books, the Coastal Zone Management Act applies to land and water uses within the coastal zone, which includes the territorial sea, that is out to 3 miles.

We would point out that the territorial sea has been defined in other statutes as part of the navigable waters of the United States. So, since section 111 says that the laws and treaties of the United States shall apply to deepwater port facilities licensed under the act in the same manner as if the facilities were located in the navigable waters of the United States, it seems to me that an interpretation could be given that the Coastal Zone Management Act applies to the facility itself. This is not the administration's intent, of course. We do not feel the States should be given authority over the establishment and operation of deepwater port facilities beyond three miles.

It appears, reading on further in section 111(a), that this act contemplates that State civil and criminal laws consistent with federal law, except for taxation laws, would apply to these ports.

Senator HOLLINGS. Do we have any precedent for that, that you know of?

Mr. BRENNAN. I think there is some precedent.

Senator HOLLINGS. How about the Outer Continental Shelf?

I am thinking of extending the criminal laws out to a deepwater port 15 to 20 miles out. I am wondering if on one of those rigs, where you would have some criminal offense occur, if a fellow were to assault somebody out on one of the rigs out there, does it violate the laws of the State of Louisiana here?

Mr. BRENNAN. I believe there is a provision that does extend the State criminal laws to the artificial structures on the Shelf. Absent such a provision, generally you have somewhat of a hiatus in jurisdiction.

A recent example is the T-3 ice island case, where there was a homicide committed on the ice island. A very close legal question arose as to the applicable law.

It was not resolved, because of the fact that the case was dismissed.

Senator HOLLINGS. I see.

Well, we appreciate what you are doing in the coastal zone field. I keep pressing, and I know our distinguished friends here are doing quite a bit in the fisheries field and otherwise, and I hope we can develop together a bill that the administration intends will have a one-stop proposition for the licensing. But I don't see how we ever will be able to forego the environmental requirements and functions of NOAA. They will still be there, and be a very vital part.

We want to do more to this in developing the coastal zone.

Is there anything your colleagues would like to add for the record?  
 Mr. KNECHT. Apparently not, Mr. Chairman.  
 Senator HOLLINGS. Thank you for your appearances here today.  
 The committee will be in recess until 2 o'clock.

**AFTERNOON SESSION**

Senator BIDEN [presiding]. The hearing will come to order. Our first witness this afternoon is General James U. Cross, executive director, State of Texas Offshore Terminal Commission.

I am told we are going to have several votes this afternoon, so there will be interruptions, and there may be one during the course of your testimony, because there is supposed to be a vote back to back to this one.

Proceed at your own pace, in any way you would like.

**STATEMENT OF GEN. JAMES U. CROSS, EXECUTIVE DIRECTOR,  
 STATE OF TEXAS OFFSHORE TERMINAL COMMISSION**

General Cross. Thank you, Mr. Chairman. I am here representing the Texas Offshore Terminal Commission, and as the spokesman for Governor Briscoe. As you may be aware, Governor Briscoe has already expressed strong support for deepwater terminals.

In his speech to the Midwestern Governors' Conference, on July 9, 1973, he states:

We are now pushing hard toward the construction of deepwater terminals . . . We must build these deepwater terminals, and we must have cooperation and assistance from the Federal Government to simplify the procedures. To construct them will require thorough planning and coordination among federal, state and local agencies. We need a single federal agency to handle these superport applications with a legislative mandate that requires precise and expeditious handling.

In recognition of the critical shortage of oil apparently facing our country, the Texas legislature created in October of last year the Texas Offshore Terminal Commission to study the need for deep draft harbors or offshore terminals on the Texas gulf coast.

Inherent in this charter is the responsibility to monitor and recommend federal legislation when and as it impacts on the interests of the State of Texas. In that regard Texas is concerned that Federal law has already, to some extent, and increasingly will become more fragmented, thus making obtainment of permits and/or licenses to utilize public lands and/or international waters to build facilities such as a deepwater terminal, haphazard and uncertain.

This fragmentation may lead to facilities which are not well planned, which do not make adequate protection for the environment, and in the construction of which, vital interests affecting the State of Texas and its citizens may be overlooked. Even worse, such procedures could result in "overkill" to the extent that no solution to the problem could ever be found.

In this connection, our commission on May 25, 1973, passed a general resolution expressing the desire that simplified procedures for obtaining permission to construct deepwater terminals be established. A copy of that resolution is attached to this statement.

[The resolution follows:]

THE TEXAS OFFSHORE TERMINAL COMMISSION

RESOLUTION

Whereas, there is an apparent critical shortage of basic energy fuels available to Gulf Coast refineries; and

Whereas, urgent action to qualify Gulf coastal port and transportation facilities to handle vast quantities of offshore crude oil (imports) is of paramount importance to the economic health of our state and nation; and

Whereas, the Commission is aware that monumental efforts are currently being expended by federal and state governments, public institutions, refiners, producers and consumers, private consortiums, and civic organizations to insure that adequate supplies of crude oil continue to be available to Texas refineries; now, therefore, be it

*Resolved*, That the Texas Offshore Terminal Commission hereby endorse and encourage the participation and efforts of all groups presently involved in attempting to solve this very urgent economic dilemma, and that the United States Congress be enjoined to enact legislation simplifying the procedures required to license or permit the building and subsequent operation of handling and shipment facilities for fossil fuel supplies to United States coastal ports and refineries; and, be it further

*Resolved*, That the Texas Offshore Terminal Commission declare its readiness to assist all ventures and to monitor the activities of all groups to assure complete and impartial liaison with state and federal authorities with the goal of obtaining and maintaining adequate supplies of crude oil for the strategic refineries on the Texas Gulf Coast and other United States coastal ports and refineries.

Attest.

JAMES U. CROSS, *Executive Director*.

General CROSS. While our studies have shown a clear need for some type of deepwater facilities, those studies have also shown that to construct and operate them will require thorough planning and coordination among Federal, State, and local agencies.

Several pieces of Federal legislation have been proposed that would authorize or impact on the issuance of permits for construction of deepwater terminal facilities, and it is Texas' view that any such enabling legislation should include the following provisions before passage.

Federal legislation should reserve to the State off whose coast the proposed facility is to be built, the right to decide where it is to be built, whether it is to be publicly or privately owned, and whether the State itself should construct the facility. This provision is necessary, we feel, to enable the State to adequately protect the interests of all its citizens in view of the potentially enormous environmental and economic impact of the proposed facilities.

A second provision, and one equally critical, is that simplified procedures for the issuance of permits must be incorporated into the legislation.

I have with me today a chart showing the steps necessary for obtaining a work permit from the Corps under the River and Harbors Act. I did not give that to your counsel, but I will before I leave.

[The chart follows:]

There are 21 agencies and 6 other groups shown on the chart, and many of the steps indicated may have to be done several times before obtaining final approval.

With the apparent critical shortage of crude oil in the United States, such delaying procedures could hold up development of a deepwater port facility indefinitely. Accordingly, to avoid such delays, legislation authorizing permits for such facilities must contain specific provisions to require precise and expeditious handling of applications by a single Federal agency, and that agency should be given the necessary muscle to insist that expeditious handling be accorded each application by all agencies involved in the permitting/licensing process.

Attached to this statement are several proposed changes to S. 1751 which we think is basically a good bill. Should these changes be incorporated the bill would accomplish the dual aims of maintaining State control over any facilities to be built off the State's coast while at the same time Federal authority would be concentrated in a single agency.

While this statement is not intended as a complete endorsement of this particular bill, S. 1751, it would, if modified by the attached changes, more correctly establish responsibility and authority for deepwater terminals in the appropriate places.

#### SECTION 103 (E)

The Secretary shall obtain the approval of the State agency designed by the governing authority; in the absence of the governing authority, then the Governor of the State off whose coast the facility is proposed to be located. No facility shall be licensed without such approval. I am referring to the Texas Offshore Terminal, and in the case of Louisiana, it would be the LOOP, or any other such authority in a particular State.

Senator BREN. May we concentrate on that a moment? We have raised questions about that section. Let me make sure I understand the effect of your proposed change, or your recommendation.

Right now, as the bill reads, it says the Secretary shall consult with the Governor of any State off whose coast the facility is proposed to be located to insure that the facility and directly related land-based activities would be consistent with State land use programs.

Now I raised that question with I believe Mr. Train, and I also raised it with the Under Secretaries of the other departments that have been here, and they said the effect—I believe it was the Department of Interior yesterday—that said the effective application of that section gives the Governor a veto power if in fact he or the appropriate agency finds that this does comport with our State land-use program.

I questioned that and I suggested it might be made stronger. Does your change bear on that question, whether or not the State has a greater say, such as in the construction of such a facility?

General CROSS. Yes, sir, I think it would. I think effectively it would give the State veto authority over any application that might be pending before the Federal agency.

Senator BIDEN. You say that the Secretary shall obtain the approval of the State agency designated by the governing authority. Does the governing authority mean the State?

General CROSS. No; the State agency designated by the Governor. It means in our case the Texas Offshore Terminal Commission as it is now formed.

Senator BIDEN. All right.

General CROSS. In the absence of the governing authority, then the Governor of the State. Perhaps we could clean that language up a little bit, but in effect what that means in the case of Texas, the Texas Offshore Terminal Commission which acts for the Governor on matters concerning offshore terminals or superports.

Senator BIDEN. That says if you don't get the explicit approval of the Governor or the governing authority then there cannot be a port constructed off that State's coast?

General CROSS. That is correct.

Senator BIDEN. Why is that necessary?

General CROSS. As I said in my testimony, there is a good deal of impact from an environmental standpoint, and economic impact that will be related to the building or not building of these terminals, and Texas would like a voice in whether or not that impact is going to occur in our State over the next 5 to 10 years or so.

Senator BIDEN. So would Delaware. Would you please go on.

General CROSS. I would like to add further, sir, that we think there ought to be a superport built off Texas.

Senator BIDEN. Fine.

General CROSS. And we understand Delaware's position, that if they don't want one, that is their business.

Senator BIDEN. You may have people coming down from Delaware offering you theirs. I think I promised it to Louisiana.

General CROSS. All right, sir. Continuing, Mr. Chairman, we would change section 104(c). An application filed with the Secretary for a license under this act shall constitute an application for all Federal authorizations required for construction and operation of a deepwater port facility. The Secretary shall consult with other agencies to insure that the applications contain all information required by the agencies.

The Secretary will forward a copy of the application to those Federal agencies with jurisdiction over any of the construction and operation and will not issue a license under this act until he has been notified by such agencies that the application meets the requirements of the laws which they administer.

Now here is the changes. If such notification is not received by the Secretary within 6 months of forwarding the application to that agency, such failure to notify shall be deemed approval of the application by each such agency. Hearings held pursuant to this act shall be consolidated insofar as practicable with hearings held by other agencies.

Senator BIDEN. I assume the reason for that is that there are unnecessary delays now, and that puts the burden on the agency to come forward.

General CROSS. Yes, sir. In the case of Seadock, by the time they

conclude their studies, we think it should not take much more review at the Federal level to clean up what few holes there are in the application and go ahead and let the application go forward.

We don't see that there should be as much as 2 years' delay in the application process which has been suggested, that is, in some of the other bills now before the Congress.

Senator BIDEN. All right.

General CROSS. We would add section 105(g): The Secretary shall promulgate rules and regulations required under this section in such a manner that the time required for a decision to grant or deny a license shall not exceed 1 year.

Senator BIDEN. Let me make sure if I understand how this ties in with the rewriting of section 103(e). When does the governing authority have to make their decision on the construction of the facility?

General CROSS. Within 6 months.

Senator BIDEN. So if the Governor or the governing authority took no action in 6 months, it would mean they approved and then from that point on it is 1 year, or an additional 6 months?

General CROSS. No, sir, just an additional 6 months.

Senator BIDEN. All right. Fine. Thank you.

General CROSS. Continuing, Mr. Chairman, change section 107, Conditions in licenses, The Secretary is authorized to include in any license granted under this act any conditions he deems necessary to carry out the purposes of this act. Such conditions may include, but not be limited to:

1. Such fixed fee as the Secretary may prescribe to assure that only those applicants who are financially responsible, are permitted to license and operate a deepwater facility, and the change follows now. Except that no costs or fees shall be charged if the applicant is a State or political subdivisions of a State.

Senator BIDEN. Do you feel there should be a further delineation of the things the Secretary of State should consider in deeming whether or not it is necessary that a license be granted? In other words, the bill sets out six considerations as I understand it, everything from reimbursement to a licensee whose license is revoked or has expired, must be sure that the facility will be harmless to navigation and to the environment.

It was suggested by someone, and I am not sure who it was now, that maybe the Secretary should be specifically directed to consider the land side effects of construction of such facility.

Do you think that is worthy of inclusion?

General CROSS. I believe it is, although I believe when you are considering the environmental impact of any such facility that you necessarily have to consider the land side impact as well. In other words, you have to look at the whole ball of wax, and you might broaden the language a little bit to include that particular aspect of it, but as we see it, it is adequate just like it is.

Senator BIDEN. Thank you.

General CROSS. Continuing, we would change section 112, and it reads now as follows:

Facilities connected to a deepwater port facility licensed under this Act such as pipelines and cables, which extend above or into submerged lands or

waters subject to the jurisdiction of any state or possession of the United States, when in such waters shall be subject to all applicable laws or regulations of such state or possession to the extent not inconsistent with Federal law or regulation.

Nothing in this act shall be construed as precluding a State from imposing, within its jurisdiction, more stringent environmental, safety or other regulations of whatever kind.

That is the end of my statement, Mr. Chairman.

Senator BIDEN. What compels you to make that recommendation?

General CROSS. We don't have any specific reason for including that, except that if in the granting of a permit, as it was done under the proposal that we made here, we felt like a particular aspect of the environment or a particular safety aspect was not getting the proper treatment, we would like the final say again as to how that should be handled.

We don't have anything specific. We just feel like it would give us a broad enough act that we could—well, we might need it.

Senator BIDEN. I notice when we Senators comment on the testimony of witnesses our comments are directly related to our own bias which we bring to this hearing, and recognizing that in advance, I would like to compliment you on your very enlightened statement, and I would like to ask you a few questions about some other proposed legislation.

Although it is not often mentioned, there are some other serious pieces of legislation relating to deepwater ports and their construction and operation introduced by other Senators.

I have a bill which I was author of, and I would like to mention one specific aspect of it, which speaks to your recommended change in section 103.

In the bill which is S. 1316, it gives the governor of the State, and I guess it could be amended to include "or governing authority" but it gives a State the authority to veto the construction of such a port or facility, which is the effect of your recommended change in section 103.

But I am sure that it will come as a great shock to some of the observers of these hearings that I felt that that would be potentially a little dangerous, that it might open up such a decision to capricious action on the part of the governor who might be getting pressured at this point in time by either environmentalist groups on the one side or industry on the other.

General CROSS. You are talking now about vetoing the facility off someone else's coast?

Senator BIDEN. No; off your own coast. That is all my legislation speaks to. So in order to avoid the potential capricious action of a governor, we decided to attach some conditions upon which the governor could exercise a veto. Ostensibly, the reason why a governor or a governing agency would decide they did not want the facility off their shore would be because it would in some way be detrimental to the State's environment. We felt that it might be necessary to insure the good faith of the State by requiring them to enact legislation at the State level to protect their own environment.

More specifically, what I was afraid of was that, let's say my

State, the environmental groups might say that—or whoever—might say, “we don’t want a facility off the coast of Delaware,” but at the same time might not take that necessary action at the State level to protect the very things they say they are concerned about, our ocean front, our sand dunes, our salt water marshes, and so on and so forth.

You could mention a number of things. So, again, I am a little concerned that there might be some industry in the State which for some reason would find some competition from the oil industry not desirable, and that that industry in that State, if they had a lot of clout, might pressure the governor to exercise a capricious veto.

So we set out some eight or nine requirements which the State must meet. Otherwise, within 2 years of the time it is exercised the governor’s veto would become null and void and you would be able to go ahead and construct the facility.

I don’t want to take too much time and go into details what they were, but conceptually how does that strike you? I think I sense the answer from the expression on your face, but maybe for the record you could let us know how that approach appealed to you, or doesn’t appeal to you.

General CROSS. Well, first let me say that I doubt very seriously that Texas, or the Texas Governor, whether it be Governor Briscoe or any future Governor.

Senator BIDEN. I am sure the Texas Governor would not exercise a capricious veto.

General CROSS. Accordingly we wouldn’t object to that kind of legislation being passed separate and apart or as an amendment to this bill.

We wouldn’t want to see, however, the 2 year provision that an application be held for 2 years while everybody had a chance to study it and look at it and gum it and massage it to death. We feel like this problem is of such import, not only to Texas, but to the Nation, that we need to get on with it, and we intend to assure at least the citizens of Texas that should there be a deepwater terminal authorized down there that we are going to place the adequate safeguards to assure that the environment is protected and that our State interests are looked after.

Senator BIDEN. I think that is a very valid point. My reason for inserting the 2 years was, believe it or not, to give the proponents a greater advantage, because the veto becomes final until he changes his mind.

I was looking for a time limit within which the State would have to take action to demonstrate that they really were as concerned as the governor showed they were about their environment. That is a very cogent point you raise about the delay, that it may be too long, even though it works the other way in this case.

I have no further questions. I really appreciate your cooperation and your comments. Thank you very much.

General CROSS. Thank you.

Senator BIDEN. Before we call the next witness, a vote was just announced, and I would like to temporarily recess to walk over to the floor and vote.

It will be the panel of Mr. William B. Read, Mr. James Arnold, Mr. John Mascenic, and Capt. Billy Smith.

Thanks again, General.

General Cross. Thank you, Mr. Chairman.

Senator BIDEN. We will recess for 15 minutes.

[Recess.]

Senator BIDEN. The hearing will come to order.

Gentlemen, we will come and proceed as you would like. I am told we are not likely to have another vote for another hour or so, so we may even get through all your testimony without interruption.

**STATEMENT OF WILLIAM B. READ, PRESIDENT, LOOP, INC.; ACCOMPANIED BY JAMES ARNOLD, EXECUTIVE DIRECTOR, PUBLIC RELATIONS MANAGEMENT COMMITTEE, SEADOCK, INC.; JOHN MASCENIK, EXXON CORP.; CAPT. BILLY SMITH, GULF OIL CORP.; AND CAPT. EDEN G. THOMPSON, GULF OIL CORP.**

Mr. READ. Thank you, Mr. Chairman. I would like to introduce some industry experts that we have brought along with us to help answer any questions you might have. I am William Read, of LOOP, and on my right is Jim Arnold, who will tell the Seadock story. On my left is John Mascenic. Mr. Mascenic is an engineering associate with Esso Research and Engineering Co. and has for the past 12 years been involved in the design, installation, and operation of marine terminals worldwide, and for research and development in marine terminals. He is a graduate of the U.S. Naval Academy and Rensselaer Polytechnic Institute and has served aboard ship as well as in the Civil Engineer Corps of the U.S. Navy. He is a registered professional engineer in New Jersey and a member of technical societies.

He has published a number of papers and holds five U.S. patents in the field of offshore terminals. He is also secretary of the Single Point Mooring Forum and has served as chairman for many of their committees. He is available to answer any questions you may have on the SPM design and operation.

On my right, the first gentleman is Capt. B. E. Smith. Captain Smith has served for 30 years in the maritime industry, 23 years of which have been with the Gulf Oil Corp. in the following capacities:

Starting as a third mate and rising to master of a vessel, and then port captain at Port Arthur, Tex., superintendent of Gulf's Liberian tanker fleet operating worldwide, and is now manager of safety and environmental relations, Gulf Oil Co. Marine Department.

He has memberships in the American Institute of Merchant Shipping and is a chairman of one of their committees, vessel traffic systems. He is on the operations and navigation committee. He is a member of the American Petroleum Institute committees, deepwater ports committee, tanker accident study group and tanker safety group. He is an alternate on the National Industrial Pollution Council.

Captain Smith is available to answer any questions you may have concerning the tanker operations.

On his right is Capt. E. G. Thompson, retired. He spent 34 years with the Gulf Marine Department, 29 years as master of a vessel. He has had extensive single point mooring experience, first in Korea during April 1964 through January 1966. Also in Angola, Nigeria, and in Spain during 1967 and 1968.

Captain Thompson will be able to answer any questions you might have concerning the operation of single point moorings and moorings of vessels at SPMs.

Mr. READ. Mr. Chairman, I have abbreviated my testimony. I would like to submit a written presentation and give verbally a shorter version of that, covering only the high points.

Senator BIDEN. Your entire statement will be in the record.

Mr. READ. I am William Read. I am appearing in my capacity as president of LOOP, Inc. I would like to thank you for the invitation to appear today and for the opportunity to explain our project. LOOP, Inc., with offices in New Orleans, is a corporation formed to design, finance, construct, and operate a deep draft crude oil tanker unloading terminal in the Gulf of Mexico waters off the coast of Louisiana.

The LOOP facility is being planned as a common carrier subject to ICC regulations, open to all potential users who meet published tariff requirements. The purpose of our project is to provide an economically and environmentally feasible facility, by which to handle the large volumes of imported petroleum needed to meet the Nation's growing energy demands.

Imports in 1970 totaled 3.4 million barrels a day. According to NPC projections, imports in 1975 may reach 7 million barrels a day. By 1980, the level of oil imports projected is 11 million barrels per day, by 1985, volumes could rise to 19 million barrels a day.

The economics of transporting this large volume of imported petroleum takes on great significance. Costs can be considerably reduced through the use of supertankers.

Today, shipping oil directly to east and gulf coast ports in 47,000 ton tankers from the Persian Gulf costs approximately \$13 a ton. By contrast, 250,000 tonners could transport crude oil to Louisiana and Texas gulf ports for about \$5.70 a ton.

Transshipment alternatives, that is, transporting crude oil to a deepwater port in the Bahamas or other location near the United States and transshipping from there to existing U.S. ports in small tankers would add approximately \$1.05 per ton to the direct shipment cost.

Another significant reason for the use of supertankers is the impact of these ships in reducing port congestion. The use of offshore marine terminals specifically designed to handle supertankers would reduce the potential number of ships arriving at our existing ports.

In view of these significant advantages of supertanker operations, deepwater terminals are needed at strategic locations near major refining areas to permit the direct movement of petroleum from U.S. terminals to refineries in a manner that will minimize both environmental risks and transportation costs.

Both the LOOP and SEADOCK projects are required to meet the projections previously mentioned.

Refineries located along the Texas gulf coast and in western Louisiana would be served by SEADOCK. The LOOP facility will supplement crude oil supplies to existing Louisiana and Mississippi refineries, and through Capline, the largest crude oil pipeline in the United States, will supply many of the refineries of crude oil deficient midcontinent America, as far north as Chicago.

These areas contain more than 15 percent of the Nation's existing refinery capacity.

Senator BIDEN. Would you repeat that again. Just the amount of capacity, and where that capacity is?

Mr. READ. The area that I am referring to that contains 25 percent of the Nation's existing refinery capacity is the Midwest area served by Capline and the existing Louisiana and Mississippi refining complex.

Senator BIDEN. I apologize for interrupting, but I am trying to follow. The Capline is shown in your full statement?

Mr. READ. Yes. It is connected to a majority of the refineries in the Midwest area through interconnecting pipelines.

Senator BIDEN. That approximately 25 percent of the existing refinery capacity in the United States, that is there?

Mr. READ. Yes, and that includes the refineries in Louisiana and Western Mississippi, also.

Senator BIDEN. Thank you.

Mr. READ. Projections of the volumes of imported crude oil moving to the Midwest through the proposed LOOP project were prepared as part of a study of the economic impact of a Louisiana offshore oil port. The study was prepared by Gulf South Research Institute and the H. J. Kaiser Co.

The study shows approximately 991,000 barrels per day of imported crude oil would move to Midwest refineries in 1977, growing to 1,895,000 barrels a day by 1985, and 2,375,000 barrels a day by 1990.

The range of crude oil volume destined for Midwest refineries is approximately 50 percent of the total throughput of crude oil as projected in the study.

I would like to submit a copy of this economic impact study for the record of this hearing.

Senator BIDEN. Without objection.

Mr. READ. The LOOP staff of 19, experienced in design, installation, and operation of deep draft terminals are in the design phase of the LOOP project. We will complete the design work necessary for an application to a Federal authorizing agency by the end of this summer. In this regard, I also would like to submit for the files a copy of the LOOP feasibility study completed in June of 1972, which is presently being updated by our engineering group.

Senator BIDEN. Without objection.

Mr. READ. It would consist of a marine terminal, large diameter, buried pipelines from the marine terminal to an onshore storage facility, and the on-shore storage facility itself. I can refer the committee to the map on page 13 of my statement.

A number of different concepts for marine unloading terminal were studied by the LOOP engineers. By comparison of the various alternatives, LOOP engineers chose the SPM as the most economical and safest means of operation for unloading large volumes of crude oil in the Gulf of Mexico.

In order to develop a clear understanding of the system proposed, I refer the members of the committee to the simplified chart which is also included in the written testimony.

The essential elements of the SPM concept include one or more single point moorings, pumping and operations platform, and submerged pipelines carrying the unloaded crude oil to a shore-storage terminal.

The SPM concept has been proven in over a 100 worldwide applications since the first single point mooring was installed in 1959. Attached to the floor of the seabed by anchors or pilings, the SPM floating buoy can withstand very extreme weather and sea conditions. Vessel approach and departure from SPM's are relatively simple maneuvers for tankers of all sizes.

The remaining elements shown on the flow chart of the LOOP project are conventional in nature and certainly not unique to systems presently in use offshore Louisiana.

Designs of these systems are being developed in accordance with existing Federal and State regulations and industry standards. I will submit for the record a draft copy of the listing of codes, regulations, standards, and practices that have been incorporated in the LOOP basic design manual.

Senator BIDEN. Without objection.

#### LOOP BASIC DESIGN MANUAL

##### CODES, REGULATIONS, STANDARDS & PRACTICES

- 3.0
- 3.01 Pipelines
- 3.011 Government Regulations
  - Bureau of Land Management Permits*
  - Corps of Engineers Permits*
  - Office of Pipeline Safety*
  - Title 49, Part 192 Transportation of Natural Gas by Pipeline (Fuel)
  - Title 49, Part 195 Transportation of Liquids by Pipeline
- 3.012 Industry Codes, Standards & Practices
- 3.0121 Codes
  - American National Standards Institute*
  - B31.4 Liquid Petroleum Transportation Piping Systems
- 3.0122 Standards
  - American National Standards Institute*
  - B16.5 Steel Pipe Flanges
  - B16.9 Wrought Steel Butt-welding Fittings
  - American Petroleum Institute*
  - 5LS Specification for Spiral-Weld Line Pipe
  - 5LX Specification for High-Test Weld Line Pipe
  - 6D Specification for Pipeline Valves
  - 601 Specification for Metallic Gaskets
  - 1104 Standard for Welding Pipeline
  - Manufacturer's Standardization Society*
  - SP44 Steel Pipe Line Flanges
  - SP48 Steel Butt-welding Fittings (26" up)

- 3.0123 Recommended Practices**  
*American Petroleum Institute*  
 RP5L1 Railroad Transportation of Line Pipe  
 RP1102 Liquid Petroleum Pipelines Crossing Railroads and Highways  
 RP1109 Marking Liquid Petroleum Pipeline Facilities  
 RP1110 Pressure Testing of Liquid Petroleum Pipeline  
*National Association of Corrosion Engineers*  
 RP-01 Control of External Corrosion on Underground or Submerged  
 Metallic Piping System
- 3.02 Offshore Unloading Facilities**
- 3.021 Government Regulations**  
*American Bureau of Ships*  
 Standards for Hull Design (SPM)  
*Coast Guard*  
 CG-321 Marine Warning System  
*Federal Aviation Administration*  
 Regulation, Part 77 Heliport Navigable Airspace Specification  
*Outer Continental Shelf Office*  
 OCS No. 8 Platform Safety and Pollution  
 Part 2 Control Equipment (Installation Only)  
 OCS No. 9 General Design  
 Part 1 (Installation Only)
- 3.022 Industry Codes, Standards & Practices**
- 3.0221 Codes**  
*American National Standards Institute*  
 B31.4 Liquid Petroleum Transportation Piping Systems  
 C1 National Electrical Code  
*American Society of Mechanical Engineers*  
 F3 Pressure Vessels (Sec. VIII) Division 1  
*National Fire Protection Association*  
 30 Flammable and Combustible Liquids Code  
 78 Lightning Protection Code  
*Underwriters Laboratories*  
 National Board of Fire Underwriters  
 Building Code
- 3.0222 Standards**  
*American National Standards Institute*  
 A58.1 Minimum Design Loads in Buildings  
 B16.5 Steel Pipe Flanges  
 B16.9 Wrought Steel Butt-welding Fittings  
 C37.20 Switchgear assemblies  
*American Petroleum Institute*  
 2B Specification for Fabricated Structural Steel Pipe  
 2C Specification for Offshore Cranes  
 5L Specification for Line Pipe  
 5LX Specification for High Test Line Pipe  
 6D Specification for Pipeline Valves  
 601 Metallic Gaskets  
 610 Centrifugal Pumps for General Refinery Service  
 613 High-Speed Special-Purpose Gear Units  
 616 Combustion Gas Turbines for General Refinery Services  
 1104 Standard for Welding Pipelines  
 2531 Mechanical Displacement Meter Provers  
 2534 Measurement of Liquid Hydrocarbons by Turbine Meter Systems  
 2543 American Standard Method of Measuring the Temperature of  
 Petroleum and Petroleum Products  
 2545 Method of Gaging Petroleum and Petroleum Products  
 2546 Standard Method of Sampling Petroleum and Petroleum Products
- Manufacturer's Standardization Society*  
 SP44 Steel Pipe Line Flanges  
 SP48 Steel Butt-Welding Fittings (26" up)

- National Electrical Manufacturers Association*  
 TR1 Transformers, Regulators and Reactors  
 SG3 Low-Voltage Power Circuit Breakers  
 SG4 High-Voltage Power Circuit Breakers  
 SG5 Power Switchgear Assemblies (For first chapter, see ANSI C37.20—1969)  
 WC3 Rubber-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy  
 WC5 Thermoplastic-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy  
 MG1 NEMA Motor and Generator Standards  
 WC7 Cross-Linked Thermosetting Polyethylene Insulation for Power Cables Rated 0 Through 600 Volts  
 WC8 Ethylene-Propylene-Rubber, Insulated, Ozone-Resistant, Wires and Cables, 5000 Volts and Less  
*Standards of the Hydraulic Institute*  
*Single-Point Mooring Forum*  
 Hose Standards
- 3.0223 *Recommended Practices*  
*American Gas Association*  
 Gas Measurement Committee Report  
*American Institute Steel Construction Manual*  
*American Petroleum Institute*  
 RP2A Planning, Designing & Constructing Fixed Offshore Platforms  
 RP500A Classification of Areas for Electrical Installations in Refineries  
 RP2003 Protection Against Static, Lightning & Strey Currents  
*Instrument Society of America*  
 RP3.1 Flowmeter Installations, Seal and Condensate Chambers  
 RP4.1 Uniform Face to Face Dimensions for Flanged Control Valve Bodies  
 S5.1 Instrumentation Symbols and Identification  
 RP12.1 Electrical Instruments in Hazardous Atmospheres  
 S12.4 Instrument Purging for Reduction of Hazardous Area Classifications  
 RP31.1 Specification, Installation and Calibration of Turbine Flowmeters  
 RP201. Instruments, Gages, Thermocouples, Orifice Plates and Flanges, Control Valves, and Pressure Safety Valves  
*National Fire Protection Association*  
 10 Installation of Portable Fire Extinguishers  
 20 Centrifugal Fire Pumps  
 37 Stationary Combustion Engines and Gas Turbines  
 77 Static Electricity  
 496 Purged Enclosures for Electrical Equipment in Hazardous Location  
*Single-Point Mooring Forum*  
 Guide: Hose  
*Steel Structures Painting Council*  
 SP1-10 Cleaning Procedures
- 3.03 Stations and Terminals
- 3.031 *Government Regulations*  
*Office of Pipeline Safety*  
 Title 49, Part 185 Transportation of Liquids by Pipeline
- 3.032 *Industry Codes, Standards & Practices*
- 3.0321 *Codes*  
*American Concrete Institute*  
 318 Building Code Requirements for Reinforced Concrete  
*American National Standards Institute*  
 B31.4 Liquid Petroleum Transportation Systems  
 C1 National Electrical Code  
*American Society of Mechanical Engineers*  
 F3 Pressure Vessels (Section VIII) Division 1  
*National Fire Protection Association*  
 30 Flammable and Combustible Liquid Code  
 78 Lightning Protection Code

- Underwriters Laboratories*  
National Board of Fire Underwriters Building Code
- 3.0322 Standards
- American National Standards Institute*  
A58.1 Minimum Design Loads in Buildings  
B16.5 Standard Pipe Flanges  
B16.9 Wrought Steel Butt-welding Fittings  
C37.60 Switchgear assemblies
- American Petroleum Institute*  
5L Specification for Line Pipe  
5LS Specification for Spiral-Weld Line Pipe  
5LX Specification for High Test Line Pipe  
6D Specification for Pipeline Valves  
12D Large Welded Production Tanks  
601 Metallic Gaskets  
610 Centrifugal Pumps for General Refinery Service  
613 High-Speed Special-Purpose Gear Units  
616 Combustion Gas Turbines for General Refinery Service  
650 Welded Steel Tanks for Oil Storage  
1104 Standard for Welding Pipeline  
2000 Venting Atmospheric and Low Pressure Storage Tanks  
2531 Mechanical Displacement Meter Provers  
2534 Measurement of Liquid Hydrocarbon by Turbine Meter Systems  
2543 American Standard Method of Measuring the Temperature of Petroleum and Petroleum Products  
2545 Method of Gaging Petroleum and Petroleum Products  
2546 Standard Method of Sampling Petroleum and Petroleum Products
- American Wood Preserving Association*  
C3 Standard for the Preservative Treatment of Piles by Pressure Processes
- Manufacturer's Standardization Society*  
SP44 Steel Pipe Line Flanges  
SP48 Steel Butt-welding Fittings (26" up)
- National Electrical Manufacturer's Association*  
TR1 Transformers, Regulators and Reactors  
SG3 Low-Voltage Power Circuit Breakers  
SG4 High-Voltage Power Circuit Breakers  
SG5 Power Switchgear Assemblies (For first chapter, see ANSI C37.20—1969)
- WC3 Rubber-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy  
WC5 Thermoplastic-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy  
MG1 NEMA Motor and Generator Standards  
WC7 Cross-Linked Thermosetting Polyethylene Insulation for Power Cables Rated 0 Through 600 Volts  
WC8 Ethylene-Propylene-Rubber, Insulated, Ozone-Resistant, Wires and Cables, 5000 Volts and Less
- Standards of the Hydraulic Institute
- 3.0323 Recommended Practices
- American Gas Association*  
Gas Measurement Committee Report
- American Institute Steel Construction Manual*
- American Petroleum Institute*  
RP500C Classification of Areas for Electrical Installations for Pipelines  
RP2003 Protection Against Static, Lightning & Stray Currents
- Instrument Society of America*  
RP3.1 Flowmeter Installations, Seal and Condensate Chambers  
RP4.1 Uniform Face to Face Dimensions for Flanged Control Valve Bodies  
S5.1 Instrumentation Symbols and Identification  
RP12.1 Electrical Instruments in Hazardous Atmospheres  
S12.4 Instrument Purging for Reduction of Hazardous Area Classifications

- RP31.1 Specification, Installation and Calibration of Turbine Flow-meters**  
**RP201. Instruments, Gages, Thermocouples, Orifice Plates and Flanges, Control Valves, and Pressure Safety VValves**  
*National Association of Corrosion Engineers*  
**RP-01 Control of External Corrosion**  
*National Fire Protection Association*  
**6 Sprinklers, Fire Pumps & Water Tanks**  
**10 Installation of Portable Fire Extinguishers**  
**11 Foam Extinguishing System**  
**20 Centrifugal Fire Pumps**  
**37 Stationary Combustion Engine & Gas Turbine**  
**77 Static Electricity**  
**496 Purged Enclosures for Electrical Equipment in Hazardous Location**  
*Steel Structures Painting Council*  
**SP1-10 Cleaning Procedures**  
**3.04 Environmental**  
**3.041 Government Regulations**  
*Coast Guard*  
**33CFR154 Large Oil Transfer Facilities**  
**33CFR156 Oil Transfer Operations**  
*Environmental Protection Agency*  
**National Environmental Policy Act**  
*State of Louisiana*  
**Environmental Protection Plan for Deep Draft Harbor**  
**Federal Clean Air Act Implementation**  
**Federal Noise Control Act Implementation**  
**Federal Water Pollution Control Act Implementation**  
**3.05 Communications**  
**3.051 Government Regulations**  
*Federal Communications Commission*  
**Rules and Regulations**  
**3.052 Industry Standards**  
*Electronic Industry Association*  
**TR-141 Microwave Relay System for Communications**  
**TR-142 Microwave Housing Facilities**  
**RS-152 Minimal Standards for Land-Mobile Communication F. M. or P. M. Transmitters 25-470 MHZ**  
**RS-158 Mechanical Consideration for Transmission Line in Microwave Relay Applications**  
**RS-159 Mechanical Characteristics for Microwave Relay System Antennas and Passive Reflectors**  
**RS-173 Emergency Stand-by Power Generators and Accessories by Microwave Systems**  
**RS-195-A Electrical and Mechanical Characteristics for Microwave Relay System Antennas and Passive Reflectors**  
**RS-199 Solid Dielectric Transmission Systems**  
**RS-200 Circular Waveguide**  
**RS-203 Microwave Transmission Systems**  
**RS-204 Minimum Standards for Land-Mobile Communications FM or PM Receivers**  
**RS-210 Terminating and Signaling Equipment for Microwave Communications System—Part I Telephone Equipment**  
**RS-222-A Structural Standards for Steel Antenna Towers and Antenna Supporting Structures**  
**RS-225 Rigid Coaxial Transmission Lines 50 Ohms**  
**RS-232 Interface Between Data Terminal Equipment and Communication Equipment Employing Serial Data Interchange**  
**RS-237 Minimum Standards Land-Mobile Systems Using FM or PM in the 25-470 MHZ Frequency Spectrum**  
**RS-252 Baseband Characteristics of the Microwave Radio and Multiplex Equipment**  
**RS-258 Semi-Flexible Air Dielectric Coaxial Cables and Connectors, 50 Ohms**

- RS-259 Rigid Coaxial Transmission Lines and Connectors, 75 Ohms
- RS-261-A Rectangular Waveguides (WR3 to WR2300)
- RS-271-A Waveguide Flanges — Pressurizable Contact Types for Waveguide Sizes WR90 and WR2300
- RS-274 Rigid Waveguides
- RS-316 Minimum Standards for Portable/Personal Land-Mobile Communications FM or PM Equipment 25-470 MHz
- RS-339 Minimum Standards for Land-Mobile Communications Antennas Part I—Base or Fixed Station Antennas
- RS-334 Signal Quality at Interface Between Data Processing Terminal Equipment and Synchronous Data Communications Equipment For Serial Data Transmission
- RS-363 Standard for Specifying Signal Quality for Transmitting and Receiving Data Processing Terminal Equipment Using Serial Data Transmission at the Interface With Non-synchronous Data Communications Equipment
- RS-368 Frequency Division Multiplex Equipment
- RS-374 Land-Mobile Selective Signal Standards
- 3.06 Other
- 3.061 Government Regulations
  - Coast Guard*
  - 33CFR126 Handling of Explosives or Other Dangerous Cargo Within or Contiguous to Waterfront Facilities
  - Occupational Safety & Health Administration*
  - 29CFR1910 Standards
  - Public Health Service*
  - Federal Drinking Water Standards
  - Municipal & Parish*
  - Applicable Rules, Ordinances
- 3.062 Industry Recommended Practices
  - International Oil Tanker & Terminal Safety Group*

Mr. READ. A vast storehouse of experience with offshore platforms pipelines, and so forth in Louisiana is readily available. Initially, the LOOP facility will consist of 3 SPM's, operation platform and three buried pipelines to the onshore storage facility.

The SPMs would be located in a 100 to 120 feet of water, approximately 19 miles offshore. SPMs and lines to shore would be added as needed until the full configuration of 5 SPMs and 5 lines to shore is attained.

SPMs will be spaced 5,000 feet apart, and each will be 8,000 feet from the platform. This facility will have a potential throughput capacity of approximately 4 million barrels a day, and would be able to unload tankers of up to 500,000 deadweight tons in rates in excess of 100,000 barrels an hour. The crude oil would be segregated by grade during unloading, storage, and transfer from the onshore storage facility.

The project will be financed in its entirety by private capital. Investment for the LOOP project includes approximately \$180 million for the offshore facility, including pipelines, and \$260 million for the onshore storage terminal.

The large diameter pipeline connecting the storage facility with the Capline terminal on the Mississippi River will require an additional investment of \$88 million.

With regard to this pipeline, I should point out that it being designed by LOOP, but will be separately owned by a number of the LOOP shareholders.

The location of the LOOP platform and SPM complex offshore

Lafourche Parish is outside potentially dangerous bottom mud-slide areas, such as those around the mouth of the Mississippi River, and also clear of existing ship traffic.

Proposed navigation fairways and maneuvering areas are clear of existing production platforms. LOOP working with the U.S. Coast Guard and companies presently operating in the Gulf of Mexico proposes that the fairways to the marine terminal will be marked by lighted buoys, and LOOP will undertake radar surveillance and monitoring of tankers in the fairway, the anchorage area and to and from the marine terminal.

Ships will normally be moored in order of their arrival, and trained mooring masters will be on board during loading and unloading operations. All operations in the area, including final inspections, will be under the supervision of the LOOP mooring master.

During the mooring operation, LOOP mooring launches will have the responsibility of attaching the ships messenger lines to the SPM buoy's mooring line and keeping the floating hoses a safe distance from the ship.

Once the ship is moored, the launch will then bring the hoses alongside, allowing the ships hoisting gear to lift them over the rail.

Unloading crude oil will be measured by transfer meters on the offshore platform, and also at the onshore terminal. These meters will be continuously monitored by a computer located in the control building at the onshore terminal.

Should the onshore meter show a predetermined quantity less than the offshore meter, the system will alarm, signalling operating personnel to identify the cause, shut down the operation in the event of a leak.

Also, simultaneous decrease in discharge pressure and an increase in the flow rate at the platform indicating a line break will sound an alarm and cause the pumping unit on that pipeline system to shut down automatically. In addition, the computer directed supervisory control system will assist the operators in the safe and efficient operation of the entire system.

The pipelines from the marine terminal to the onshore storage facility will be corrosion protected, wrapped and anchored in concrete, buried beneath the seabed, using the technology developed over many years of offshore pipelining.

As an example, there are more than 1,685 miles of inservice oil pipelines of 8-inch or more in diameter in the submerged lands of the Continental Shelf in offshore Louisiana.

Storage tanks at the onshore terminal will be surrounded by dikes to contain potential spills in the tank farm area, and pipelines in the area will be equipped with valves to isolate pumps, pipelines, and tanks in the event of damage.

The entire facility will be equipped with fixed and portable fire fighting systems. Storage tanks will be equipped with floating roofs to minimize venting of hydrocarbons to the atmosphere. Oily waste water will be collected, which will then be treated prior to return to the outside environment.

Emergency hurricane security measures will be adopted. These will include filling empty tanks with water to secure them during hurri-

cane winds and high water. The entire tank farm area will be enclosed in a dike higher than the incidence of any storm driven tide over a 100-year period.

Further, the LOOP facility, as an unloading oil terminal, would not be subject to the problems of disposal of oily ballast. Although the potential for a major oil spill is greatly reduced, contingency plans must be drawn in the event of a spill.

Spilled oil must be contained and retrieved. The API, the EPA, Coast Guard, and industry are all involved in extensive research programs to improve the effectiveness of oil spill cleanup in open water.

Trained personnel and fast reaction cleanup equipment are presently available in the Gulf of Mexico through an industry cooperative operating in the immediate area of the proposed LOOP facility.

Industry and tanker operators insure financial liability for cleanup of spills. The Federal Water Pollution Control Act Amendments of 1972 have requirements in this regard for cleanup costs.

In planning the various facility elements, LOOP has maintained close contact and continues to consult with local, State, and Federal agencies.

On March 30, 1973, LOOP Inc., presented its project to the Louisiana Deep Draft Harbor and Terminal Authority. The State agency you heard from this morning through Governor Edwards is what I am referring to.

This was created by the legislature to promote and regulate deep draft port development in Louisiana. The Louisiana statute requires that the authority promulgate an environmental protection plan to insure protection of the State's environment.

I will submit, also, for the record, a copy of the act creating the authority and outlining the environmental protection plan.

Mr. READ. LOOP has recently initiated a 12 month environmental program expected to cost up to a million dollars, designed to more than meet the requirements for environmental impact statement outlined by the NEPA Act of 1969.

The study will be the most comprehensive ever undertaken in Louisiana's coastal zone and the data will revert to the public domain for use by all citizens with an interest in the area. Three organizations have been chosen to conduct this study.

Nicholls State University, located in Louisiana, will furnish seven experts in chemistry or biology, and will be responsible for all offshore chemical and biological investigations.

The LSU Center for Wetland Resources will conduct the offshore physical oceanographic studies and the complete onshore environmental assessment of the tank-farm site, and adjacent bays and estuaries and the pipeline to Capline.

LSU will furnish nine investigators as well as six research associates.

In addition to Nicholls and LSU, Dames and Moore will serve as consultants to provide guidance as required for environmental report planning and preparation. As I said, the total cost of the LOOP environmental assessment program will be as much as a million dollars.

A common objective of State and Federal governments, and also the oil industry, must be to assure that the United States has the ability to receive sufficient supplies of foreign petroleum to meet the energy requirements.

It is LOOP's position that the Federal legislation should be in the form of a single purpose licensing law.

We suggest the establishment of a single Federal licensing authority which would be the focal point for environmental considerations under NEPA. It should operate under congressional directive to establish a simple licensing procedure leading to a speedy administrative procedure following consideration of both energy needs and environmental impact.

In this act, provisions can be made for consideration of the interest of the States affected.

As to S. 1751, this bill proposes a licensing law. It would establish the Department of Interior as the focal point. It addresses the subject of consideration of the interests of most States. It recognizes the need for constructive action to permit the receipt of crude oil and petroleum products in an economically sound manner to help satisfy our energy needs.

There are some features of the bill which we would prefer to see handled in a simpler fashion. They are discussed in more detail in our written statement. I emphasize our recommendation that the act be a simple, single purpose act.

We suggest that the act expressly recognize that existing port facilities are unable to accommodate the large ships carrying the crude oil and petroleum products and that there is a national interest in supplying the energy requirements through the use of such vessels.

We think it would be helpful to have provisions respecting the qualifications of applicants and specifications as to the content of applications. The term of the license should be for a limited initial period for construction and for a secondary period for so long as the port is used, maintained, and operated. Such a provision is more related to the facts of installation and use than is the term provision contained in the bill.

Recognizing that the probable number of applications under the act pertaining only to the licensing of offshore oil ports would be relatively small, particular consideration is suggested of the use of the adjudicatory public hearing on the record for handling these applications.

Certainly, the necessity for a broad regulatory system is not present. It is further suggested that judicial review should be available to parties who participated in the administrative proceedings who are aggrieved by the administrative proceeding, and who otherwise have standing to sue.

The bill contains no provisions regarding compensation for injury of workmen, navigational safety, labor disputes, or general judicial jurisdiction.

Coverage of them seems necessary as it was determined to be in the Outer Continental Shelf Act.

As to the other extensions of Federal law, it should be sufficient to generally apply the Constitution and laws and treaties of the United States. This application of laws can be in such a manner as not to assert sovereignty over a part of the high seas.

Thank you for your interest in our project, and I suggest to the chairman that we hear from Mr. Arnold, then we both will be available to answer any questions you might have along with the rest of the group.

Senator BIDEN. Thank you.

Did you have a prepared statement in addition to that?

Mr. ARNOLD. Yes; I would like to give an oral presentation with respect to Seadock and ask that the written statement be made a part of the record, with your approval.

Mr. ARNOLD. I am J. E. Arnold, member of the management committee and chairman of the public affairs committee of Seadock.

I am happy to be here today to tell you about our project. The purpose of Seadock is to develop a deepwater facility capable of unloading petroleum imports from the new 200,000- and 500,000-dead-weight-ton class of very large carriers.

Our location proposed is 25 to 30 miles offshore of Freeport, Tex., and we believe that Seadock and similar deepwater terminals offer significant environmental advantages as well as cost savings to the consumer.

Membership in our project consists of 12 companies, 11 of which are petroleum companies, and one is a chemical company. The project will be financed by private industry. No Federal or State subsidy will be required. Industry has the technical expertise, the financial ability, to design, construct, and operate a deepwater terminal such as Seadock and we feel this is the role which industry should play.

Seadock would be a common carrier, and will be providing a service to all who need to use it, both owners and nonowners alike. It will publish and file rules and regulations which are common to all its shippers.

Now, membership in Seadock is open. We have 12 companies participating today, and we expect others to join in the project before it draws to a conclusion.

I would like to talk briefly today about the long-term need for deepwater terminals, about the logistics of the industry, that they relate to, that is, a little bit about the project and its operation, and about the tanker procedures and the terminal design features which serve to make it a safe and environmentally desirable operation.

Now, deepwater terminals will supply a need that exists not only today and over the next decade, but for several decades to come. Hopefully, during the decade following 1985, where Mr. Read furnished you some information up to that date, hopefully beyond that date other fuels such as nuclear energy, synthetics, and so forth, will be able to slow down the growth rate of oil imports, but it is very unlikely that the volume of oil imports will be held constant during the decade beyond 1985, much less be reduced.

Therefore, we feel like deepwater terminals, the need for deepwater terminals, will exist throughout the balance of this century.

Due to the current high level of overwater crude oil imports and somewhat declining domestic production, deepwater terminals are needed. The crude oil to be imported through Seadock will not only supply the gulf coast, but also the lower midcontinent area. It is estimated that about 1 million barrels a day anticipated to be imported through Seadock by 1980 will move to the lower midcontinent area.

In addition, products refined by gulf coast refineries both in Louisiana and Texas, over 50 percent of these products actually move to other areas of the country, the Atlantic Coast, the Southwest and the Midwest areas.

Decisions on new inland pipeline transportation system and refinery expansions are closely related to the decisions on deepwater terminals. A legislative program to provide for a timely decision on deepwater terminals is therefore urgently needed so that these related decisions may also proceed on schedule and assure adequate supplies of petroleum energy to our Nation's industry and its consumers.

Deepwater terminals will complement existing port facilities and encourage their growth by providing petroleum raw materials at economical transportation costs to existing refineries, chemical plants, and so forth.

Attention needs to be directed toward modernization and expansion of our existing ports to handle anticipated increases in commerce.

A number of alternatives, or alternative berthing facilities, were considered for Seadock. In the Gulf of Mexico, the gently sloping Continental Shelf does not provide adequate deepwater closer than 20 to 30 miles from shore. Dredging such distances on a massive scale to provide a deepwater berth near shore is not only costly, but raises unresolved environmental questions.

Providing conventional type berths well offshore would require either a breakwater for a fixed pier, or sea island, or artificial island. Seadock has chosen the SPM-type facility in order to avoid both the environmental disruption and the high cost associated with dredging or the construction of artificial islands and breakwaters, and in a recent study, the Corps of Engineers came to the same conclusion.

I will not go into the details of the SPM configuration, since the Seadock configuration would be similar to LOOP, which Mr. Read has already discussed.

As to the conditions under which an SPM can operate, we feel that at the Seadock installation, VLCC's will be able to moor in maximum seas of 6 to 8 feet, and that once moored, the VLCC will be able to unload oil in seas up to 12 feet.

Now, this relates to the historical data from the Institute of Storm Research, which shows that significant seas less than 12 feet will occur on the average of 96-6/10 percent of the time at the particular location of Seadock.

The significance of this is that we will have a very high operational factor and a very low down time. For example, as far as experience with some of the SPM's operated today, one of the companies is operating these in the North Sea and has been for a couple

of years. In this operation, the vessel will self-moor in seas up to 16 feet, and once moored, are actually operating and handling oil in seas up to 24 feet.

Although different operating equipment and conditions are involved here, this is an example of what can be done, and we feel it is the reason why the operating criteria for Seadock that I just outlined is actually conservative.

The operation of Seadock and similar terminals will benefit from some of the experience gained in the oil terminals around the world. We made a survey of eight SPM unloading terminals that were operated by various companies that are involved in Seadock. These were unloading terminals, and the survey shows an average spill rate of less than three-quarters of a barrel for every 1 million barrels handled.

The experience of these terminals represented a cumulative total of 30 years, and these terminals combined have unloaded over 1 billion barrels of oil.

I would like to point out that in considering data such as this for individual SPM installations in various parts of the world, it is important to consider the physical environment, the design, operating procedures, and the type of operation, whether it is loading or unloading, under which the operation is taking place.

Where operations have conformed to proper design and adherence to good operating procedures, they have resulted in remarkably pollution-free experiences. With new technology and expertise that has been developed over the years, we are certain these accomplishments can be exceeded by U.S. deepwater terminals.

As I mentioned, the facility of Seadock would be 25 or 30 miles off the coast of Freeport. This is the same location that the corps located in its study. In selecting this particular location, Seadock studied a number of offshore locations ranging all the way from Corpus Christi to Port Arthur. It provides an optimum site near the gulf coast refining centers, and it has other advantages.

Projects such as Seadock require a substantial investment, and that segment of Seadock that extends from the buoys to the onshore terminal that we refer to as the marine portion, requires an investment of \$310 million. The terminal itself onshore would require an investment of about \$80 million. Beyond this, a substantial investment will be required for the pipeline distribution network to serve refineries and various processing plants.

Up to date, Seadock has spent about \$1 million in development engineering and environmental work, and by the end of the year, these expenditures will reach \$3 to \$4 million.

The construction of a terminal like Seadock requires a considerable amount of planning and lead time. The timetable we hope to follow will place the facility in operation by mid-1976. The actual schedule will depend on such factors as when enabling legislation is provided, environmental impact review by Federal agencies, public hearings, and so forth.

The project is being developed from the engineering standpoint by a full-time engineering group located in Houston. This 17-man group has people with expertise in the various segments of the proj-

ect, such as SPM design and operation, underwater pipelines, deep-sea platforms, onshore storage, environmental assessment, and so forth. The 17-man staff represents an average experience of 16 years.

In developing our project, we have been in contact with various Texas State agencies and officials to advise them of our plans and offer our assistance and receive their ideas. They support the concept of the deepwater terminals and are cooperating in every possible way.

The establishment of the deepwater terminal, as General Cross pointed out to you earlier today, the Legislature established the Texas Offshore Terminal Commission. We think this commission is a major asset to the State and we look forward to working with it and accomplishing the goal of both Seadock and the State of Texas.

I think to emphasize the impact of the reduction in harbor congestion, I would like to refer you to figures 6 and 7 of the chart.

First of all, from a national standpoint in figure 6, this indicates that the present number of ship calls to U.S. ports in 1970 would bring waterborne crude oil imports to approximately 5,000. If we do not do anything, this number of ship calls and deliveries to U.S. ports will increase to over 10,000 by 1985. However, if we provide deepwater terminals for handling the Eastern Hemisphere imports of our waterborne crude oil imports, the actual number of ship deliveries will actually decrease to 4,000 by the year 1985.

The next figure I would like to talk about is figure 7, where the Coast Guard has developed information on the location of tanker accidents. We will see as far as collisions and rammings are concerned that these accidents occur in piers, harbors, and entrances and in coastal waters close to shore. You will note that there are very few accidents of these types that occur in the sea.

As far as groundings, also, obviously, groundings do not occur in the sea. They occur in harbors and entrances and near the coastal shore.

Both of these figures, I believe, exemplify the reduction in boat traffic and hazards involved with the importation of crude oil where deepwater terminals located off the shore and VLCC's are utilized.

Now, turning briefly to legislative aspects, the legal committee of Seadock in conjunction with others has developed a memorandum on the administration's bill and some guidelines for legislation, which I did not attach to this statement, but would like to do so with your approval, under separate cover.

Senator BIDEN. Without objection, it will be included in the record.

Mr. ARNOLD. In our memorandum, in one sentence, we can say that our ideas on legislation would be that the design would cover the authority of one Federal agency to issue a license for the construction and operation of the deepwater petroleum terminal while at the same time giving adequate safeguards and consideration to the various effects that it may have on the environment, the national interest, and the jurisdiction of the State and Federal governments.

In closing, I would like to say that private industry will be spending millions of dollars in the development of deepwater terminal facilities to meet a national need for adequate supplies of energy at

a reduced risk to the environment, and the lowest possible cost to the consumer.

Under such conditions, we must avoid the environmental and legal delays which have hampered us in the past. Therefore, we urge the Congress to act expeditiously in order that deepwater port facilities may be constructed and placed in operation, thereby serving the needs of the Nation and the consumers.

Thank you for your attention.

Senator BIDEN. Thank you, Mr. Arnold.

Lest some of you who attended the hearings yesterday and this morning get the wrong impression, my colleague, Senator Johnston, has not changed parties by moving to the right side of the aisle here. I think I scared him over to this side from where he was sitting before.

Due to the fact that he may be dubbed to chair the next hearing, I am going to limit my questions to 10 minutes and let him have a shot at it in the hope that if he chairs the next one, he will do the same thing, and I have a number of questions I would like to come back to, also.

Does that end your prepared statements, or do you have more?

Mr. READ. We have a very brief statement by Mr. Mascenik. He submitted two papers to be included with the record of the hearing and has a few comments.

Mr. MASCENIK. I am pleased to be here today to discuss offshore terminals. I will refer to two papers that have been submitted to the joint subcommittees. One is an article published in the March 5, 1973, issue of the Oil and Gas Journal, and the other is a paper which was presented at the 18th Annual API Tanker Conference. "SPM's Standards for Single Point Moorings."

My colleagues and I at Esso research have been involved in the design of SPM's for VLCC's, tankers capable of carrying 140,000 tons or more of oil. The United States until relatively recently was primarily self-sufficient with respect to crude oil.

The demand for larger tankers and hence the need for deepwater ports in the United States did not exist previously. I would like to point out that at present there are over 100 VLCC berths in service throughout the world. There are piers in protected harbors, for example, piers in Milford Haven, Banford Bay, Ireland, and a few multibuoy berths.

We gained valuable experience from operating these facilities. This experience is being applied to new designs and to their operations.

Thus we feel that we in the United States are fortunate because the necessary technology, operating experience, and proven hardware are available for application today.

As indicated in the two papers and in previous testimony, over 100 single-point moorings are serving vessels of all sizes. Several more have gone into service since the date of the papers. I mentioned, and many more are being planned.

The cluster concept is under consideration in Saudi Arabia for loading.

Also, as I indicated in the papers, deepwater terminal technology

is improving. The knowledge of wind, wave, and currents at all types of berths is being expanded as more model and full-scale field data are obtained and analyzed.

Industry groups, such as the SPM forum are developing standards and exchanging information relative to this type of mooring.

Now, proper design of any offshore marine terminal requires consideration of the vessels and the cargo to be handled, knowledge of the environment and site conditions and the effects of the environment on ships to be handled. Details as to how to go about accomplishing this are given in the papers previously mentioned.

Since the design of an offshore terminal is site oriented, each facility should be custom designed for the location in question.

Certain operations of offshore terminals such as berthing, and transferring cargo must be suspended under certain environmental conditions. The limits as we see them are contained in the papers that I mentioned. When we consider these limitations along with the environmental and site conditions in the Gulf of Mexico, we concur with Seadock that the SPM is the optimum of offshore facilities to install.

In conclusion, I would like to state that we believe the use of the VLCC's and the construction of deepwater offshore terminals are economically and environmentally desirable in meeting the needs of the United States in the importation of large volumes of crude. While a number of offshore terminal alternatives are possible depending on site and so forth, single-point moorings are optimum in the gulf.

The cluster concept as proposed by LOOP and Seadock improves the control of mooring and make the SPM concept even more desirable.

Thank you, Mr. Chairman.

Senator BIDEN. Thank you for keeping it brief.

Are there any other statements?

Mr. READ. No.

Senator BIDEN. As I said, I have a number of questions, and I am sure Senator Johnston has questions also, and rather than specifically direct the question to any individual, you all can decide how best you would like to handle it.

I would like to start off by going to the very basic point, and that is that there is going to be in the near future and in the distant future a need to rely on crude oil imports—and that you don't see this need diminishing in the future. Is that correct?

Mr. READ. That is correct.

Senator BIDEN. There was some testimony yesterday that by the year 1985 we won't have the degree of reliance which is being projected by you gentlemen. I assume you are in disagreement with that position. You don't see anything between now and 1985 that is going to turn that curve downward in terms of imports of crude?

Mr. ARNOLD. No. As I recall, the testimony by Interior yesterday, they pointed to the same thing, that we are not going to be able to bring on alternate sources of energy, whether they be synthetics, nuclear, solar, or whatever, fast enough to result in a turndown of the level of imports in the next decade or so.

We hope we can stop the growth rate, that we can bring these other sources on fast enough so that we can slow the growth rate down.

Senator BIDEN. Do you really? Seriously?

Mr. ARNOLD. Yes.

Senator BIDEN. Why would it be in your interest to do that, to hope that you really do turn it down?

Mr. ARNOLD. I feel that in the interests of this Nation that we have coal reserves, we have shale reserves, we have the technical ability in the nuclear area. Why can't we do it in the solar area.

Senator BIDEN. But wouldn't that be against your direct economic interests for that to occur, you people sitting directly in front of me representing the outfits you are now representing? I am not saying that is the reason for your position. I am just asking you a question. It would be against your economic interests, wouldn't it?

Mr. ARNOLD. We are going to do all we can. Mr. Chairman, as far as the conventional sources, and I think we should do all we can, and we need to give maximum incentive in that area, but given that, and in doing all that we can, we are going to need to bring on these other alternative forms of energy, and the time to do that is just going to—the time frame is going to result in our not being able to slow down this rate of import as early as we would all like.

Senator BIDEN. In testimony presented at this committee yesterday, Russell Train, Chairman of the Council on Environmental Quality, stated that "Further development and experience with single-point mooring technologies will be necessary to alleviate problems of oil-spill containment before these facilities come into general use in the United States." That is a quote from his testimony. You don't agree with that statement?

Mr. ARNOLD. I might speak to that point. I think Mr. Train was referring to the containment of oil during the unloading operation with an apron around a VLCC at an SPM location, similar to what can be done with a fixed pier on shore in a harbor. We don't think, and as I recall, the testimony of Mr. Train before the Public Works and Merchant Marine Committee of the House, he went on to elaborate on that statement, and said he did not think it was feasible, or even perhaps desirable for this type of technology to be developed.

What we need to do is to have boom equipment available so that we can get it out there when and if it is required. As a matter of fact, it would be in a matter of 2 or 3 hours, and then we would have the ability to pick up the oil from the sea. I think those types of things are the things that need to be worked on equally or even to a greater extent than being able to surround the VLCC.

Senator BIDEN. What are your capabilities of oilspill on containment or cleanup now?

Mr. ARNOLD. The existing capability, I think one example I can give you is on the west coast. Clean Bay Incorporated have booms capable of operating in seas of 6 to 8 feet, and they have a capability to clean up 100,000 barrel oilspill.

Now, we can translate that in the gulf.

Very seldom in the gulf do we have seas of greater than 8 feet. So you can translate that technology to the area of these deepwater

terminals and say that we have the capability today to handle oil-spills of 100,000 barrels, and that the equipment to contain them and to pick them up in the waters of the gulf coast at both of these projects that we are proposing to operate, actually, there is some existence of that capability today on the gulf coast.

Senator BIDEN. Did you hear the testimony of Admiral Sargent this morning who said 3 to 5 feet was the maximum?

Mr. ARNOLD. Yes; let me explain his testimony. I think what he was talking about was the mobile airlift movement of booms, where the airlift itself would limit the type of boom that could be lifted in a particular area.

What we are talking about is a boom capability that would be transported to the area in which say an LST-type vessel, you get out there very quickly. But you get out there with equipment that can operate in higher seas than the Coast Guard was speaking of.

So I don't think we are really in contradiction with each other. He was talking about the mobile airborne lift of the type of boom which might very well be desirable in certain areas. We are talking about the movement of heavier equipment in LST's both trying to get it out there where you need it as fast as you can.

Senator BIDEN. I assume that all of you would agree that this SPM system would be equally applicable to any such facility in the North Atlantic, or in the east coast area?

Mr. MASCENIK. I should say that preliminary studies that have been made indicate that there is a distinct possibility that it could be applied on the east coast. For instance, the corps have looked at applying it some 13 miles off Long Branch, for instance, in that area, and looking at the weather and data and that they have available, the currents, the wave conditions, it would appear that a single point mooring installation there would have a usage factor on the order of, I think, 90 percent.

I may be off plus or minus a couple of percent.

Senator BIDEN. When you say berth usage, it means 9 out of 10 times when the ship pulls up, it would be able to use the facility?

Mr. MASCENIK. Yes. You could have outages due to fog, wind, or sea conditions, and outside of that, say, wave conditions. It would be the same outages that would apply in the use of all other type of facilities.

Senator BIDEN. On the wave conditions, I think Mr. Arnold testified. It could operate in seas of 23 feet.

Mr. ARNOLD. In his experience in the world, and I mention the North Sea, which is probably the most hostile environment in the world, and there is an operation going on there where tankers are self-mooring in seas up to 18 feet and are actually operated up to 24 feet.

Now it takes a certain type of equipment to do that, but I give it as an example that the state-of-the-art is improving.

Mr. MASCENIK. I think I would like to point out that there are limitations. The limits on a single point mooring exist when you are attempting to berth and put the hose on board ship. There is a limitation on the berth as to when you have to get out. The limitation

is 6- to 8-foot seas, depending on the kind of sea conditions that we have, and when we try to calculate the first outage or conversely the first usage, we tried to apply these factors in the same way.

Senator BIDEN. In other words, you wouldn't recommend to one of your captains to try to hook up off of Delaware, New Jersey, in 18-foot seas?

Mr. MASCENIK. No, sir, not at all.

Senator BIDEN. That makes me feel better all the way up to Wilmington.

Everyone else is probably aware, but I am not, I would really appreciate it if you would get extremely fundamental and stick right with your technical man there and explain to me physically how a captain hooks up to one of these moorings.

Mr. READ. We would like to defer that to Captain Thompson.

Captain THOMPSON. Senator Biden. I really was associated with my first experience with this buoy in Korea. Of course we had there a boat that tended the buoy, and at that time it was really our first experience in such an operation.

It was a joint venture with the Gulf Oil Corporation and the Korean Oil Corporation, the Korean Government. I was a little leery of this thing, because I had no knowledge of this before, so to me it was quite a challenge.

However, the buoy had been then in operation, as I recall—I went there in April of 1964—and this buoy had been installed and started operations in November of 1963, and they had a launch that ran the ropes.

Senator BIDEN. Ran the line to hook up?

Captain THOMPSON. All the mooring ropes go off the bow. At that time, we used double ropes, and they ran the rope aft and around the mooring arm and back to the port side.

Senator BIDEN. Excuse me, Captain. I am going to have to interrupt you here and recess this. I have 5 minutes to get to the floor. I would like to follow up on that when I come back if I could.

Thank you.

[Recess.]

Senator JOHNSTON [presiding]. Do you see yourself as competitors for superports?

Mr. READ. I would like to state as we have previously stated that our feeling is that both ports will be needed to supply the Nation's energy needs. We both serve different areas.

As I pointed out, the seadock project in Texas supplies Texas refineries and those in western Louisiana. LOOP serves central Louisiana and western Mississippi refineries and also serves the midwest refineries.

Mr. ARNOLD. We need both facilities, and they are not competitive. Once having been built, they provide a shipper two ways to go in making logistics decisions, but we need them both.

Senator JOHNSTON. Do you have refining capacity now or is that on the drawing board, to take care of the requirements of both superports?

Mr. READ. I think we can state for LOOP that the projections of use are sufficient to justify economically the building of the port in Louisiana.

**Senator JOHNSTON.** The projections?

**Mr. READ.** The projections of use by potential shippers are sufficient to justify economically the building of the port.

**Senator JOHNSTON.** Do you have the capacity now in existence or on the drawing board that could take care of the requirement?

**Mr. ARNOLD.** I think I could answer that. Considering the present high rate of importation of crude oil in this country, and the somewhat declining domestic production, we can say that we have justification for deepwater terminals today.

We wish we had a law and facilities in existence today.

**Senator JOHNSTON.** I know you have justification, and I think it is inevitable that we are going to have them. The question is, however, do you have the necessary refineries in existence today, or are they on the drawing boards and authorized, or to be authorized from this point out?

**Mr. ARNOLD.** No, you would not have to authorize any additional refineries to need these facilities. We have the refinery capability today that needs the oil to be imported through these facilities.

**Senator JOHNSTON.** If you had the facility available today, you could refine the oil? The reason I am asking that is because we have heard testimony in the Interior Committee that we are presently operating at peak capacity.

**Mr. ARNOLD.** We are also importing 6 million barrels of petroleum a day, and our domestic production is tending to decline, so that without doing anything, the imports into this country are going to increase, even if we don't build another barrel of refining capacity in the United States.

**Senator JOHNSTON.** I take it then that the superport would replace a great deal of the importation that is presently taking place in smaller vessels?

**Mr. ARNOLD.** That is right.

**Senator JOHNSON.** So you don't need any more refining capacity at all to take care of the requirements?

**Mr. ARNOLD.** That is correct.

**Senator JOHNSON.** How about in your case, Mr. Read? I know they are planning to build refineries in Louisiana.

**Mr. READ.** Yes, there are plans to expand existing refineries in Louisiana and in the midwest. I would anticipate in order to supply the needs of the country by the year 1977, or 1976 when we would anticipate having this project finished that there would have to be additional refining capacity built.

**Senator JOHNSTON.** How many additional refineries would be expected in Louisiana?

**Mr. READ.** Projections of new refinery building were made through the economic impact study sponsored by LOOP and the State authority, and in that study they have made some projections on refining capacity for Louisiana. I have submitted this for the record. As of right now, I know of three projects for refineries that are under consideration, that are pretty much dependent upon the building of an offshore port and several others on being able to secure the necessary crude oil.

**Senator JOHNSTON.** They are all involving negotiations with Saudi Arabia, are they not?

Mr. READ. I am not certain who they are negotiating with, but they are trying to secure long term supplies of crude oil, potential refinery builders.

Senator JOHNSTON. Mr. Read, you stated in your testimony that the pipelines and the authority to condemn the pipeline routes should be included in the legislation. Is that correct?

Mr. READ. Yes. We feel that should be a part of the overall licensing procedure.

Senator JOHNSTON. Are you talking about, the OCS or the State land as well?

Mr. READ. We are of the opinion that the entire project is going to have to be addressed in a project manner instead of in a piecemeal manner.

Senator JOHNSTON. In your case, you have to build a pipeline all the way to Convent, don't you?

Mr. READ. Yes, that is part of our project.

Senator JOHNSTON. With regard to this bill, are you talking about addressing the problem of pipeline capability all the way to Convent, or to the coast line, or to the 3-mile limit?

Mr. READ. LOOP itself consists of the offshore unloading facility, the pipelines to shore, and the tank farm at shore, that is, on the shore, and we would expect that the license would cover that entire facility.

Senator JOHNSTON. Including the tank farm?

Mr. READ. Yes, sir.

Senator JOHNSTON. All right. What problems do you expect to have with respect to hurricanes in your tank farm. Your tank farm, I understand, is going to be built in Lafourche Parish in some rather low lands; it is high lands for Lafourche Parish, but low in terms of the continental United States. What dangers do you anticipate, and what plans have you made for coping with those dangers?

Mr. READ. We will have a hurricane contingency plan. We will design the facility in the design stage to have the dike around the entire facility which would be higher than what we would expect a storm-driven tide to be in a 100-year period, but in case the water did come over the dike, we could have the tanks filled with water at such a level that they would remain where they are in place and not go floating away.

Senator JOHNSTON. How much water would you have to have in the tanks to have them filled, in other words, to have them be impervious to the storm surge?

Mr. READ. We would probably put in the tanks some 14 or 15 feet of water, if there wasn't already that much oil in the tank.

Senator JOHNSTON. If you put that much water in the tank, what would that do to the tank? Would that give you any problem on corrosion. What I am driving at is that I don't know that building a dike around one of these tank farms is going to be practical in Louisiana. You may have some people who tell you it is, but I understand they had tides immediately off the Mississippi Coast of 30 and 40 feet in some areas.

Mr. READ. I think that those tides were in constricted areas where they were maybe between some dikes. We don't anticipate that the

tide level will get up over 12 feet in the open area that we will be building in.

Also, there are existing tank farms right within a mile of the location that we propose to build this tank farm facility, and they have been there for some 15 or 20 years and have survived hurricanes with no damage at all.

Senator JOHNSTON. They have not had a hurricane to hit directly in the area, have they?

Mr. READ. Not directly, I don't believe.

Senator JOHNSTON. The reason that I am asking the question is because a gentleman who lives in Lafourche Parish and whose opinion I respect contacted me in my office and pointed out that building a tank farm in Lafourche Parish, considered it to be highly dangerous.

He wants the superport, but he thinks it is unwise to build it that close to shore. He feels that filling up the tanks with water is not a viable alternative, because of the economic problems which exist there. You have one of the hurricanes that hangs offshore, and it stays there for days and days, and then all of a sudden makes a run in, you don't have the time to empty your tanks and fill them with water.

Mr. READ. We have high capacity pumps that will be used to fill the tanks with water, so that there won't be any possibility of them floating off their foundations or having any damage to them.

Senator JOHNSTON. That is good. I say that not to argue with you, but to point out very real concern of responsible people. I hope you will, and I know you will, fully address that problem.

Mr. READ. It is a very real concern that we have been studying for the last 6 months.

Senator JOHNSTON. I understand that you mentioned in your testimony what the role of the States should be. You heard the Governor's statement this morning in which he stated that the State ought to be the first licensee, and have the right to transfer that license on to the consortium, LOOP, or whoever it happens to be. I understand you object to that. Would you tell me what your objections are?

Mr. READ. I don't say that I officially object to that. I don't understand the mechanics of how this would be accomplished. We have spoken about this, and I don't know how this would be accomplished.

Senator JOHNSTON. I would like your comments on the general principle of the States having, in effect, a veto or right to control, or right to bargain, if you will, with the consortium, how does that strike you as a general proposition without reference to the details?

Mr. READ. Our suggestion in my written testimony and in the verbal testimony that I presented suggests that the administration bill be simplified in that particular area through the use of an adjudicatory public hearing on the record, at which time all Federal, State and all agencies would have an opportunity to come together and make a decision, and I think that we have said in our statement that States should have a role in regulating and making decisions on this, as well as the Federal Government.

We would propose, through these adjudicatory public hearings on the record, that all parties who would have an interest in the project could be heard.

Senator JOHNSTON. I would get the implication from your testimony that one of the chief objections to the principal of full participation of the State veto would be, that you want a one window hearing, and not have your pipe stacked up 4 or 5 years as it has been in Alaska. I have total sympathy with that.

But assume we can take care of the timelag problem. Then would you have serious objections to State licensing, and in turn licensing to you, or do you just suggest that it be done otherwise?

Mr. READ. We do not know how the mechanics would operate in doing this State licensing. We feel that the people who are going to build and own and operate the facility should receive the license for the facility.

Senator JOHNSTON. Does that mean you have serious objection to State involvement?

Mr. READ. No. There is no objection to State involvement. That is, as a regulating body of the facility.

Senator JOHNSTON. Should they have the right to veto?

Should they have the right to control, or simply the right to advise?

Mr. READ. I think the State should have the right to regulate the facility, that is as well as the Federal Government.

Senator JOHNSTON. To in effect impose conditions?

Mr. READ. Yes, any legitimate conditions under the law.

Senator JOHNSTON. That is an important point, because the Government position is that, in effect, the Federal Government ought to regulate and the State ought to "consult." As Senator Biden so cleverly said yesterday, a "consultation" might be to call up the Governor and say "how do you feel about this LOOP project," and the Governor says "I object to it seriously", and the reply is "nice talking to you, Governor."

You would not object, however, to the State being actively involved with the right to regulate, the right to restrict, and the right to in effect bargain with you over the conditions under which the superport is to be built and operated?

Mr. READ. I think we can point as our position the fact that we have already made a presentation to the State authority and informed them about our project, and we are working with them, cooperating with them, and I might say we are cooperating very well, both from our standpoint and I hope from the State's standpoint.

Senator JOHNSTON. I understand that to be true. I understand there is a very good relationship, and you are working closely together particularly on the environmental problems.

That is one reason I commend the Governor this morning for recognizing environmental problems early on and in working out a plan to take care of those problems.

I take it really that in your case, in the case of Louisiana, at least, your working relationship is so close that you would not fear State regulations.

Mr. READ. Yes, sir.

Senator JOHNSTON. I would frankly take your testimony to mean that you would not basically object to the plan as suggested by the Governor this morning that the State be the licensee, provided that

the details were worked out so as not to involve too much time, and so as to carefully restrict what the role of the licensee is and what the role of the operating company would be.

Mr. READ. We have no intent to avoid any State regulations.

Senator JOHNSTON. Very good. Would you agree with me that States ought to be entitled to a reasonable share of the revenues on a flow through basis? I am not trying to commit you to any figure, as recompense for the roads and schools they are going to have to build and the environmental problems they are going to have to take care of. Would you concur with that?

Mr. READ. One of the reasons we participated financially in supporting an economic impact study of what the economic impact of an offshore oil port would be on Louisiana was to find out what this effect would be. I think this was pointed out in the study which we will present for the record. It shows that the cost to the Government would be covered by the existing taxes within the Government, and on the existing basis of taxation within the State of Louisiana at the present time.

Also the benefit of the oil port based on the investment, the net benefit to the State was approximately 5 to 1.

Senator JOHNSTON. Does that mean your answer is no?

Mr. READ. We would have to take a stand that we want to provide services for the ultimate consumer at a minimum cost, and we would naturally take a stand against any additional charges to the facility.

Senator BIDEN [presiding]. Would the Senator yield on that point? I understood from the Louisiana study that the cost-benefit ratio was only 1.09 to 1. Not 5 to 1.

Mr. READ. There are two cost-benefit ratio figures in the study.

Senator BIDEN. The oil companies and the States.

Mr. READ. No, the first one being the 5 to 1 ratio being the investment cost of the facility and the net benefit to the State. That is the 5 to 1 ratio, and the investment is being made by the industry and the benefit is 5 to 1 to the State.

That is in the way of lowered costs of supplies to the State.

Senator BIDEN. Isn't it true that it is the smallest investment you are talking about here?

Senator JOHNSTON. What is gasoline selling for in Louisiana?

Mr. READ. I think it is 40.9.

VOICE. 41.9 extra, and about 38.9 regular.

Senator JOHNSTON. I think it may be a cent higher out in Virginia. Why would that be, by the way, that gasoline would sell about the same down in Louisiana as it would up here?

Mr. READ. I can't answer that.

Senator JOHNSTON. If you build a superport, you are saying that there would be a difference.

Mr. READ. I can't speak to that, Senator.

Senator JOHNSTON. I don't want to treat you as an adversary, but rather as an ally, because we have worked very closely with you in Louisiana. On the other hand, I must make the point, and I think very strongly, that a superport is a mixed blessing.

Yes, it brings jobs and bigger payrolls and incomes. We want it, and you have heard our Governor testify to that. But, it also brings,

as Mr. Train said, the head of the EPA as of today, testified, it is going to bring air pollution, and it is going to bring all the other attendant problems, some of which, as I say, are mixed blessings. You get the refinery that has jobs, but it causes air pollution, and it is an eyesore.

It is an industry that is going to be gone as soon as we solve the energy crisis. In my home town of Shreveport, we were the pipeline capital of the world. We founded the city, really, on the oil industry, and when that was dried up, we were left there holding the bag.

Senator BIDEN. I was told by my State that the refinery would add to the environment by the physical appearance of it. It looked just like a big school.

Senator JOHNSTON. The point I make is that a State ought to have some compensation for the environmental impact. We ought to have the means to do some things out there in marsh. As it is now, we are losing 16.2 square miles of marsh every year according to undisputed figures.

That is today. Most of that is caused by activities of the oil industry, which we love. We are crazy about the oil industry, as you well know. Nevertheless, that 16.2 square miles of marsh is going.

I say that a State that has a superport ought to receive compensation supplied by the ultimate consumers who don't want the superports—you are going to have a lot of trouble putting one on the Atlantic coast—these ultimate consumers ought to give recompense to the States.

We ought to provide for the freshwater in the marsh, and provide the ecological balances in the marsh that will be upset by building this needed and wanted superport.

I hope that you won't oppose too strongly the reasonable recompense to which the State of Louisiana is so richly entitled. Thank you, Mr. Chairman.

Senator BIDEN. I have a number of questions, and I notice two witnesses are still waiting out there. I apologize to them, but rather than leave this testimony and submit these questions in writing, I would like to continue with the questioning if I may, and I would like to move to the question of maybe less importance initially in terms of the overall effect of the construction of these facilities and the maintenance of them, and that is jobs. It is often mentioned that there will be a lot of jobs created as a consequence of construction of these facilities.

Now I can understand there will be jobs merely in the construction of the facility, wherever it happens to be, whether it is off Delaware or off Louisiana.

But once the actual construction job is finished, and other than the very important maritime industry and the jobs that will be maintained there, I guess you are not going to have any more jobs, because you are going to have fewer ships. Maybe there will be a net loss of jobs there.

I don't know. Where are all these jobs we are talking about coming from? Maybe you fellows didn't talk about it, and maybe you don't want to. Are there going to be additional jobs as a consequence of such a facility?

Mr. READ. I might address that, Mr. Chairman, that we have participated in supporting an economic impact study which will be used as part of the environmental assessment for the entire project, which projects the land side developments along with the superport as well as other logical plant site development, these new refineries and petrochemical installations and a projection of the service industries that would serve them, and this is included in the economic impact study which I will submit with my statement.

Senator BIDEN. Is such a landside development inevitable from your standpoint and everyone else's? It is inevitable that we are going to have it, isn't it?

Mr. READ. We have said this depends upon the State. If the State does not want landside development, it probably won't develop, but if the State wants it and provides the necessary land zoning and climate for development, it will no doubt occur.

Senator BIDEN. I am going to ask you a question which would be ruled out of order if it were in court, but I am going to be unfair and ask anyway: Were you a gambling man, what kind of odds would you give that there would be—pick any State in the Nation—what kind of odds would you give that there wouldn't be landside development. Give me the highest odds against it in any State in the Nation, and I am sure you fellows are pretty familiar with the proposed sitings.

Mr. READ. I think there would generally be landside development. I think it would depend on what the State would permit in the way of landside development.

Mr. ARNOLD. If I could comment on that briefly, I think you are going to have landside development with or without deepwater terminals, and that one of the unrecognized advantages of a deepwater terminal to help disperse that landside development is the fact that it makes more economical the long distance high throughput pipeline transportation.

In the case of our Seadock, we think the project itself will generate a project to bring crude oil in the lower midcontinent area of the country, and as a result will disperse the land development far from the coastal region.

Senator BIDEN. I think it is a good point, that it is not just the coastline, but it could be 30, 50, or 100 miles in, and there may be pressure for development.

Mr. ARNOLD. I am speaking of 1,000 miles in, or 500. Also, the point that I was trying to get across is that this development is required whether or not a deepwater terminal, because we are going to have to get the job done in supplying the petroleum energy needs of this country, and we have the alternative of doing nothing about deepwater ports, or providing the means by which it comes in larger ships.

Senator BIDEN. That landside development will probably be centered around the refining capacity of that crude at some point. We are pumping crude into this pipe, and if I understand it correctly now, although there have been those who testified that there would be no, especially when they are trying to convince me about the value of this in the Delaware-New Jersey area, they say there will

be no new refineries necessary. I wonder about that, and I would like to ask you two specific questions.

Is it, or is it not true that coastal refineries, those that are within 100 miles of the coastline on the east, west, and gulf coasts, isn't it true that those refineries are operating at maximum capacity now?

Mr. ARNOLD. Yes.

Mr. READ. I think that most of the refineries which have access to crude oil right now are operating at capacity. I think there are some refineries up in the Midwest which aren't because they don't have access by pipeline or by water to get the supplies of crude oil to the refineries.

Senator BIDEN. The justification that has been pointed out as the economic basis for the supertanker is that it costs a lot of money to transport oil that long distance, and the distance is usually the Persian Gulf, because that is where we are looking for the bulk of our crude requirement in the remainder of this century. Is that correct?

Mr. ARNOLD. The Eastern Hemisphere is where the supply is.

Senator BIDEN. We are really talking about the Persian Gulf, aren't we?

Mr. ARNOLD. The North African, and the west coast of Africa. The Persian Gulf would be biggest.

Senator BIDEN. By far, though, maybe 4 or 5 to 1?

Mr. ARNOLD. Yes.

Senator BIDEN. That oil is going to cost a lot of money to get it from the Persian Gulf, and let's concentrate on that for the moment. It costs a devil of a lot of money to get that oil from the Persian Gulf to the east coast or to the gulf coast of the United States.

So your argument is, in the economic interest of the Nation, the more viable way of doing it is with a larger tanker, because it cuts down the cost per barrel of oil, is that correct?

Mr. ARNOLD. Yes.

Senator BIDEN. That is the basic premise on which we are estimating that, and I believe in your statement, Mr. Arnold, you say just petroleum imports are expected to reach 15 million barrels per day by 1985.

I assume these are barrels of crude oil that you are referring to, not refined oil, or are you?

Mr. ARNOLD. This is both crude oil and petroleum products, but the great majority of it is crude oil.

Senator BIDEN. Is that 14.5 million or 14 million, or what?

Mr. ARNOLD. 10 or 11 million barrels a day.

Senator BIDEN. All right. As you see it, this requirement for crude is going to increase, as the century wears on, and hopefully, we will catch up at one point in time, where at least if we don't make a turn-down, we are going to level off.

Now, isn't it true that most of the refineries, and particularly the ones in the Midwest and on the gulf coast and the east coast are refineries that were built to refine sweet crude? Isn't this true?

Mr. READ. Yes, for the most part.

Mr. ARNOLD. Not exclusively.

Senator BIDEN. Keep in mind the admonition of Samuel Clemens that all generalizations are false, including this one.

The bulk of it is sweet crude, the bulk of the refineries are designed to process sweet crude. Isn't it true that the bulk of the oil we will be getting from the Persian Gulf is sour crude?

Mr. READ. Yes, sir.

Senator BIDEN. Doesn't that mean that in order to refine the increased amounts of oil, which will be in the millions of barrels per day, however you cut it, you know, whether you say it is 5 million or 30 million, between now and the year 2000, there are going to be an awful lot of barrels per day of sour crude coming to the United States, for which we don't have the refining capacity now to process. Is that correct?

Mr. ARNOLD. In a sense, we have the refining capacity, we need to add the desulfurization capacity.

Senator BIDEN. Unless someone flat out lied to me in some of the major oil companies that made this statement to me are sitting in this room today, they tell me that is a very expensive process to convert a sweet crude plant to be able to process sour crude, and that as a practical matter, it is more economical in the interest of God and country that you built new plants. They don't say God and country.

I am a little skeptical.

Mr. ARNOLD. I won't say necessarily. I can state from my own standpoint that we are considering a new plan to provide facilities at existing refineries, and we have been gradually doing it over a period of years. We have had to because of the product specifications.

Senator BIDEN. That gets us to the thing that really concerns that young upstart, Joe Biden, and that is this, that there has been a phenomenal assault in the last year, particularly in the last 4 months, by everyone from major corporations to individuals on the kooky environmental lists and the Clear Air Act.

As I understand it, and according to the testimony of Mr. Train yesterday, most of which I disagree with, I might add, Mr. Train, if I am not mistaken, indicated that we really don't have the capacity now, the technology available now to refine sour crude and meet the Clean Air Act standards as they apply now without changing in them on a chemical basis. Is that correct?

Mr. READ. I don't know that I am qualified to answer that.

Mr. ARNOLD. I would like to try to answer the question.

You are saying that just taking refineries, the equipment they have today, and you would be correct, that they could not handle the quantity of the sour crude that they are going to handle in the future, but of course they haven't had to.

That is not to say that they can't get in shape.

Senator BIDEN. Even building the new refineries to handle sour crude, I understand from the arguments made that the technology is not available on an economical basis in order to meet the present clean air standards as called for under the 1970 Clean Air Act of the Congress.

Now, if you don't feel qualified, and don't think necessarily that you would be qualified to speak to that, but if you are, please do.

Senator JOHNSTON. If the Senator would yield, we have had testimony on this before the Interior Committee, and I think the problem

is more in the stack cleaning of coal. If the ambient air standards that are scheduled to become operative in 1975 do go in, instead of being put off for a year, as the President has recommended, then it is going to result in the nonusage of a couple of hundred thousand tons a day of coal.

Senator BIDEN. I agree that is true, also. I have no argument with that.

Senator JOHNSTON. We have heard no testimony about not being able to refine sour crude.

Senator BIDEN. It was raised by Mr. Train, and we heard testimony from him to that effect, but other than that, I have heard from a number of environmentalists from my State, and the other side of it from industrial spokesmen who sat in my office when I was doing battle with the particular company about placing a refinery in my State, when I was a local official.

The admission was made that this isn't going to be like the Getty plant you have up the road. The reason they have a problem is that they are using sour crude. They were going to use sweet crude, and said it wouldn't cause a problem. The technology is available to refine sweet crude and meet all the requirements of the act.

But they agreed it was not available for sour crude to be done economically at this point in time. That was 2½ years ago, and I may be slightly misrepresenting what they said, but I heard from a number of people, including the technocrats, that it is at least a great deal more difficult, if not economically not feasible, to refine sour crude and meet the Clean Air Act as it now stands, and maybe this young lady who knows a heck of a lot about it than me will underline a section from Mr. Train's testimony that says that under the Federal air and water pollution laws, new facilities are required to be compatible with ambient air and water quality standards.

This framework of controls should assure that deepwater port-related industrial development will occur within the limits of environmental acceptability.

Senator JOHNSTON. If the Senator would yield on that point, Mr. Train's assertion is one I have been trying also to make. What he was talking about was not the increased degradation caused by high sulfur product, but that due to the tremendous onshore development of refineries and petrochemical complexes, there would be a tremendous degradation of the air quality of the State right offshore. This would necessitate further controls, and more comprehensive restrictions on any kind of polluting air device. That is the reason that I have been calling for additional natural gas from my State, a clean-burning fuel which we are using now, rather than requiring it to go to fuel oil, whether it is low sulfur fuel, or high sulfur fuel.

I don't mean to dispute your point, but that is the point I have been trying to make here these last couple of days, that we need help in Louisiana to cope with the air pollution.

Senator BIDEN. I agree with everything that my distinguished colleague says to the point he goes, but I would like to pursue the question again. Am I right or am I wrong about the technology available to refine our crude and at the same time meet the present Clean Air Act standards set out in that act?

Mr. ARNOLD. It would be my understanding from my knowledge that the technology is there, but we would like to deliver a paper to you on that subject by people who are more aware of that technology than we are sitting at this table.

Senator BIDEN. Fine, and I won't pursue it any more.

Mr. READ. It is my understanding that this is a very complicated subject, and it is one that I am not competent on. It is my understanding that if you measured the air quality right at the stack, you would come out with an air quality that is not acceptable. However, if you measured it at the refinery fence, you probably could meet the air standard.

Senator BIDEN. And if you measured it in Pennsylvania, we would be in great shape in Delaware.

I think this is a valid point, and I will save that for a political speech. I think that we are having a problem. Again, sir, we talked about the cost-benefit ratio. I would like to go back to that if I may, and I quote from the "Economic Impact of Louisiana Offshore Oilport Study" done by H. J. Kaiser Co., the Gulf South Research Institute. On the last page it reads, "The revenue-cost ratio at 1 point 9 to 1 is considered to be conservative on the low side because of the additional corporate and business taxes that would accrue in industries outside the refining and the manufacturing of the petrochemical intermediates."

Let's talk about that ratio if we could for a minute, and I want to make sure you fellows put that down there, and that Bennett gets all the money he can from the oil refinery.

This report says, and you correct me if I am wrong, that the ratio includes the cost not just of you all building that platform in the open set 20 miles out, and pumping oil through a pipeline to the shore. That includes everything from that shore point on that you are not building, if I am not mistaken; is that correct?

Mr. READ. Yes.

Senator BIDEN. So when we start talking about the cost-benefit ratio, or revenue-cost ratio, don't you think it is fair that we have to consider not just from your facility to shore, but from shore to wherever the devil that goes into that State?

Mr. READ. The costs for public services includes roads, schools, police services, and so forth, were based on projections of employment in new refineries, new petrochemical plants, and the associated supplying businesses related to the new plants. Taxing these facilities, these new facilities, based on the existing tax rates, this project showed that there would be 1.09 times as much tax generated as the cost of these improvements and services.

Senator BIDEN. And the question I would raise is whether or not, assuming the same ratio would apply in other States, whether it is worth .09 benefit ratio to subject your government to the pressures resulting from a deepwater port. I would like to return to Senator Johnston's comments about the disputed figures of consuming 16.2 miles of marsh per year. At that rate, you would eliminate the State of Delaware pretty soon. We are not nearly as big as you are in Louisiana and Texas.

Speaking of Texas, I assume you disagree with the Governor's position as stated here by General Cross, which says the State should have veto power over the construction of such a facility. Is that correct, Mr. Arnold?

Mr. ARNOLD. Yes. We think that the State should be heard and that the interests of the State should be considered and protected, but that for a national problem, in the matter of a national decision, I would go along that the ultimate decision should not solely rest with the State in this matter.

Senator BIDEN. Liability for oil spills, back to you. Mr. Read, only because you mentioned it in your statement, and anyone else can comment, too, and I will try to submit the rest of the questions I have in writing: in your statement, there are three full paragraphs that appear on that page starting with the paragraph that begins "Although the potential for major oil spills is reduced," and so forth. It goes on from there.

Then the next paragraph speaks to a program that covers 95 percent of the tankers serving the U.S. petroleum industry and provides for cleanup costs based on tanker tonnage up to \$10 million.

Now, again, correct me if I am wrong here, but right now you are not being serviced by these 400,000, or 500,000, or essentially a million deadweight tons, is that correct? We are talking about tankers that are considerably smaller, is that correct?

Mr. READ. Yes.

Senator BIDEN. Wouldn't you think in order to cover those tankers that the cleanup cost liability should be drastically increased in light of the increase and the size of the vessel irrespective of segregated ballast and the double bottoms and the rest? Shouldn't it be more like \$100 million instead of \$10 million?

Mr. ARNOLD. How about \$30 million? Voluntarily tanker owners and cargo owners have provided insurance up to \$30 million for any one incident. This is an additional \$20 million I believe—well, it is a \$30 million top. So there is 3 times the 10 that are available in terms of funds.

Senator BIDEN. We are talking about ships that are going to be 10 or 12 times the largest ships now.

Mr. ARNOLD. There are ships of 250,000 deadweight tons; that is not the average size that comes in today.

Senator BIDEN. The average is closer to 50 or 60, isn't it?

Mr. ARNOLD. You are correct. The agreement was directed toward the 250,000 deadweight tons. You tripled it.

There is presently, internationally, being discussed a convention to take the place of this voluntary agreement, and I think this will be handled.

Senator BIDEN. You would have no objection to us handling it in the legislation, would you?

Mr. READ. Maybe Captain Smith could address this.

Captain SMITH. Before I do that, Senator, could I back up and consider that challenge you made a little bit ago about proliferation of industry and land use. I would like to take even money on the State of Delaware.

Senator BIDEN. I hope you don't have to make that bet, but I will take it if it comes. I will give you 8 to 5.

Captain SMITH. After the *Torrey Canyon*, as you know, there was considerable hue and cry, and the international oil companies and shipping interests came up with a scheme they called TOVALOP. It provided for \$10 million, and it seems that at the time nobody provided for the cargo on them, so there was this subsequent agreement made called CRYSTAL, and I forget just what all these initials stand for, but it provided for another \$20 million.

Now, in this is to hold compensation to third parties and what have you, depending on what we refer to as the Brussels Convention, and there is in the mill now, internationally, works to come up with an international scheme by all governments. It will be a government thing, then, to adequately compensate, and I think—I don't know what figure has been mentioned.

Senator BIDEN. Captain, I would like to get back to you, Senator Johnston has to leave at 5 and has a few more questions.

Senator JOHNSTON. Along this same subject matter, suppose I am a shrimper, and I don't catch shrimp after an oil spill, what right of action, what right of recompense would I have under this plan? Do you have a contingency plan for that situation should it arise?

Captain SMITH. Yes; there are some lobster fishermen up in Maine, and places like that. Of course, with provable damages, I think that is the case in any lawsuit situation, but there are people whose boats need repainting.

Senator JOHNSTON. I am not worried about the "probable" damages, but I am concerned about the fisherman who fishes in the broad gulf area. He has a pattern of being able to catch so many fish each year, and he doesn't always catch exactly the same amount, but he has a pattern.

It would be very difficult under present law to ascribe a definite number to that and say what the total loss is over a period of years to him.

I believe we ought to build into this statute some kind of scheme for recompense to that kind of person. I don't think we have it now, \$30 million wouldn't do it. We catch over a billion pounds of commercial seafood off the Louisiana coast each year.

If you had a *Torrey Canyon* kind of spill out there, I suspect that total loss would exceed \$30 million by a multiple, if you took into account the possible damage that it might do to the breeding ground for shrimp and oysters, red snapper and all the rest. I would like to hear from some of you in writing about what kind of statutory claims procedure we could get to compensate the fishermen.

I just came in from a meeting with the Canadian Parliamentarians. They are here to protest moving the Alaskan oil and Vancouver Bay and the Straits of Juan de Fuca. They are not satisfied with the double bottoms, and they paint a very frightening picture. I was applying that to Louisiana and thinking that we have, potentially a lot more to lose than they did, because I think ours are the better fishing grounds.

I would like to build into the statute something to protect fishing interests and the marshland interests, and I would like to hear from you as to your ideas in that question.

Their cost-benefit ratio of 1.09 to 1—by the way, Mr. Read never used to smile, and he has been dealing with Louisianians lately.

Senator BIDEN. If I were you, I would be, too, because I don't think it would be the same in my home state. Take advantage of it while you can.

Senator JOHNSTON. I would suggest to you and to this committee for the record that a cost-benefit ratio of 1.09 to 1 is just about break even. That ratio is from a study commissioned by LOOP as well as other interested groups. I am not arguing against the fact that we want a superport, but I am saying if you are going into it with no more expectation than 1.09 to 1, and that doesn't give any diminution factor at all for environmental degradation. That doesn't include any consideration at all for the fact that sooner or later we are not going to need to import this much oil, and you are going to lose many of these jobs as we did in my home town when the oil industry moved out. When you consider all those factors, I think it ought to entitle the adjacent State to rather major consideration in terms of income to make up for those factors.

Would you agree with that?

Mr. READ. If it is determined by Congress that this is desirable, we would agree with it.

Senator JOHNSTON. I think I had better quit on that.

Senator BIDEN. Based on the last statement of Senator Johnston's, I am sure he will be on the left side again tomorrow.

Senator JOHNSTON. Let me just tell all these gentlemen I am sorry I have to leave. I have a very important appointment in my office, but we appreciate your coming, and your cooperation with our good State. We know that we are going to work really well together and are not going to have to face some of the problems that we are facing here as possibilities.

We are not going to have to lose our wonderful oysters and shrimp that we enjoy so much. Thank you very much for coming, gentlemen.

Senator BIDEN. Besides that he has a refinery that looks like a school house.

Again, I have got more questions here. and I apologize, gentlemen, and I especially apologize to Mr. Moody and others who are waiting.

I have a very important appointment at 5:30, and I am willing to forego that. It is baseball practice against the Republicans, which is very important to me, just so you know how much I care about that, I am going to forego baseball practice if need be. They've won by the way, 9 years in a row.

At any rate, back to the Captain. Captain, you mentioned *Torrey Canyon*, and you pointed out that after that there were agreements reached as to liability, including the TOVALOP program which accounts for 95 percent of the existing vessels.

Now, my question is, assume *Torrey Canyon* had gone under completely and was not at all salvagable, and was sitting in the bottom of the English Channel right now. Assume it were there. Assume that happened off New Jersey, instead of the English Channel.

If I am not mistaken, under our admiralty law, the owners of *Torrey Canyon* would have not been liable for beyond—well, would not have been liable for anything, a total of \$65 in exposed liability, because we base our—I see a gentleman shaking his head no—that we base our exposure to liability of a ship owner to the value of that ship as it is reclaimed, or after the accident. Is that correct?

Is that how they do it?

Captain SMITH. Well, at that time there was a limitation of liability. In other words, under U.S. law you were only limited to a maximum, I believe at that time it was \$100 a gross ton, or \$60, but there was a limitation of liability.

Senator BIDEN. There are two types of liability I guess I should speak to. One is actually cleaning up the beaches and the marshes and the shore and what have you. I understand there is another type of exposure which is not covered, and that is permanent damage.

Once you clean up the marsh, you may not refurbish the marsh or the beach or whatever it happens to be, assuming there is permanent damage done to it, but you have physically cleaned up the oil there. Is there any of that type of liability?

Captain SMITH. I don't know.

Senator BIDEN. Do any of you gentlemen know the answer to that question?

Mr. ARNOLD. No, we don't. We would be glad to find out by now. None of us are attorneys.

Senator BIDEN. By the way, I am really not trying to put you guys on the spot, and if you don't know, please submit it in writing.<sup>1</sup>

Mr. ARNOLD. We would like to do that.

Senator BIDEN. I would appreciate that very much, and in light of that, I won't go on with the other questions on liability I had, expecting an answer.

I will just raise them. It is the liability to third parties that I want to get into here, not just the clean up cost. It is the liability to third parties that I am interested in.

In your statement, Mr. Read, you say that this immediate response mechanism is required by the Federal Water Pollution Control Act Amendments of 1972.

This act provides for reimbursement from a vessel owner or operator and an offshore facility operator or owner to the United States for clean up costs. Vessel owners and operators are assigned liability from 100 percent gross tonnage or \$14 million, whichever is lesser.

If the spill results from an act of negligence, or acts of negligence short of willful negligence or misconduct, my understanding is that that doesn't apply to third parties, but just to clean up.

I would like you to give me what you understand the exposure to third parties to be, and whether or not you think the exposure for clean up is adequate here under the Clean Air Act.

Mr. READ. Fine.<sup>2</sup>

Senator BIDEN. I will ask one last question, and then I would like to be able to submit additional questions to you in writing.

<sup>1</sup> No information has been submitted.

<sup>2</sup> No information was submitted.

I believe it was Mr. Arnold who referred us to the diagram indicating location of tanker accidents, collisions, and rammings and groundings, and pointed out that the collisions at sea were a relatively small percentage of all collisions and rammings, and that groundings at sea were relatively small also; is that correct?

Now, if you could refer to that chart, if you would, figure 7, for clarification, with regard to groundings, there is an equal percentage of groundings at sea as there are at piers, correct?

Now, another thing is that would not the facilities that you all are talking about constructing, deepwater facilities, would they not take on an aspect of something other than open sea? Isn't it unfair to continue to refer to them and any collision that would take place as one that was taking place in open sea? In effect, aren't we taking the port out 20 miles?

The line of reasoning, if that is correct, is that those groundings and collisions at harbor entrances are also going to be brought out to sea, at least increased.

In other words, isn't it misleading to say that when we build one of these piers out in the open sea, the percentage of groundings or collisions there is not likely to be any greater in effect than those which are in the open sea now?

Captain SMITH. Run that by one more time?

Senator BIDEN. Fair enough. I am not sure I even understood my question.

Right now, you point out that collisions, rammings, and groundings in the open sea make up a relatively small percentage of collisions, groundings, and rammings.

Mr. ARNOLD. That is right.

Senator BIDEN. Would it not be unfair to postulate that the number of collisions, or the percentage of them, of rammings and groundings after the construction of deepwater facilities would be no greater than the percentage that now occurs in open sea?

Captain SMITH. We think it would probably even be less, for a couple of reasons.

Firstly, this graph is accurate in what it shows. The study shows that 80 percent of groundings either happen in port or within 25 miles of the entrance to the port. and that is simply, you cannot run into yourself, you run into somebody. and that is because they are all there, going up and down the channel.

The statistics also show that just about the same percentage, around 80, are due to human error.

So, by moving this out. in the first place. it is in deep water. You cannot run aground if there is water under you. and you have never made a mistake as long as you are afloat. So, we are not going to run aground.

By moving these ports over to isolated areas. then you are not going to be in the general traffic pattern. You are way out of the traffic pattern.

Senator BIDEN. You are going to be your own traffic pattern.

Captain SMITH. That is true, but our Bantry Bay terminal that has been in operation for 5 years, at the end of May, this last May, we had 194 300,000-tonners come into the place, and a couple of

200,000 tonners in there, and in the same period of time it took 1,100 shuttle ships to take the same oil back out there.

So, in pure numbers, you are going to have considerably fewer ships. They are going to be out of these busy up and down traffic lanes.

Senator BIDEN. Let me make sure I understand what we mean on your graph by sea. Collisions at sea do not include collisions in port, do they?

Captain SMITH. No.

Senator BIDEN. That is my point, that they are included in either harbors or entrances or something, but they are not at sea.

You raise the at sea figure to point out that this is going to be at sea and there are not going to be any spills. My point is that that is fallacious reasoning, because what you are doing in effect, is that you are bringing the port out. Granted, it may not be as dangerous as having a small ship go into the existing port, but you are creating your own traffic pattern and if the requirement for crude is as strong as you say, it is going to be a shuttle. They are going to be bouncing in and out of these regularly.

Mr. ARNOLD. I think that with the size of ship that we plan to use, we will not be shuttling a lot. To give you an idea, in 1980, handling a volume of about 2 million to 3 million barrels a day, we are talking about almost one ship per day. That is all that is going to be coming in or out.

Senator BIDEN. That is going to increase, and the whole north-east, we have a whole bundle of people up there, so there is going to be traffic.

Mr. ARNOLD. But it is going to be a very minor amount of traffic compared with the alternative. One and a half ships per day, 3 million barrels a day, that is a lot for any deepwater terminal, wherever it is.

Senator BIDEN. I am going to ask more questions until the 5-minute bell goes off.

I would like to direct this to one of the two captains.

If I understand it, one of these half million dead weight ton tankers that are proposed travels at a maximum of 16 knots or thereabouts. To stop one of those babies, it takes something like 21 minutes, or 21 miles? It is a heck of a long way. Do you guys know those figures?

Captain SMITH. Yes. Of course, I cannot tell you about a 500,000 tonner, but I can tell you about a 326,000 tonner. Stopping, and they do not go 16 knots; this is 14½ to 15 knots, but stopping in this case is a function of what you have got in the ship; is she loaded or not?

Senator BIDEN. Assume she is loaded. That is what worries me.

Captain SMITH. I figured it would. Our trial run data on the ships shows that—I do not know if it is 21 minutes. It is 2.6 miles in a loaded condition and in ballast, in the trial run data it was 1.8. She stopped a little quicker light than she did loaded, obviously.

Senator BIDEN. A million dead weight tons, which I understand are going to be a reality in the near future, that would take longer to stop, wouldn't it?

Captain SMITH. Not necessarily so. What kind of engine are you going to put in it?

Senator BIDEN. I was thinking of putting in a Harley Davidson.

Captain SMITH. You would never stop it.

Senator BIDEN. I tell you what, I have a legitimate concern here. I live just south of Wilmington, Dela., along the Delaware River, and it is about 90 miles up, and the way these tankers keep going up, the tanker may end up in my living room.

The bigger the ship, I think it is fair to say that the miscalculation, the slighter the miscalculation, the greater the consequence, the bigger the ship. Do you follow that?

Captain SMITH. I follow that real close. I do not necessarily agree with you, though.

Senator BIDEN. You do not agree with that?

Captain SMITH. If I did, I would say so.

Senator BIDEN. Tell me why. That is interesting.

Captain SMITH. In the first place, the bigger ships, they do not handle like the smaller ships.

Senator BIDEN. I saw your ad; you guys go to special school.

Captain SMITH. They are pretty keen, too. We are using one like a link trainer now.

But these ships neither become wind-rowed or tide-rowed as quickly as another ship, due to their weight, and it is like the difference between a piper cub and a 747. You are not looping round; it is precisely calculated. You are not going all over the harbor and this sort of thing.

Senator BIDEN. If the pilot of the 747 is off a little bit, we are in serious trouble, and I do not want to be in the plane.

Captain SMITH. I agree.

Senator BIDEN. You guys have been great, really. I think you overstate your case, and I think a lot of things, and I am sure it is obvious, and, of course, I come to this hearing with absolutely no prejudice built in at all beforehand, believing that refineries can look like schoolhouses, and I would like to leave you with one more thing, and then I have no more questions for you, and that is this: Would the facilities which you propose accommodate dry bulk cargo in addition to crude oil?

Mr. READ. No, sir.

Senator BIDEN. The answer is "No."

Mr. MASCENIK. Only if you could pipe it, then obviously you might be able to handle dry bulk cargo, but outside of that, there is no possibility.

Senator BIDEN. Fellows, thank you, very much.

[The statements follow:]

**STATEMENT OF WILLIAM B. READ, PRESIDENT, LOOP INC. (LOUISIANA OFFSHORE OIL PORT)**

My name is William B. Read, and I am appearing this morning in my capacity as President of LOOP Inc. I would like to thank you for the invitation to appear today and for the opportunity to explain our project.

LOOP Inc., with offices in New Orleans, is a corporation formed to design, finance, construct and operate a deep draft crude oil tanker unloading terminal in Gulf of Mexico waters off the coast of Louisiana. The LOOP facility is being

planned as a common carrier subject to I.C.C. regulations, open to all potential users who meet published tariff requirements.

Formed in October 1972, our fourteen stockholders include Ashland Oil, Inc.; Chevron Pipe Line Company; Exxon Pipeline Company; Marathon Oil Company; Murphy Oil Corporation; Shell Oil Company; Tenneco Oil Company; Texaco Inc.; The Toronto Pipe Line Company; Union Oil of California; Clark Oil & Refining Corporation; The Standard Oil Company (Ohio); Texas Eastern Transmission Corporation; and Amoco Pipeline Company. Additional shareholders may join through the completion of our engineering design.

The purpose of our project is to provide an economically and environmentally feasible facility by which to handle the transportation requirements of the large volumes of imported petroleum needed to meet the nation's growing energy demands.

In a report to the National Petroleum Council<sup>1</sup> on December 11, 1972 the following projections were made concerning the nation's energy posture:

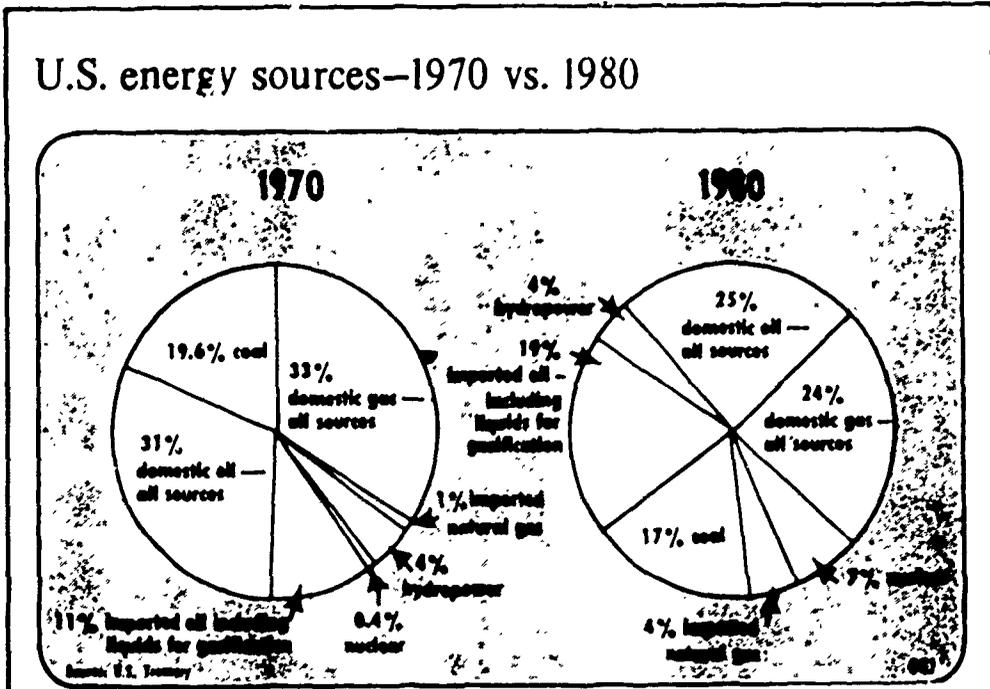
(1) Under the most optimistic supply conditions, domestic oil might provide 28% of total energy requirements by 1985. This still represents a decline from 31% in 1970.

(2) If present trends continue, however, domestic oil would provide only 17% of total requirements in 1985. All domestic sources of energy—including petroleum, natural gas, nuclear power, coal and hydroelectric power—are predicted to meet less than three-quarters of the national energy requirement.

(3) Imports of oil and gas in 1985 will fill the gap between domestic supply capability and total demand. Imports in 1985 could range from 11% of total requirements to 38%.

In the shorter term, United States Treasury Department studies indicate that import requirements by 1980 total 19% of our energy needs.

The volume of petroleum imports is significant as it is the balancing figure in computing an energy supply-demand balance. Petroleum imports in 1970 totaled 3.4 million barrels per day. According to N.P.C. projections, imports in 1975 may reach 7 MMB/D. By 1980, the level of oil imports projected is 11 MMB/D. In 1985, import volumes could rise to 19 MMB/D.



<sup>1</sup> Presentation Made To National Petroleum Council, December 11, 1972, by John G. McLean, Chairman, Committee On U.S. Energy Outlook and Chairman and Chief Executive Officer, Continental Oil Company; and Warren B. Davis, Chairman, Coordinating Subcommittee, Committee On U.S. Energy Outlook and Director of Economics, Gulf Oil Corporation.

The economics of transporting this large volume of imported petroleum takes on great significance. Costs can be considerably reduced through the use of supertankers. Ten years ago there were virtually no ships of 100,000 DWT. Today there are over 200, and this number is expected to reach 800 by 1975. By 1980 the 200,000-300,000 DWT tanker will become the world's standard, reflecting the importance of supertankers in reducing transportation costs.

TABLE 2.—KENT AND SUSSEX COUNTIES

	1970 (actual)	2000	
		(Without port)	(With port)
Residential acreage.....	20,512	26,400	102,000

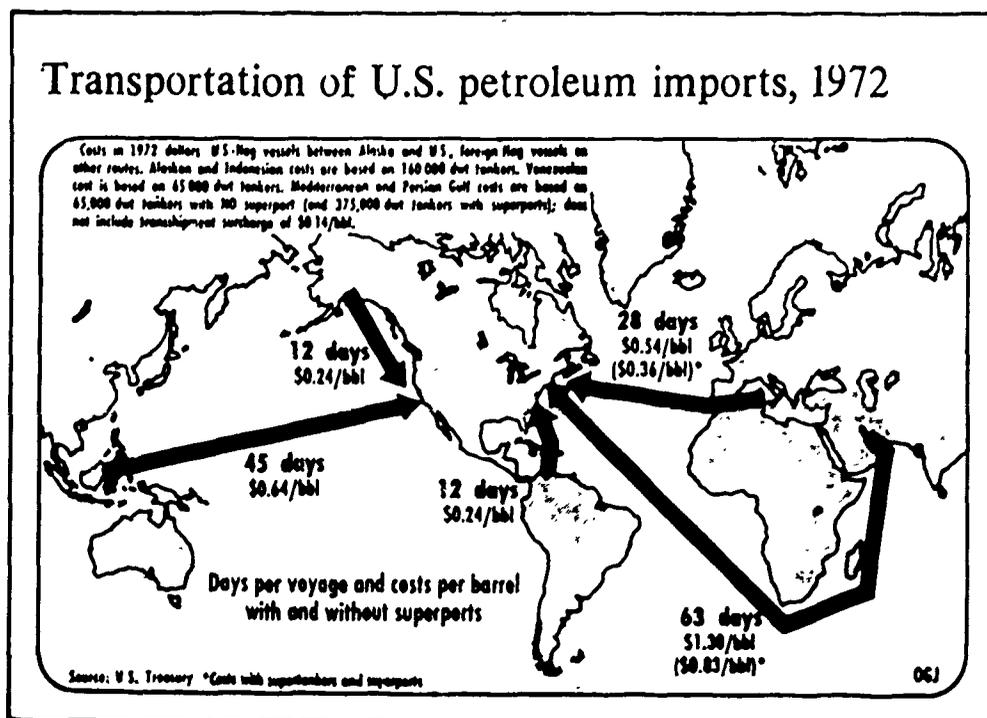
TABLE 3.—KENT AND SUSSEX COUNTIES

	1970 (actual)	2000	
		(Without port)	(With port)
Nonresidential acreage.....	8,941	14,547	89,100

(ANALYSIS OF WORLD TANK SHIP FLEET SCIENTIFIC RESOURCES AND DEVELOPMENT PLANNING SUN OIL COMPANY, AUGUST 1972)

Today, shipping oil direct to East and Gulf Coast ports from the Persian Gulf in tankers of 47,000 DWT costs approximately \$13 a ton. By contrast 250,000 DWT tankers could transport crude oil to Louisiana and Texas Gulf ports for about \$5.70 a ton.<sup>2</sup>

Transshipment alternatives—that is, transporting crude oil to a deepwater port in the Bahamas or other location near the United States and transshipping from there to existing U.S. ports in small tankers, or loading smaller tankers directly from supertankers at sea—would add approximately \$1.05 per ton to the direct shipment cost.<sup>3</sup>

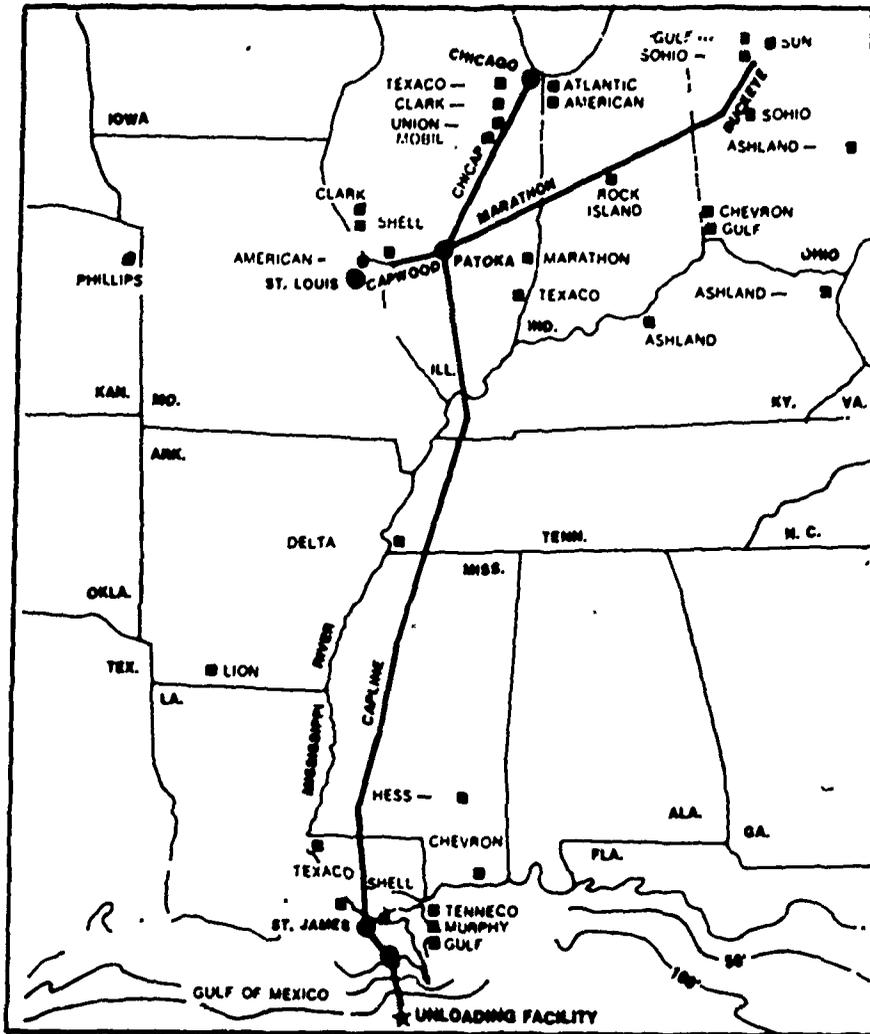


<sup>2</sup> "The Economics of Deepwater Terminals", U.S. Department of Commerce, Office of Ports and Intermodal Systems.

<sup>3</sup> Source: U.S. Treasury as cited in the "Oil and Gas Journal", April 30, 1973, page 82.

Looked upon conversely, the magnitude of these cost savings can be viewed as penalties to American industry and consumers for failing to utilize these larger vessels—higher transportation costs for crude oil will result in increased consumer product prices, a further loss of competitiveness in world markets for American products, and a high risk of the movement of critical processing industries outside the United States.

Another significant reason for the use of supertankers is the projected impact of these ships in reducing port congestion.<sup>4</sup> For example, in the case of the use of 47,000 DWT tankers as opposed to 250,000 DWT tankers, arrivals would be reduced from more than 45 daily to less than nine daily by 1985.<sup>5</sup> Industry figures show that more than 78 percent of tanker accidents occur in congested harbor areas. The use of offshore marine terminals specifically designed to



(LOOP Facility Service Area)

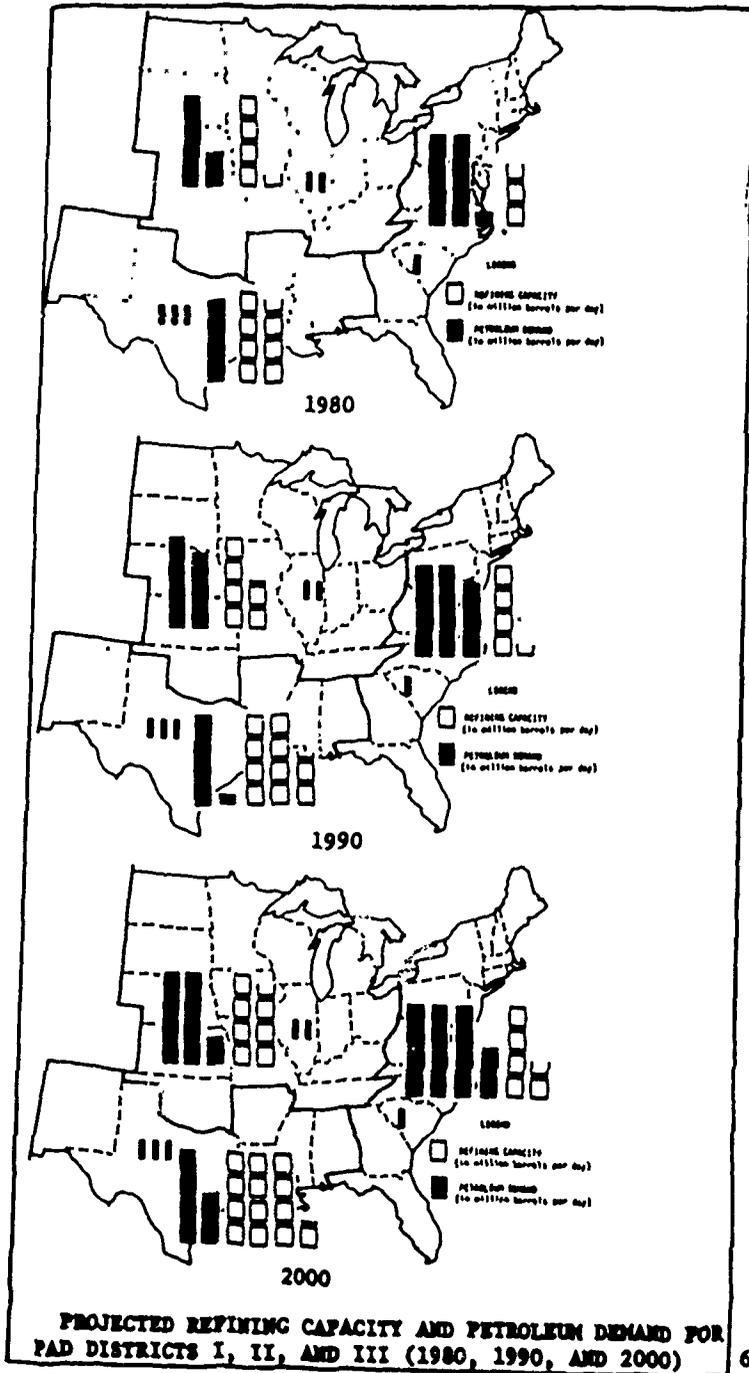
<sup>4</sup> Because of depth constraints, ports on the East and Gulf Coasts cannot handle supertankers—ships requiring a draft over 60 feet of water. Transshipment alternatives, while they exist, would aggravate port congestion problems. (Loc. cit.)

<sup>5</sup> The Port of New Orleans, for example, handles some 120 million tons of cargo annually, one-half of which involves the use of barge transportation. The 1500-foot-wide maintained channel at the foot of Canal Street is annually navigated (inbound only) by over 44,000 barges, 17,000 towboats and tugs, and almost 15,000 ocean-going vessels. This average 78,000 "bottoms" annually does not include pleasure craft or ferry boats, and amounts to 210 "bottoms" daily through the Port of New Orleans. Actually, this figure could be doubled to reflect two-way traffic. For statistical purposes, the Port of New Orleans is defined as everything on the Mississippi River below the Port of Baton Rouge. (Port of New Orleans)

handle supertankers would reduce the potential number of ships arriving at our existing ports, and thus reduce the potential for accidents.

In view of these significant advantages of supertanker operation, deepwater terminals are needed at strategic locations near major refining areas to permit the direct movement of petroleum from U.S. terminals to refineries in a manner that will minimize both environmental risks and transportation costs.

Both the LOOP and SEADOCK projects are required to meet the import projections previously mentioned. Refineries located along the Texas Gulf Coast



6. "The Economic Impact of a Louisiana Offshore Oil Port", D. A. Neumann, Chief Economist, H. J. Kaiser Company; and Dr. Jan W. Duggar, Scientific Director, Gulf South Research Institute, May 1973.

and in Western Louisiana would be served by SEADOCK. The LOOP facility will serve refineries in Louisiana and throughout the Midwest.

The LOOP facility will supplement crude oil supplies to existing Louisiana and Mississippi refineries and through Capline, the largest crude oil pipeline in the United States, will supply many of the refineries of crude oil deficient mid-continent America, as far north as Chicago. These areas contain more than 25 percent of the nation's refinery capacity.

Projections of the volumes of imported crude oil moving to Louisiana and the Midwest through the proposed LOOP project were prepared as part of a study of the economic import of a Louisiana Offshore Oil Port by Gulf South Research Institute and the H. J. Kaiser Company.<sup>7</sup> As indicated in the study, approximately 991,000 barrels of imported crude oil per day would move through a facility to mid-continent refineries when in operation in 1977, growing to 1,895,000 b/d by 1985 and 2,375,000 b/d by 1990. This range of crude oil volumes destined for mid-continent refineries is approximately 50% of the total throughput of the terminals as projected in this study.<sup>8</sup>

(Thousands barrels per day)

Area of origin	Quantity	
	1975	1980
<b>Western Hemisphere:</b>		
Canada.....	1,300	2,000
Venezuela.....	1,400	1,500
Other Latin America.....	1,400	1,750
<b>Total.....</b>	<b>4,100</b>	<b>5,250</b>
<b>Eastern Hemisphere:</b>		
Africa.....	600	1,100
Europe.....	175	250
<b>Middle East:</b>		
Saudi Arabia.....	1,850	3,200
Iran.....	900	1,200
Other mid-East.....	825	1,430
Asia-Pacific.....	250	570
<b>Total.....</b>	<b>4,600</b>	<b>7,750</b>
<b>Total world.....</b>	<b>8,700</b>	<b>13,000</b>
Less Canada (pipeline).....	1,300	2,000
<b>Total waterborne.....</b>	<b>7,400</b>	<b>11,000</b>

TANK SHIPS UNDER CONSTRUCTION OR ON ORDER (NOT INCLUDING COMBINED CARRIERS)

Dec. 31:	Number of vessels	Deadweight tonnage	
		Total	Average per vessel
1961.....	352	15,737,000	44,700
1962.....	324	14,040,000	43,300
1963.....	387	19,211,000	49,600
1964.....	332	17,683,000	53,300
1965.....	403	20,591,000	51,100
1966.....	441	27,385,000	62,100
1967.....	469	41,444,000	88,400
1968.....	514	53,729,000	104,500
1969.....	570	59,328,000	104,100
1970.....	649	75,447,000	116,300
1971.....	773	100,250,000	129,700

<sup>7</sup> This study was based on estimates of U.S. energy requirements for selected future years as compiled by the U.S. Department of the Interior and the National Petroleum Council.

<sup>8</sup> Op. cit., page 26.

## TANK SHIPS UNDER CONSTRUCTION OR ON ORDER (NOT INCLUDING COMBINED CARRIERS), DEC. 31, 1971

Intended flag of registry	Number of vessels	Deadweight tonnage		
		Total	Average per vessel	Percent of existing fleet
Liberia.....	114	23,010,000	201,800	48.0
Japan.....	72	13,777,000	191,400	60.4
Norway.....	77	11,982,000	155,600	51.9
United Kingdom.....	83	8,926,000	107,500	35.5
France.....	31	5,911,000	190,700	76.1
Italy.....	34	3,075,000	90,400	54.4
Denmark.....	13	2,433,000	187,100	82.8
Spain.....	18	1,913,000	106,300	68.2
Greece.....	23	1,764,000	76,700	19.8
Panama.....	9	1,633,000	181,500	27.8
West Germany.....	30	1,563,000	52,100	43.4
Sweden.....	23	1,559,000	67,800	35.2
United States.....	13	1,365,000	105,000	14.8
U.S.S.R.....	65	1,200,000	18,500	23.1
All Others.....	168	20,139,000	119,900	122.6
<b>Total world.....</b>	<b>773</b>	<b>100,250,000</b>	<b>129,700</b>	<b>52.3</b>

## ACTUAL AND PROJECTED PETROLEUM DEMAND AND SUPPLY FOR PAD DISTRICT III

[In thousands of barrels per day]

Item	Actual		Projected				
	1970	1971	1975	1980	1985	1997	2000
District III production of crude.....	6,507	6,484	6,200	5,800	5,436	5,060	4,300
Shipments:							
To PAD I.....	651	567	558	510	473	405	300
To PAD II.....	1,454	1,559	1,380	1,240	1,200	1,160	975
PAD III.....	4,402	4,358	4,262	4,050	3,757	3,495	3,025
Required imports of crude.....	-45	134	1,053	2,990	4,604	6,057	9,084
Crude runs.....	4,357	4,492	5,315	7,040	8,361	9,552	12,109
Expansion factor.....	1,513	1,417	1,352	1,011	840	750	584
Supply of refined products.....	5,870	5,909	6,667	8,051	9,201	10,302	12,693
PAD III Demand.....	2,478	2,578	3,017	3,671	4,215	4,746	6,017
Surplus, To.....	3,392	3,331	3,650	4,380	4,986	5,556	6,676
PAD I.....	2,771	2,691	2,920	3,380	3,986	4,465	5,276
PAD II.....	534	533	620	850	900	1,100	1,400
PAD IV and V.....	87	107	110	150	100		

Source: H. J. Kaiser Co. and Gulf South Research Institute.

## PROJECTED CRUDE THROUGHPUT VOLUME FOR LOUISIANA OFFSHORE OIL PORT

[In thousands of barrels per day]

Item	1977	1980	1985	1990	2000
PAD II.....	991	1,495	1,895	2,375	3,677
Louisiana refineries.....	494	973	1,518	1,966	2,978
Subtotal.....	1,485	2,468	3,413	4,341	6,655
Other PAD III refineries.....	54	97	182	236	447
Medium estimate.....	1,539	2,565	3,595	4,577	7,102
Adjustment for leveling in Louisiana crude output.....	-126	-250	-430	-600	-970
Low estimate.....	1,413	2,315	3,165	3,977	6,132
Medium estimate.....	1,539	2,565	3,595	4,577	7,102
Variance in PAD II demand.....	302	342	400	450	570
High estimate.....	1,841	2,907	3,995	5,027	7,672

Source: H. J. Kaiser Co. and Gulf South Research Institute.

Two principal conclusions were reached as a result of this evaluation of economic impact study: first, that an offshore oil port is urgently required because of a rapidly growing need for imported crude oil in Louisiana and in the Midwest; and second, that the benefits of the project would exceed costs by a ratio of 5.39 to 1.

This study found that if the offshore terminal is in operation by 1977, 13,400 new jobs will have been created by 1980 in petroleum refining, petrochemicals, and construction. Another 21,970 jobs will have been added in other industries.<sup>9</sup>

Refining capacity in Louisiana is projected in the study to rise from 1,568 to 3,949 thousand barrels per day between 1975 and year 2000.<sup>10</sup> This projected expansion for refining capacity was found by the researchers to be necessary to meet growing petroleum requirements in Louisiana as well as the Midwest and East Coast markets. The dependency of these areas on petroleum products from Louisiana refineries will continue to grow, although refining capacity in these areas is also projected to expand. In the Midwest, refining capacity is forecast to increase at the same rate as the regional demand for petroleum. In Eastern states, refining capacity is forecast to increase more rapidly than demand, but these states remain far short of being able to supply their own requirements.

This study found that, without an offshore oil terminal, employment in refining and petrochemicals in Louisiana would decline or stagnate. No present jobs would be cancelled or replaced because of an offshore oil terminal. The volume of non-petroleum products moving across Louisiana docks would continue to grow. The movement of refined petroleum products from Louisiana to the Midwest and to the East Coast by water would grow *only* if an offshore oil port is constructed. This movement requires an increased supply of crude oil for Louisiana refineries, which would be made possible by an offshore oil port.<sup>11</sup>

At this time, I submit a copy of the Economic Impact Study for the record of this hearing.

Presently, our staff of nineteen, including eleven professional engineers,<sup>12</sup> experienced in the design, installation and operation of deep draft terminal facilities, is involved in the design phase of the LOOP project. Our staff efforts are being complemented by advisory committees composed of representatives of shareholder companies, and a number of engineering contractors. We will complete the design work necessary for an application to a federal authorizing agency for an offshore oil terminal by the end of this summer. In this regard, I submit for the record of this hearing a copy of the Louisiana Oil Port feasibility study completed in June 1972 and presently being updated by our engineering group.

The Louisiana offshore oil port project as conceived by LOOP would consist of a marine terminal for unloading deep draft crude oil tankers, large diameter buried pipelines from the marine terminal to an onshore storage facility, and the onshore storage facility itself. I refer committee members to the map on page 13 of this statement. The marine terminal would be located in 100-120 feet of water approximately 19 miles off the Louisiana coast. The storage facility would be located in Lafourche Parish.

An adjunct to the LOOP facility will be a pipeline from the onshore storage facility to the St. James, Louisiana terminal of Capline.

A number of different concepts for the marine unloading terminal were studied by LOOP engineers. These included the "man-made island" facility of the type proposed by the Maritime Administration, the more conventional "fixed pier" facility and the "single point mooring" concept.

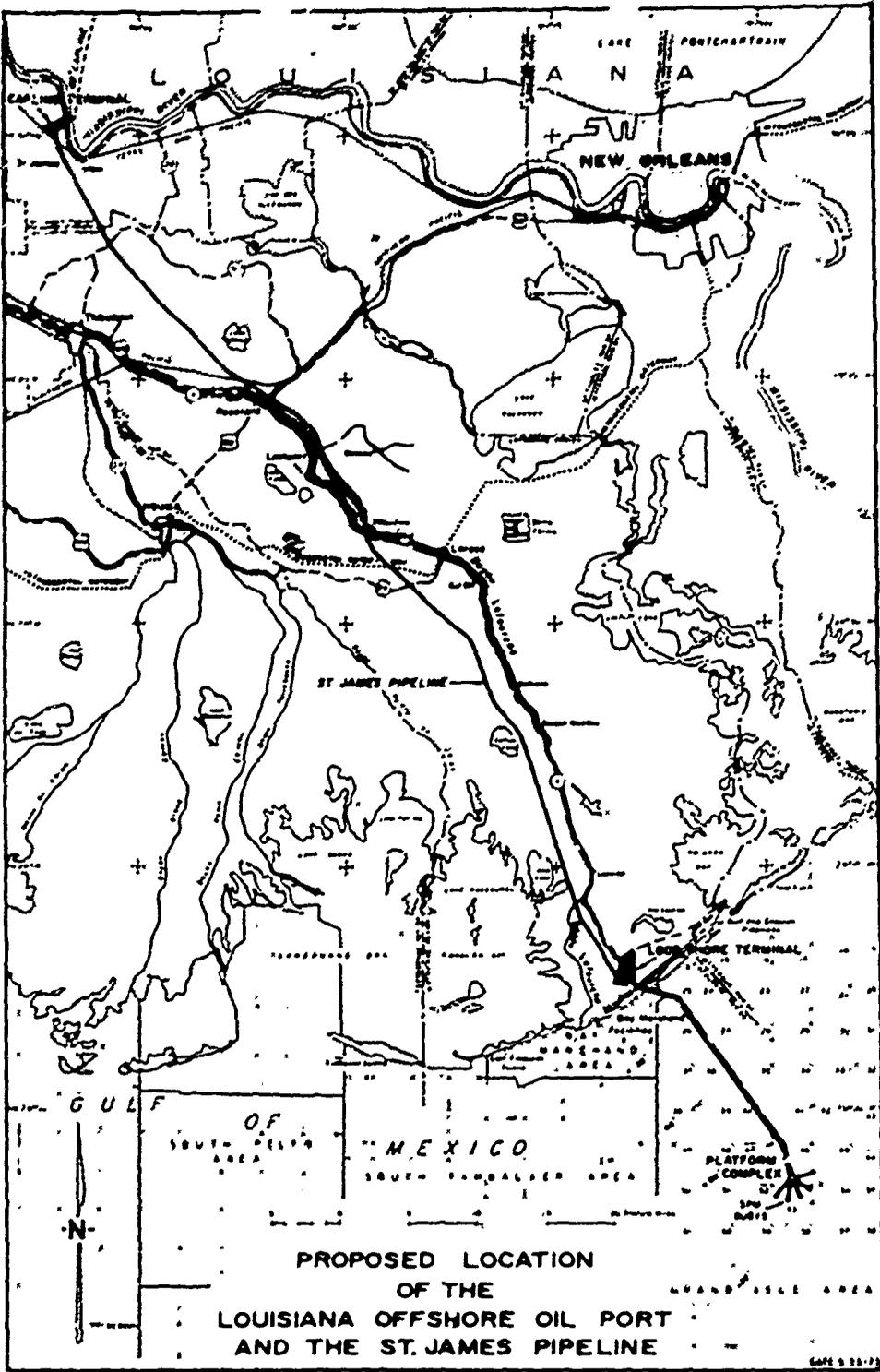
Of these alternatives, the "man-made island" type was rejected as infeasible for economic reasons.

<sup>9</sup> Ibid. page 3.

<sup>10</sup> Ibid. page 4.

<sup>11</sup> Ibid. page 5.

<sup>12</sup> Brief biographies of key personnel responsible for the various engineering aspects of our project are attached to this statement as pages 1a and 2a.

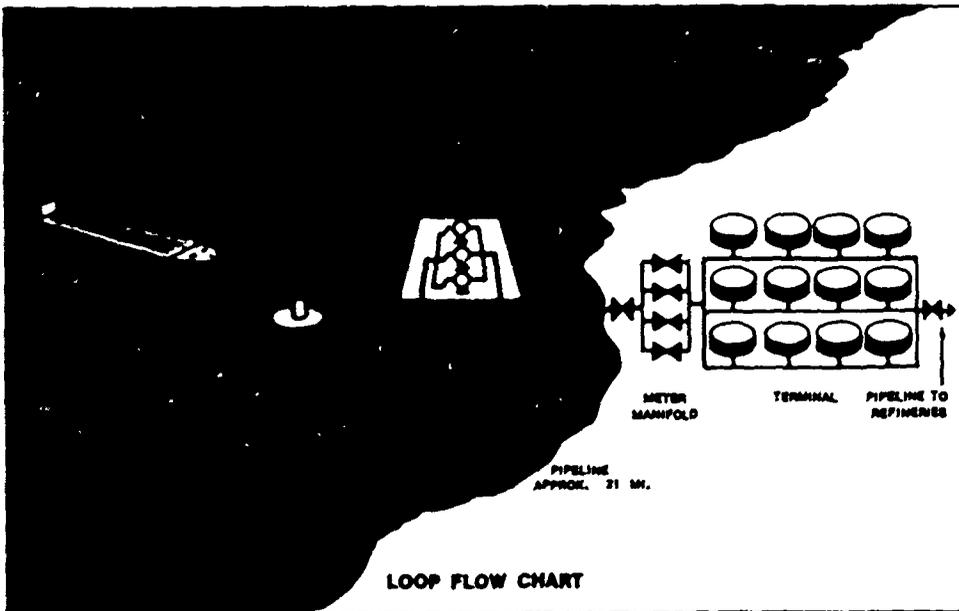


The "fixed pier" type was rejected for operational reasons. A fixed pier facility, without a prohibitively expensive breakwater system, would be inoperable more than 50% of the time due to unfavorable weather conditions.

A single point mooring configuration for the proposed LOOP project would require an investment of approximately \$180 million dollars. This includes 5 SPM's, 2 pumping platforms, a crew quarters platform and 5 pipelines (48" in diameter) 21 miles long, connecting the marine terminal to the onshore storage facility. In addition, the SPM concept would allow a Louisiana offshore oil port to be in operation in Gulf of Mexico weather conditions more than 90% of the time, without the need for a breakwater, based on studies of the significant wave periods and wave height categories in the operating area.<sup>14</sup>

By comparison of the various alternatives, LOOP engineers chose the SPM as the most economical and safest method of operation for unloading large volumes of crude oil in the Gulf of Mexico.

In order to develop a clear understanding of the system proposed, I refer the members of the committee to the simplified flow chart.



The essential elements of the SPM concept include one or more single point moorings,<sup>14</sup> pumping and operations platforms, and submerged pipelines carrying unloaded crude oil to a shore storage terminal.

The SPM concept has been proven in over 100 worldwide applications since the first single point mooring buoy was installed in 1959.<sup>15</sup>

Attached to the floor of the seabed by anchors or pilings, the SPM floating buoy can withstand very extreme sea and weather conditions. Vessel approach and departure from SPM's are relatively simple maneuvers for tankers of all sizes. Ships approach the SPM directly, and mooring is accomplished in a short time with the aid of a mooring launch. The vessel is secured to the SPM buoy with bow lines only and is free to rotate around a 360° arc, like a weathervane, always heading into the wind, sea and current. When the tanker finishes unloading, hoses which had been connected to the tanker's manifold are capped and placed in the water. Mooring lines are slipped and the tanker leaves the berth without the aid of tugs or launches.

<sup>14</sup> "Louisiana Offshore Oil Port Feasibility Study", Appendix 9-1 through 9-12, June 1972.

<sup>15</sup> A diagram of one type of SPM, the single anchor leg mooring, is attached as page 3a of the addenda.

<sup>16</sup> A list of all SPM installations worldwide is attached as pages 4a through 16a of the addenda to this statement.

The remaining elements shown on the flow chart of the LOOP project—the operations platforms, pipelines and tank farm—are conventional in nature, and certainly not unique to systems presently in use offshore Louisiana. Designs of these items are being developed in accordance with existing federal and state regulations and industry standards. I submit for the record of this hearing a draft copy of the listing of codes, regulations, standards and practices incorporated in the LOOP Basic Design Manual. A vast storehouse of successful experience with offshore platforms, submerged pipelines, and tank farm construction in Louisiana is readily available.

Initially it is expected that the LOOP facility will consist of three SPM's, operations platforms, and three buried pipelines to the onshore storage facility. The SPM's would be located in 100 to 120 feet of water approximately 21 miles offshore, and SPM's and lines to shore would be added subsequently until the full configuration of five SPM's and five lines to shore is attained. SPM's will be spaced 5,000' apart, and each will be 8,000' from the platform. This facility will have a potential throughput capacity of over four million barrels per day and would be able to unload tankers of up to 500,000 DWT at rates in excess of 100 thousand barrels per hour. Crude oil would be segregated by grade during unloading and during storage and transfer from the onshore storage facility.

Financial responsibility for the costs of construction and initial operations will be guaranteed by LOOP's shareholders.

Capital investment for the LOOP project includes approximately \$180 million for the offshore facility including pipelines, and \$260 million for the onshore storage terminal. The large diameter pipeline connecting the storage facility with the Capline terminal at the Mississippi River will require an additional investment of \$88 million. With regard to this pipeline, I should point out that it is being designed by LOOP but will be separately owned by a number of LOOP shareholders.

Main factors to be considered in designing for maximum operational effectiveness and minimum environmental impact for a deepwater crude oil unloading terminal include:

- (1) Location of the facilities;
- (2) Designing safety factors in response to potential internal or external forces such as pumping pressures and weather conditions;
- (3) Protection against abnormal conditions such as hurricanes or human error;
- (4) Containment and treatment of normal effluents such as waste water and sewage;
- (5) Design of monitoring systems and emergency reaction plans;
- (6) Design of methods to prevent, isolate, and control spills.

Other factors requiring consideration, while not part of facility engineering design, include establishing operational procedures to detect spills, and portable equipment to control and clean up spills.

Location of the LOOP platform and SPM complex 19 miles offshore Lafourche Parish is outside of potentially dangerous bottom mudslide areas, such as those around the mouth of the Mississippi River, and clear of existing ship traffic. Proposed navigation fairways and maneuvering areas are clear of existing production platforms. LOOP, working with the United States Coast Guard and companies presently operating in the Gulf of Mexico, proposes that the fairways to the marine terminal will be marked by lighted buoys, and that LOOP will undertake radar surveillance and monitoring of all tanker approaches in the fairway, anchorage area and to and from the marine terminal.

Ships will normally be moored in order of their arrival, and trained LOOP mooring masters will be on board during mooring and unloading operations. All of the operations in the berthing area—including final inspections and clearing the berth—will be under the supervision of the LOOP mooring master.

During the mooring operation, LOOP mooring launches will have the responsibility of attaching the ship's messenger lines to the SPM buoy's mooring lines, and keeping the floating hoses a safe distance from the ship. Once the ship is moored, a mooring launch then brings hoses alongside, allowing the ship's hoisting gear to lift them over the rail. Secure connection to the ship's manifold is then effected.<sup>14</sup>

<sup>14</sup> Captioned photos of operating procedures at existing SPM facilities are included as pages 17a through 21a of the addenda.

Prior to unloading, manifold connections will be pressure tested by the ship's pumps, and during unloading, LOOP personnel on both platform and shore based control centers will continuously monitor unloading operations.

Unloading crude oil will be measured by transfer meters on the offshore platform and also at the onshore terminal. These meters will be continuously monitored by a computer located in the control building at the onshore terminal. Should the onshore meter show a predetermined quantity less than the offshore meter, the system will alarm, signalling operating personnel to identify the cause, and to shut down the operation in the event of a leak. Also, a simultaneous decrease in discharge pressure and an increase in flow rate at the platforms, indicating a line break, will sound an alarm and cause the pumping unit on that pipeline system to shut down automatically.

In addition, the computer directed supervisory control system will assist the operators in the local and remote control of equipment and monitoring of equipment operation, process stream flows, tank level and inventory; and in the safe and efficient operation of the entire system.

The tele-communication link will be by microwave from the offshore platform to the shore terminal and along the St. James Pipeline. A limited service marine radio station will provide contact with vessels as they enter the Gulf of Mexico. Marine VHF radio will be used during the berthing and unloading operations as well as UHF radio for personnel communications. Maintenance crews and operators will be in constant contact with the terminal by use of mobile VHF and UHF radio.

Pipelines from the marine terminal to the onshore storage facility will be corrosion protected, wrapped and anchored in concrete, and buried beneath the seabed, using the technology developed over many years of offshore pipelining. As an example of this technology, there are more than 1685 miles of in-service oil pipelines of 8" or more in diameter in the submerged lands and continental shelf offshore Louisiana.

The safety record of pipeline transportation far exceeds that of other modes of transportation. In great measure this excellent record is due to the development and adoption of codes and standards by industry and professional organizations.<sup>17</sup>

Storage tanks at the onshore terminal will be surrounded by dikes to contain potential spills in the tank farm area, and pipelines in the area will be equipped with valves to isolate, and pumps to clear, pipelines and tanks in the event of damage. The entire facility will be equipped with both fixed and portable fire fighting systems. Storage tanks will be equipped with floating roofs to minimize venting of hydrocarbons to the atmosphere. A system of dikes, pumps and directed drainage will collect oily waste water which will then be treated prior to returning to the outside environment.

Emergency hurricane security measures will be adopted. These will include filling empty tanks with water to secure them during hurricane winds and high water. The entire tank farm area will be enclosed in a dike higher than the incidence of any storm driven tide over a 100-year period.

During construction of the entire project, LOOP will inspect welding, structural materials and corrosion coating with radiographic and electrical test methods. All phases of the construction will be inspected by experienced personnel, and on completion of the facility installation, all parts of the system subject to pressure will be hydrostatically tested well above maximum operating pressure.

The use of supertankers and deepwater terminals would, by reducing the number of tankers arriving at existing U.S. ports and thereby reducing the probability of collisions or groundings, reduce the number of oil spill accidents. Representatives of CEQ have endorsed the offshore oil port concept as environmentally preferable to the use of small tankers and existing port facilities. Further, the LOOP facility, as an unloading terminal, would not be subject to the problems of disposal of oily ballast.

Although the potential for a major spill is greatly reduced, contingency plans must be drawn in the event of a spill. Spilled oil must be contained and re-

<sup>17</sup> Nineteen such codes and standards have been adopted by reference in the Department of Transportation regulations governing transportation of petroleum and petroleum products by pipeline, appearing in section 195.3 of Title 49 of the Code of Federal Regulations.

trieved. The American Petroleum Institute, the Environmental Protection Agency, the Coast Guard and industry are involved in extensive research programs to improve the effectiveness of oil spill clean-up in open water. Trained personnel and fast reaction clean-up equipment are presently available in the Gulf of Mexico through an industry cooperative operating in the immediate area of the LOOP facility.

In addition, industry and tanker operators assure financial liability for clean-up of spills. The "TOVALOP" program covers 95% of tankers serving the United States petroleum industry and provides for clean-up costs based on tanker tonnage up to \$10 million. Also, oil companies participating in "CRISTAL" provide coverage up to \$30 million for clean-up procedures immediately, without delays waiting for responsibility to be assigned.

This immediate response mechanism is in aid of the requirements of the Federal Water Pollution Control Act Amendments of 1972. This act provides for reimbursement from a vessel owner or operator, and an offshore facility owner or operator to the United States for clean-up costs. Vessel owners and operators are assigned liability of \$100 per gross ton or \$14 million, whichever is lesser, if the spill results from acts or negligence short of willful negligence or misconduct. In the latter case the act provides expressly that there is no limit on the liability of the owner or operator. As to owners and operators of offshore facilities, the liability is \$8 million when short of willful negligence or misconduct with no limit when the spill results from willful negligence or misconduct.

In planning the various facility elements, LOOP Inc. has maintained close contact, and continues to consult with local, state and federal agencies.

In studying alternatives for the marine terminal location including navigation fairways, we have been in contact with numerous federal agencies, including the U.S. Coast Guard, U.S. Army Corps of Engineers and the Bureau of Land Management of the Interior Department.

We have maintained contact with representatives of both the Environmental Protection Agency and the Council on Environmental Quality and have consulted with them concerning design criteria, facility location, and operating procedures.

To determine the preferred routes for offshore and onshore pipelines, consultations are continuing with representatives of U.S. Sport Fisheries and Wildlife, the Louisiana Department of Wild Life and Fisheries, Louisiana State University Center for Wetland Resources, members of the Lafourche Parish Port Commission and regional planning groups.

On March 30, 1972, LOOP Inc. presented its project to the Louisiana Deep Draft Harbor and Terminal Authority—a state agency created by the Legislature to promote and regulate deep draft port development in Louisiana. The Louisiana statute requires that the Authority promulgate an Environmental Protection Plan to insure protection of the state's environment in the event of the construction and operation of an offshore oil port. I submit a copy of the act creating the Louisiana Deep Draft Harbor and Terminal Authority and outlining the Environmental Protection Plan for the record of this hearing.

LOOP has recently initiated a twelve-month environmental assessment program, expected to cost up to one million dollars, designed to more than meet the requirements for environmental impact statements outlined by the National Environmental Policy Act of 1969. The objectives of LOOP's environmental program are to provide a comprehensive description of existing baseline conditions and to forecast the impact of the construction and operation of the proposed facility on these conditions. The study will be the most comprehensive ever undertaken in Louisiana's coastal zone, and the data will ultimately revert to the public domain for use by all citizens with an interest in this area.

For this study, the LOOP facility was divided into two basic components: 1) the area of the offshore unloading terminal, including the area of the pipeline route to shore; and 2) the area of the tank farm. Study of the tank farm are will also include study of the adjacent bays and estuaries. A separate study of the pipeline route from the tank farm to Capline is being undertaken under the same contractual agreement.

These organizations have been chosen to conduct these environmental assessment studies. Nicholls State University located at Thibodaux, Louisiana, will furnish seven experts in chemistry or biology and will be responsible for all offshore chemical and biological investigations. The areas to be studied by

Nicholls consist of the offshore terminal, and the pipeline route from the unloading area to shore. Bottom trawling will be employed monthly at each of fifteen stations in the area to determine the species composition, relative abundance and seasonal distribution of the fishes and large benthic invertebrates, primarily crustacean. In addition, the water column and bottom sediment will be sampled for benthics, zooplankton, phytoplankton and chemical analysis.

The Louisiana State University Center for Wetland Resources will conduct the offshore physical oceanographic studies and the complete onshore environmental assessments of the tank farm site, the adjacent bays and estuaries and the pipeline route to Capline. LSU will furnish nine investigators as well as six research associates.

As part of the oceanographic study, a general survey will be made of the seasonal variability of the circulation patterns in the areas of the Gulf of Mexico affected by the proposed facility. In addition, a detailed study will be made utilizing moored current meters to determine the velocity structure in the vicinity of the proposed offshore terminal site. Monthly samplings will be made of temperature and salinity distributions in the region from the Mississippi Delta to the area of the proposed offshore site and from the shore to the 130-foot depth contour. Net drift from the vicinity of the proposed site and from the shore will be evaluated by drift card releases, drogoue tracking and dye releases.

In addition to the offshore physical study, LSU will have responsibility for the environmental study of the onshore tank farm site and pipeline route. During the study, LSU will identify all pertinent present, past and future land uses and provide a detailed description of the topographic, physiographic and geologic features within the area of the proposed facilities. On a bi-monthly basis the study will identify and quantify all terrestrial and aquatic organisms in the various habitats involved, including the near-shore Gulf bottom, estuarine water bodies, natural levee forests, and back swamp forests.

At the close of the program, LSU will prepare the final report and interpret all data and results, including those data obtained by Nicholls State University.

In addition to Nicholls State University and LSU, LOOP has retained the firm of Dames & Moore to serve as consultants to provide guidance as required for environmental report planning and preparation. Total cost of LOOP's environmental assessment program will be as much as one million dollars.

A common objective of state and Federal governments and the oil industry must be to assure that the United States has the ability to receive sufficient supplies of foreign petroleum to meet energy requirements.

It is the position of LOOP Inc. that Federal legislation pertaining to the installation and operation of Deep Draft Petroleum Tanker Unloading Terminals should be in the form of a single-purpose licensing law. It is not unnecessary to amend existing statutes in a patchwork fashion, nor is it necessary to have a multiplicity of statutes with each addressing itself to only one isolated aspect of the subject. Instead, we suggest the establishment of a single Federal licensing authority which would be the focal point for environmental assessment under the National Environmental Policy Act. It should operate under Congressional directive to establish a simple licensing procedure leading to an expeditious administrative decision following concomitant consideration of energy needs and environmental impact. In this Act provision can be made for consideration of the interests of the states most affected, those which become hosts to ancillary facilities and activities.

Within this framework we offer particular observations as to S 1751, the proposed "Deep Water Port Facilities Act of 1973".

This bill proposes a licensing law. It would establish the Department of the Interior as the focal point for environmental assessment under the National Environmental Policy Act. It addresses the subject of consideration of the interests of host states. It recognizes the need for constructive action to permit receipt of crude oil and petroleum products in an economically sound manner to help satisfy the nation's energy needs. In all of these respects the bill is directed toward a solution of the problem which we believe the Congress is to solve.

There are some features of the bill which we would prefer to see handled in a different fashion.

The bill begins with an amendment to the Outer Continental Shelf Lands Act to incorporate an accommodation provision and to broaden the provisions

concerning pipelines. If a accommodations provision is necessary it can be incorporated into the licensing law without amendment of the Outer Continental Shelf Lands Act. The pipelines to carry crude oil or petroleum products from the marine facilities of a Deep Draft Petroleum Tanker Unloading Terminal should be included in the license rather than be separately authorized. These pipelines are an integral part of the facility; their only reasonably practical use is for carrying crude oil or petroleum products unloaded from large tankers.

The declaration of policy and purpose could more effectively and directly address the particular problem to be solved. We recommend that the Act expressly recognize that existing port facilities are unable to accommodate the large ships carrying crude oil and petroleum products and that there is a national interest in supplying energy requirements through receipt of the crude oil and petroleum products carried in such vessels.

This bill is abroad scale commodities bill and provides for operations in import, export and coastwise trade. The particular problem to be solved at this time is receipt of crude oil and petroleum products, a single purpose. A single-purpose Act would therefore seem appropriate. The term "Offshore Oil Port" could be substituted for the term "Deep Water Port Facility" to show the single purpose of the Act and the definition of this term could reflect that the single purpose is to provide for the unloading of crude oil and petroleum products beyond the Territorial Sea. If found to be necessary to solve other problems in foreign trade of the United States, additional Acts can be designed to cover the specific needs and considered by the Congress.

We think it would be helpful to have provisions respecting the qualifications of applicants and specification as to the content of applications.

The term of the license should be for a limited initial period for construction and for a secondary period to be for so long as the Port is used, maintained and operated. Such a provision is more related to the facts of installation and use than is the term provision contained in the bill.

In our judgment the bill could more precisely state the Congressional directive to the Secretary as to the making of a decision. The Act should specify the matters which the Secretary is required to consider in the issuance of a license. Among those matters are concomitant consideration of energy needs and environmental impact, navigational safety, and the legitimate interests of host states.

The administrative procedure proposed in the bill is innovative. In proper circumstances this innovation would be commendable. However, recognizing that the probable number of applications under an Act pertaining only to the licensing of Offshore Oil Ports would be relatively small, particular consideration is suggested of the use of the adjudicatory public hearing on the record for handling these applications. Certainly the necessity for a broad regulatory system is not present. It is further suggested that judicial review should be available to parties who participated in the administrative proceedings, who are aggrieved by the administrative decision, and who otherwise have standing to sue.

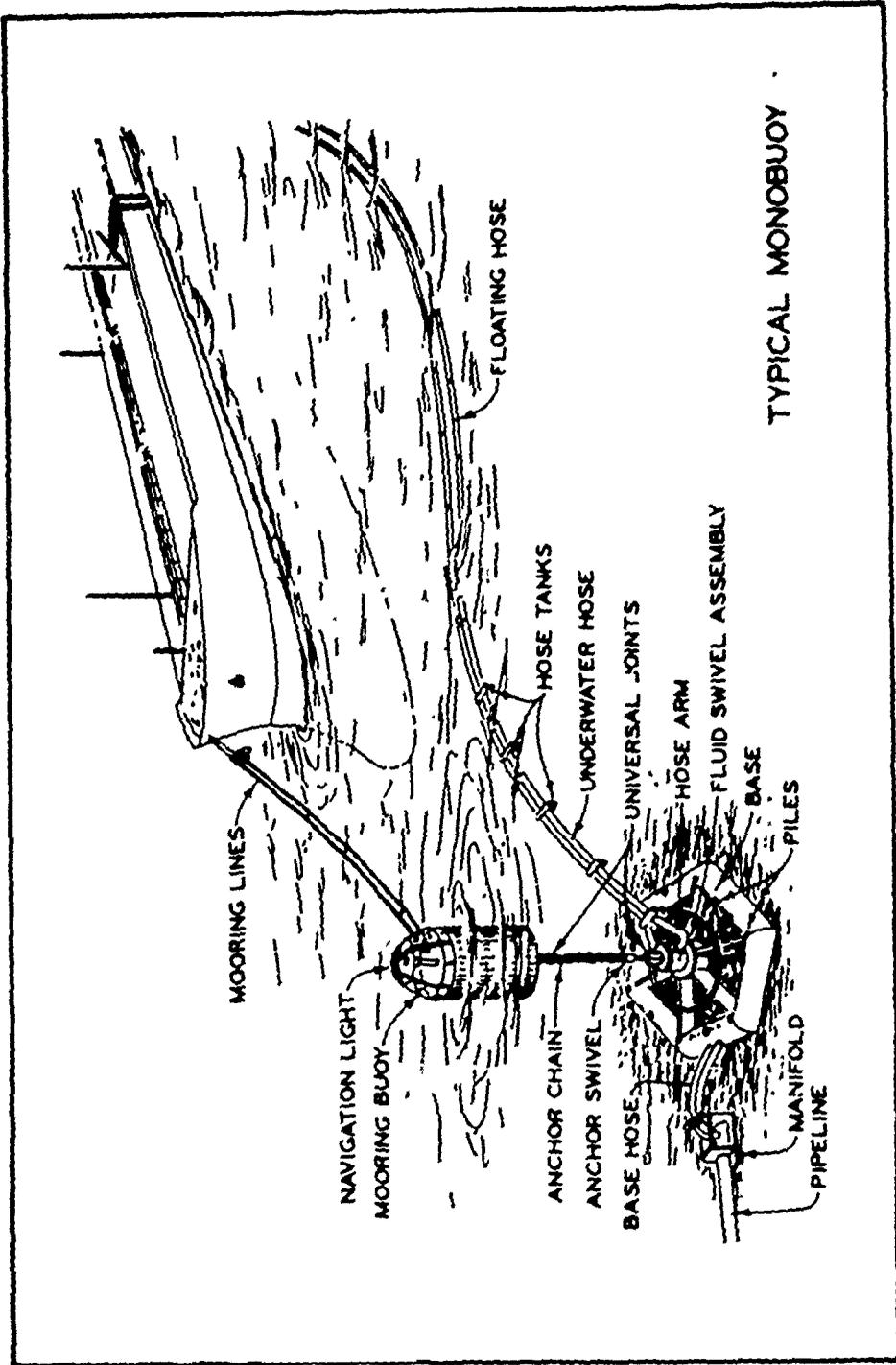
The bill contains no provisions regarding compensation for injury of workmen, navigational safety, labor disputes or general judicial jurisdiction. Perhaps it was thought that amendment of the Outer Continental Shelf Lands Act would take care of these matters. Coverage of them seems necessary.

The operation of an Offshore Oil Port involves the transportation of crude oil or petroleum products by pipeline. Consideration of application of Part I of the Interstate Commerce Act to this activity is appropriate.

As to extension of federal law it may not be necessary for the Act to contain a partial list of references to existing laws. It should be sufficient to apply the Constitution and laws and treaties of the United States. The application of the Constitution, laws and treaties can be in such manner as if the facilities were located in an area of exclusive Federal jurisdiction within a state. This application of laws need not be in such a manner as to assert sovereignty over a part of the high seas.

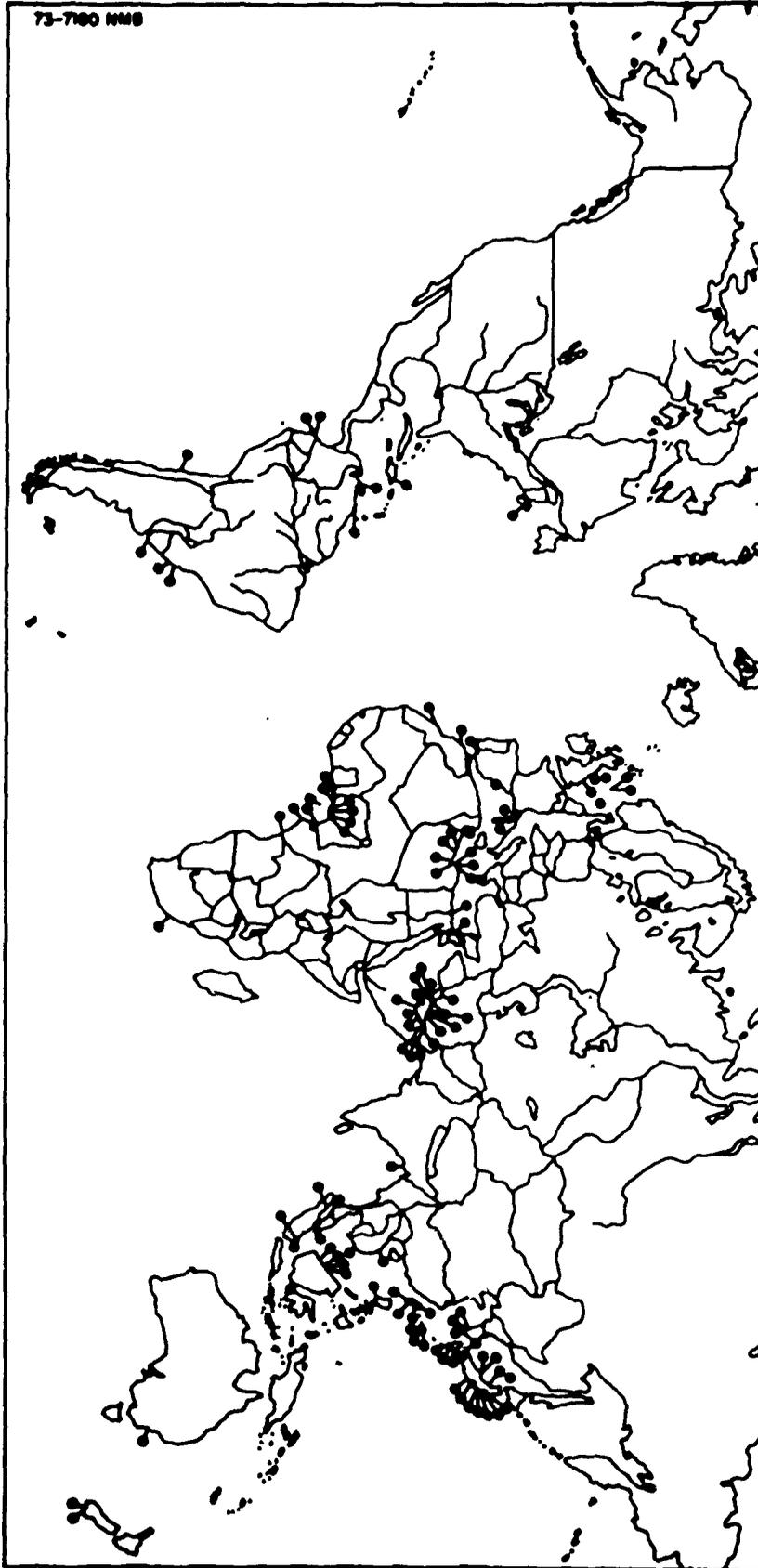
The Act should not infer any question about the effectiveness of legislation by the Congress on this subject without treaties. Congress has the power to legislate on this subject as within the contemplation of existing international conventions to which the United States is a party.

Thank you for your interest in our project. If you have any questions I will be happy to answer them.

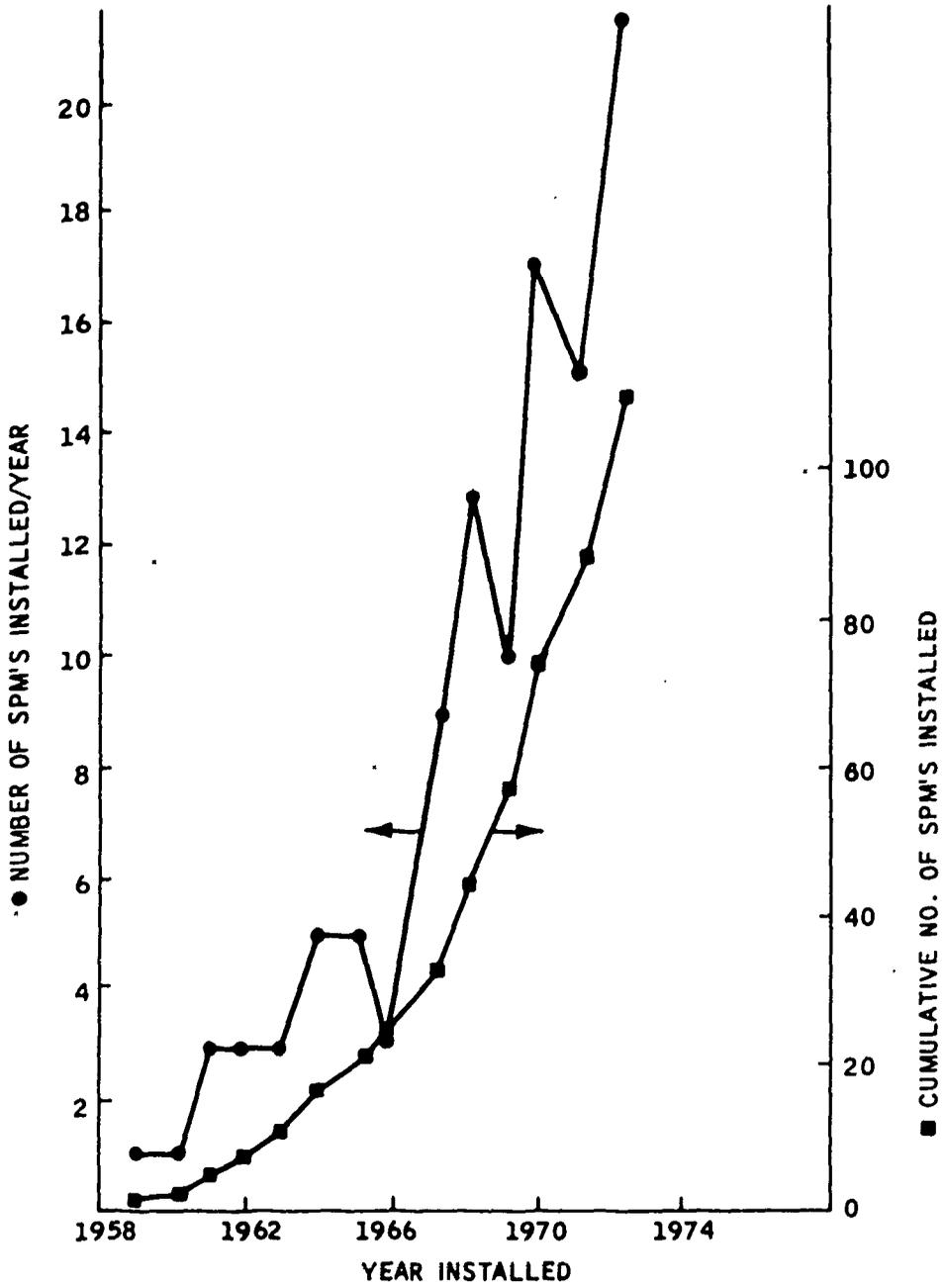


TYPICAL MONOBUOY

WORLD-WIDE SPM INSTALLATIONS



SPM INSTALLATIONS



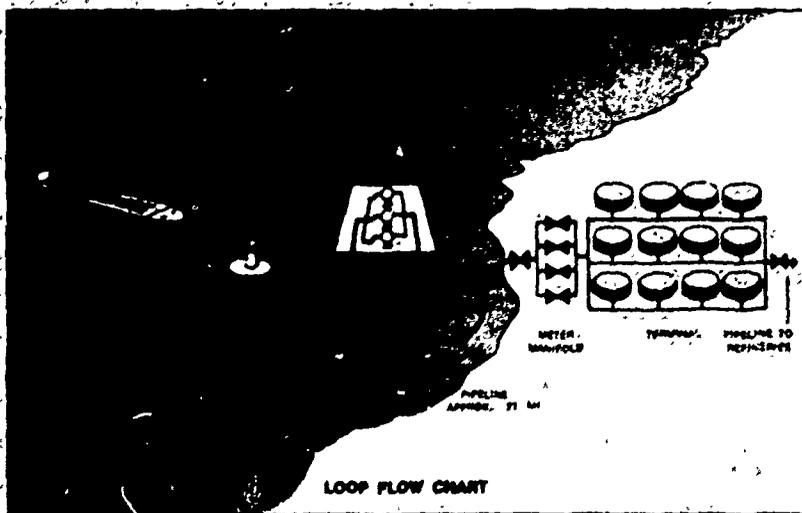
## SUMMARY OF INSTALLED OR PLANNED SINGLE POINT MOORING INSTALLATIONS

No.	Year installed	Country	Port	Owner	Designer	Maximum vessel size	Hose system number-size (inches)
1	1959	Sweden	Dalarna	Swedish Navy	IMODCO	3,000	1-4
2	1960	Malaysia	Miri (Sarawak)	Shell	SBM	45,000	2-8
3	1961	Italy	Ravenna	SAROM	IMODCO	75,000	2-10
4	1961	Japan	Niigata	Shell	SBM	65,000	1-20
5	1961	Spanish Sahara	El Aaiun	CEPSA	IMODCO	5,000	1-8
6	1962	Germany	Cuxhaven	West German Navy	do	2,500	1-4
7	1962	Italy	Fiumicino	Purifina	do	65,000	2-12
8	1962	Libya	Brega	Esso	Esso F. R. Harris	100,000	Leading arm
9	1963	Japan	Oita	Kyushu Oil	IMODCO	100,000	2-12
10	1963	Malaysia	Port Dickson	Shell, Esso	SBM	90,000	2-16
11	1963	Spanish Guinea	Bata	CEPSA	IMODCO	20,000	2-8+2-6
12	1964	Italy	Fiumicino	Purifina	Dalmine	100,000	1-16
13	1964	Japan	Yokkaichi	Shell	Mitsubishi	200,000	2-16
14	1964	do	do	do	do	45,000	2-12+1-6
15	1964	Malaysia	Miri, do	do	SBM	65,000	2-12+1-6
16	1964	do	do	do	do	100,000	1-16
17	1965	England	Nore Estuary	British Petroleum	B. P. Harlan Wolff	100,000	1-16
18	1965	Gabon	Gamba	Shell	SBM	120,000	3-12
19	1965	Japan	Chiba	Maruzen Oil	IMODCO	100,000	3-16
20	1965	Libya	Es Sider	Oasis Oil	SBM	200,000	2-16
21	1965	Qatar	Hailu	Shell	do	75,000	2-12+1-8
22	1966	Korea	Ulsan	Gulf	IMODCO	225,000	2-20+2-8
23	1966	Oman	Mina Al Fahal	Shell	SBM	225,000	2-20+2-8
24	1966	do	do	do	do	45,000	1-12
25	1967	Bangladesh	Chittagong	Chittagong Port Authority	IMODCO	100,000	2-12
26	1967	Japan	Kaohiba	U.S. Navy	do	150,000	1-16+1-12
27	1967	Kuwait	Ras Al Kattijah	Arabian Oil	McDermott	4,500	1-4
28	1967	Nigeria	Anapa	Nidagas	IMODCO	100,000	2-8
29	1967	Oman	Mina Al Fahal	Shell	SBM	100,000	2-12+1-10
30	1967	Philippines	Subic Bay	U.S. Navy	IMODCO	100,000	2-16
31	1967	Spain	Huelva	Gulf	SBM	50,000	1-12
32	1967	Taiwan	Tai-Chung	U.S. Army	IMODCO	8,000	1-4
33	1967	USA (Louisiana)	Gulf Coast	Karr-McGee	McDermott	100,000	2-16
34	1968	Angola	Cabinda	Gulf	SBM	100,000	2-16
35	1968	Egypt	Ras-el-Shaqiq	WEPKO	do	100,000	2-16
36	1968	Japan	Hokotaki	U.S. Navy	IMODCO	100,000	2-16+2-12
37	1968	do	do	Shell-Mitsubishi Oil	Mitsubishi	250,000	2-20
38	1968	do	Hakodate	Asa Oil	IMODCO	35,000	2-16
39	1968	do	Yokkaichi	Dai-kyo Oil	Mitsubishi	200,000	2-20
40	1968	Korea	Yosu	Honam Oil, Calfax	IMODCO	100,000	2-16
41	1968	do	Ulsan	Korea Oil	do	200,000	2-16+1-12

No.	Year Installed	Country	Port	Owner	Designer	Maximum vessel size	Hose system number-size (inches)
42	1963	Libya	Zueltina	Occidental	SBM	100,000	1-24
43	1963	Nigeria	Escravos	Gulf	IMODCO	100,000	3-16
44	1963	Taiwan	Keelung	Chinese Petroleum	do	100,000	2-16+1-10
45	1963	do	Tai-Chung	U.S. Air Force	do	75,000	1-12
46	1963	Venezuela	Maron	CVP	SBM	100,000	2-16
47	1969	Brazil	Tramanda	Petrobras	do	105,000	2-16
48	1969	Japan	Toyama	Japan Sea Oil	IMODCO	150,000	2-16
49	1969	do	Yokohama	Asia Oil	Mitsubishi	200,000	2-20
50	1969	Libya	Brega	Esso, Van Heuten	do	300,000	1-24
51	1969	do	Zueltina	Occidental	do	150,000	1-24
52	1969	do	do	do	do	240,000	1-24
53	1969	Nigeria	Forcados	Shell B.P.	do	240,000	1-20
54	1969	do	do	do	SBM	20,000	2-8
55	1969	South Vietnam	Tanmy	U.S. Navy	McDermott	150,000	2-16
56	1969	United Arab Emirates	Dubai	Continental	SBM	40,000	1-16+1-12
57	1970	Argentina	Puerto Rosales	YPF	IMODCO	350,000	1-24+2-16
58	1970	Canada	St. John, N.B.	Irving Oil	SBM	100,000	2-12
59	1970	Indonesia	Pangkalin Suro	Pertamina	IMODCO	130,000	2-16
60	1970	Iran	Cyrus Field	IPAC	SBM	150,000	1-16
61	1970	do	Iman Hassan	SIRIP/AGIP	IMODCO	65,000	2-20
62	1970	Israel	Ashkelon	Etat-Ashkelon Pipeline	do	200,000	2-20
63	1970	Japan	Atsumi	Chubu Electric	Mitsubishi	220,000	2-16
64	1970	do	Hemeli	Idemitsu Oil	IMODCO	100,000	2-12
65	1970	Japan (Okinawa)	Makousaku Bay	Toyo Oil, Galtex	do	55,000	2-12
66	1970	do	Tengen	U.S. Army	do	100,000	2-10
67	1970	Japan	Toyama	Nihon Oil	do	200,000	2-20
68	1970	do	Ube	Seibu Oil	Mitsubishi	255,000	2-20
69	1970	Libya	Es Sider	Oasis Oil	SBM	300,000	2-42
70	1970	do	Ras Lanuf	Mobil	do	100,000	1-20+2-8
71	1970	Morocco	Mohammedia	RAPC	IMODCO	250,000	2-24
72	1970	Singapore	Durbin	Esso	do	200,000	2-20
73	1970	South Africa	Beitany Bay	Shell	SBM	170,000	3-12
74	1971	Australia	Tramanda	Maritime Services Board	do	200,000	1-24
75	1971	Brazil	Tramanda	Petrobras	do	250,000	2-16
76	1971	Brunei	Seria	Shell	do	209,000	2-20
77	1971	Chile	Quintero Bay	ENAP	do	209,000	2-20

78	1971	Indonesia	Balikpapan	Union Oil	250,000	2-20+1-16
79	1971	do	Java Sea	ARCO	45,000	1-8
80	1971	do	do	IMODCO	55,000	2-16
81	1971	Italy	Porto Torres	Sardelli	255,000	2-2
82	1971	Japan (Okinawa)	Makigusuku Bay	Esso	250,000	2-24
83	1971	New Zealand	Waipipi Point	Marcopa Corp	75,000	2-12
84	1971	Nigeria	Qua Iboe	Mobil	255,000	2-24
85	1971	Norway	North Sea	Phillips	150,000	1-6
86	1971	do	do	do	60,000	1-6
87	1971	Taiwan	Kaohsiung	Chinese Petroleum	250,000	2-20
88	1971	United Kingdom	Humber River	Continental	210,000	1-24
89	1972	Dominican Republic	Santo Domingo	Shell	300,000	2-16+1-12
90	1972	United Arab Emirates	Das Island	BP	100,000	1-20+1-16
91	1972	Ecuador	Porto Balao	IMODCO	250,000	1-24+1-20
92	1972	do	do	SBM	145,000	2-20+1-12
93	1972	Indonesia	Java Sea	ARCO	250,000	1-24+1-10
94	1972	Kuwait	Ras al Kharjeh	Arabian Oil	70,000	1-12
95	1972	New Zealand	Tahora	New Zealand Steel Corp	328,000	2-24
96	1972	Nigeria	Escravos	Shell	300,000	2-24, 1-12
97	1972	Qatar	Maluf	Shell	300,000	2-24
98	1972	do	Um Said	Qatar Petroleum Co	300,000	2-24
99	1972	Saudi Arabia	Zuluf	ARAMCO	250,000	2-24+1-16
100	1972	do	do	do	250,000	2-24
101	1972	Tanzania	Dai es Saliam	East African Port Authority	100,000	2-20
102	1972	Trinidad	Galata Point	AMOCO	250,000	2-20
103	1972	United Arab Emirates	Dubai	Dubai Petroleum	500,000	2-24
104	1972	Spain	Ampeza	Shell	60,000	2-10
105	1972	Italy	Genoa	Port Authority	500,000	2-20+2-12
106	1972	do	North Sea	Gulf	60,000	2-20+2-12
107	1972	Tunisia	Gulf of Gabes	Aquitaine	250,000	2-8
108	1972	Nigeria	Brass Terminal	AGIP	250,000	1-20

- 1 Out of service.
- 2 Out of service, now used as part of multi-buoy berth.
- 3 Out of service.
- 4 Filled mooring tower, underwater loading arm.
- 5 Out of service, transferred to 59.
- 6 Filled mooring tower.
- 7 An extra buoy was furnished to replace 2, 15, and 16 for maintenance.
- 8 Experimental, 4 taunt anchor legs, out of service.
- 9 Out of service, replaced by 69.
- 10 Storage vessel, out of service.
- 11 Liquid petroleum gas facility.
- 12 Out of service, replaced by 500,000 deadweight tons.
- 13 Out of service, replaced by 45 designed for larger vessel.
- 14 Storage barge, out of service.
- 15 Out of service.
- 16 Single anchor leg mooring.
- 17 A second buoy was delivered for installation but was not installed.
- 18 Transferred from 9.
- 19 Storage vessel Paragrad.
- 20 Replaces 21.
- 21 Single anchor leg mooring.
- 22 Iron ore slurry facility.
- 23 Special production field mooring, 230 feet water.
- 24 Special production field mooring, 230 feet water.
- 25 Storage vessel.
- 26 Storage vessel.
- 27 Filled mooring tower.

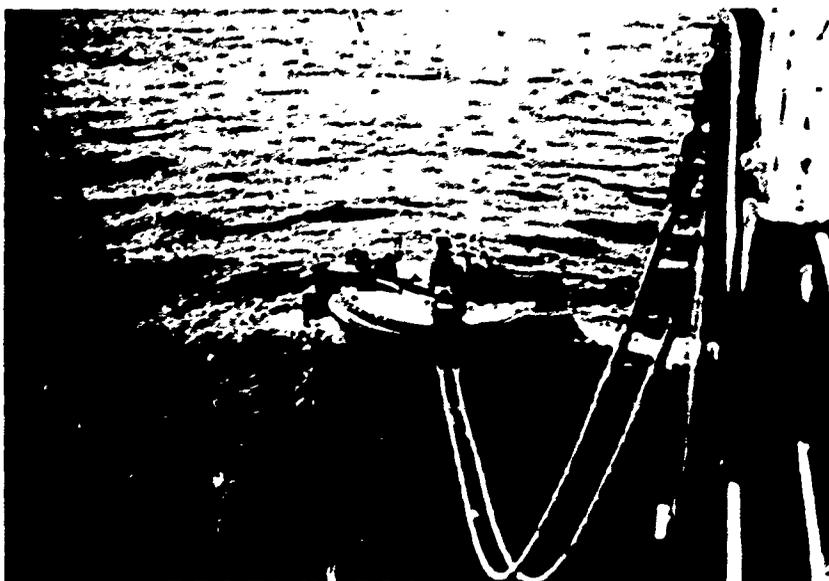


The use of offshore terminals of this type is commonplace, particularly at crude loading ports outside the United States. They have been used for a number of years with excellent results, in areas with operating

conditions much like those found in the Gulf of Mexico, where wind and wave conditions would cause a fixed-platform type of facility to be out-of-service more than 50% of the time.



Typical SALM-type of SPM. Hose is connected to a swivel at the underwater base of the SPM, and remaining hose floats on the top of water. Each section of hose is approximately 30 feet in length. Tanker is connected to SPM buoy with bow mooring lines, and is free to rotate 360° around the buoy in response to wind and wave conditions. The SALM buoy is attached to the seabed with a single anchor leg.



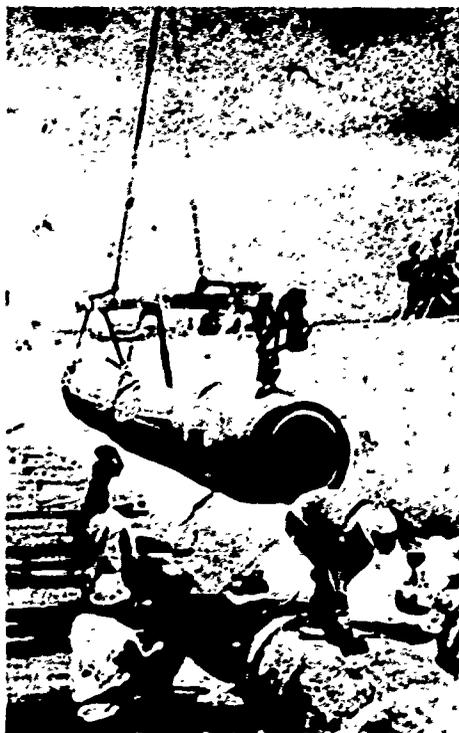
Typical CALM-type of SPM. Hose is connected to a rotating collar on the floating buoy. The CALM is anchored to the seabed with four widely separated chains converging at the base of the floating buoy.



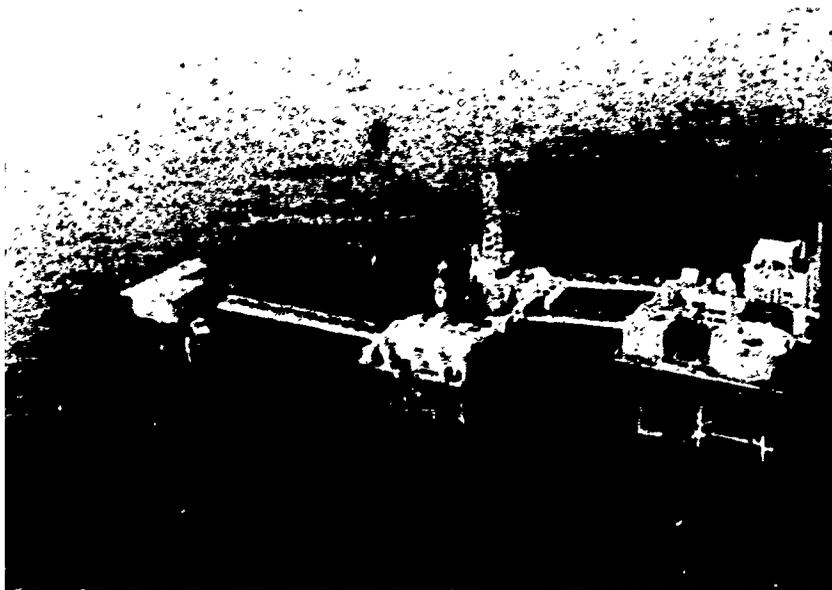
Floating hoses connected to tanker manifolds. Large drum-shaped object in foreground is a flotation buoy for hose strings.



Drip pans are located under manifold valves to catch any oil leakage during hose connections.



30-foot lengths of hose being connected prior to being attached to SPM. Hose diameter is approx. 24".



A three unit operations platform in Gulf of Mexico waters offshore Louisiana.



An aerial view of a typical tank farm. Note the "floating" roof design of the tanks on the left. Tank roofs float on the petroleum, rising and falling with the liquid level in the tank, thus retarding evaporation and minimizing the venting of hydrocarbons to the atmosphere. Tanks are enclosed in dikes, and a system of pumps and directed drainage collects oily waste water for treatment prior to release to the outside environment.

## PLANNED SINGLE POINT MOORING INSTALLATIONS 1973+

Approximate installation date	Country	Port	Owner	Designer	Maximum vessel size	Mooring system number-size (inches)
1973	Trinidad	Pointe a Pierre	Texaco	IMODCO	265,000	2-24+1-12
1973	Oman	Mina Al Fahal	Shell	SBM	300,000	2-20+1-12
1973	United Kingdom	Humber River	Continental			
1973	Mexico	Tuxpan	Pemex	IMODCO	60,000	2-16
1973	Indonesia	Djatabarang	Pertamina	do	150,000	2-20, 1-12
1973	Taiwan	Chu Wei	CPC	SBM	250,000	2-20
1973	Congo	Djeno	ELF-Congo	do	250,000	2-20
1973	Nigeria	Bonny	Shell BP	Shell	300,000	1-24
1973	do	do	do	do	300,000	1-24
1973	North Sea		Shell	do	50,000	1-10
1974	Egypt	Suez	E.G.P.C.	SBM	250,000	2-24
1974	do	do	do	do	250,000	2-24
1974	do	do	do	do	120,000	2-20
1974	do	Alexandria	do	do	250,000	2-24
1974	do	do	do	do	120,000	2-24
1974	do	do	do	do	120,000	2-20
1974	do	do	do	do	120,000	2-20
1974	do	do	do	do	120,000	2-20
1974	Singapore	Singapore	Shell	do	300,000	
1974	Saudi Arabia	Juaymah	ARAMCO	McDermott	500,000	2-24+1-12
1974	do	do	do	do	500,000	2-24+1-12
1974	do	do	do	do	500,000	2-24+1-12
1974	France	Frontignan	Mobil		275,000	
	India	Kudrimukh	Marcona (Ore)			
	Korea	Pohang	U.S. Army			
	Brazil	Sao Francisco	Petrobras		200,000	
	United Kingdom	Anglesey	Shell		540,000	
	do	do	do		540,000	

1 Will replace 29.

STATEMENT OF J. E. ARNOLD, MANAGER, DISTRIBUTION, PHILLIPS PETROLEUM CO.  
AND CHAIRMAN, SEADOCK PUBLIC AFFAIRS COMMITTEE

INTRODUCTION

Mr. Chairman, I am J. E. Arnold, Manager of Distribution of Phillips Petroleum Company and Chairman of the Seadock Public Affairs Committee. I am pleased to be here today on behalf of Seadock. The purpose of the Seadock project is to develop a deepwater facility capable of unloading petroleum imports from the new 200,000 to 500,000 deadweight ton class of very large crude carrier or VLCC. The proposed location is 25 to 30 miles offshore of Freeport, Texas. We believe that Seadock is in the public interest because it offers significant environmental advantages as well as cost savings to the consumer. Today I will describe what we propose to do and bring you up-to-date on the status of our project.

Seadock's membership presently includes eleven oil companies and one petrochemical company. The oil companies are: Amoco, Atlantic Richfield, Cities Service, Continental, Crown Central, Exxon, Mobil, Phillips, Shell, Texaco and Toronto Pipeline. The petrochemical company is Dow Chemical.

Seadock will be financed by private industry, and no federal or state subsidy will be required. Industry has the technical expertise and financial ability to design, build and operate the Seadock terminal; and we believe this is the role which industry should play.

Seadock will be a common carrier and provide a service to all who need to use it, both owners and non-owners alike. It will publish and file rules and regulations which are common to all its shippers. Its operations are envisioned, including tariff charges, will be regulated by the Interstate Commerce Commission. Although membership in Seadock is open and we expect other companies to join the project, we are trying to anticipate the needs of those companies who have not chosen to participate by designing extra capacity into the system and engineering the means for future expansion.

Today I will discuss four main topics: First, I will briefly review the long term needs for and the importance of Seadock and similar projects to the logistics of the industry. Then I will describe in more detail the Seadock

project, both the facilities involved and its operations. Next I will discuss the positive effects that we believe the combination of VLCC's and deepwater terminals will have on our economy and environment, including the tanker procedures and terminal design features which combine to make Seadock an environmentally safe operation. And finally, I will close with some comments pertaining to the type of Federal legislation which we believe is needed to make the Seadock project a reality.

#### LONG TERM NEED FOR DEEPWATER TERMINALS

Deepwater terminals will supply a need that exists not only during the next decade but for many years beyond. Based on the recent two year study of the National Petroleum Council, nuclear power and synthetic fuels are expected to supply 16% of total U.S. petroleum demand by 1985 based on the most optimistic assumptions possible considering the problems being encountered in siting and construction. This compares to nuclear power's approximate 1% share of total energy demand today. Despite this rapid growth in other fuels, petroleum imports are expected to reach 15.0 million BPD by 1985. Hopefully during the decade following 1985, other fuels will be able to slow down the growth rate of oil imports; but it is highly unlikely that the volume of oil imports could be held constant during this period, much less be reduced. The need for deepwater terminal facilities should exist throughout the balance of this century.

#### CRUDE AND PRODUCT LOGISTICS

Due to the current high level of overwater crude imports and somewhat declining domestic production, deepwater terminals are needed to supply existing refinery capacity as well as expansions and new refineries. The crude oil imported through Seadock will be utilized by Gulf Coast and Mid-Continent refineries. This will be accomplished by permitting domestic crude oil currently flowing to the Gulf Coast to be diverted through existing pipelines to Mid-Continent refineries. In addition, existing pipelines may be converted or reversed; and at least one new large throughput pipeline is being considered to directly move crude oil from Seadock to the Midwest. It is estimated that about one million BPD out of the three million BPD of crude oil expected to move through Seadock in 1980 will effectively supply Mid-Continent or Midwest refineries. Total petroleum imports are projected at 10.5 million BPD by 1980.

Products refined on the Gulf Coast from crude oil handled through Seadock will also be moved to other areas of the U.S. such as the Midwest, Southeast and Atlantic Coast. Today over 50% of the petroleum products processed on the Gulf Coast are transported to these other areas, and this is expected to continue in the future even with significant refinery growth in the Northeast.

The above illustrates the importance which deepwater terminals have on the logistic decisions of the industry. Decisions on new inland transportation systems and refinery expansions are closely related to the decisions on deepwater terminals. A legislative program to provide for a timely decision on deepwater terminal projects is urgently needed so that these related decisions may also proceed on schedule and assure adequate supplies of petroleum energy to our nation's industries and consumers.

#### EFFECT ON EXISTING PORTS

Deepwater terminals will complement existing port facilities and encourage their growth by providing petroleum raw materials at economical transportation costs to existing refineries, petrochemical plants and industries. Moreover, movements of refined products, chemicals, specialized feedstocks, grains, etc., through existing ports are expected to increase with or without deepwater terminals. Separate from the deepwater terminal legislation, attention needs to be directed toward modernization and expansion of existing ports to handle anticipated increasing commerce.

Some proponents of deepwater terminals have advocated "superports" which would handle dry bulk products, such as iron ore, coal and grain, as well as petroleum. We do not favor multi-use deepwater terminals. Most studies of

this concept indicate that there is relatively little economic incentive for using superports for dry bulk products, since they move in relatively small quantities compared to petroleum and because their point of origin and destination are much more diverse. In addition, the majority of dry bulk carriers have shallow enough drafts to permit the use of existing ports. Multi-purpose ports pose added environmental risk since the additional ships with their different types of cargo would cause both congestion and complication of equipment and operating procedures, resulting in an increased possibility of accident. Since human error is the major cause of oil spills, simplification of operating procedures is an important factor in reducing the chances of an accident. As previously mentioned, separate consideration should be given to dry bulk products through modernization of existing ports while deepwater terminal legislation should be directed toward single purpose petroleum facilities.

#### THE SEADOCK PROJECT

There are few places on the shores of the United States where deep water is found close to land. In the Gulf of Mexico, the gently sloping Continental Shelf does not provide adequate deep water closer than 20 or 30 miles from shore in most locations. Dredging on a massive scale to provide deep water near shore is not only very costly but raises serious unresolved environmental questions. Providing conventional-type berths well offshore would require costly breakwaters or artificial islands. Seadock has chosen the SPM (single-point mooring) design for its berthing facilities in order to avoid both the environmental disruption and the high costs associated with dredging or the construction of artificial islands or breakwaters. In a recent study, the Corps of Engineers reached the same conclusion.

With the SPM system, the tanker moors at a buoy and oil is then pumped from the tanker through a floating hose to an SPM and from there into an undersea buried pipeline to shore. I would like to point out that this is a proven concept since over 100 SPM's have been installed and successfully operated worldwide since the first application in 1959. The single-point mooring has the advantage of being operable in weather that would put other types of terminals out of service. The tanker is free to weathervane about the buoy, facing into the wind, current and waves to keep mooring line and other forces to a minimum. These buoys are sturdy and safe.

#### OPERATING EXPERIENCE

At the Seadock single-point mooring buoy, VLCC's will be able to moor in maximum seas of 6' to 8' with a mooring craft handling the mooring lines and hoses. Once moored, the VLCC will be able to operate in significant seas of up to 12' while pumping oil ashore. Historical data from the Institute of Storm Research shows that significant seas less than 12' will occur on the average of 99.6% of the time at the Seadock location. The buoys themselves would be designed to withstand hurricane conditions; however, the tanker would have to stop pumping, close its valves and disconnect from the hoses and mooring lines under such conditions.

In the North Sea, one of the Seadock companies has demonstrated, as a result of two years of successful experience, the ability to self-moor in seas up to 16' and once moored, to operate in seas up to 24'. Although different operating equipment and conditions are involved, it is due to rapidly improving techniques such as this that the above Seadock operating criteria are considered conservative.

The operation of Seadock will benefit from the experience gained at some of the newer oil terminals around the world. The Milford Haven terminal, located in a national park in England, has operated with a spill rate of less than one-half barrel for every one million barrels handled according to a recent government report. In a region of Ireland noted for its beaches, the Bantry Bay terminal has handled well over 500 million barrels of oil with no measurable pollution. Single-point mooring installations, similar to those Seadock will use, have operated with spill rates as low as Milford Haven and Bantry Bay.

A survey of eight (8) SPM unloading terminals operated by the Seadock companies and located throughout the world shows average spill rates of less than three-quarters barrel for every one million barrels handled. These terminals represent a cumulative experience of 30 years and have unloaded over one billion barrels of oil. These operations will illustrate how proper design and adherence to good operating procedures have resulted in remarkably pollution free operations. With new technology and expertise which have been developed over the years, we are certain these accomplishments can be equaled and exceeded by U.S. deepwater terminals.

#### SITE AND FACILITIES

Seadock plans to build the marine facilities at a location 25 to 30 miles offshore of Freeport, Texas. This is essentially the same location recommended by the Corps of Engineers in its study. Seadock studied a number of offshore locations ranging all the way from Corpus Christi to Port Arthur. Freeport provides an optimum site near Gulf Coast refining centers where naturally deep water is relatively close to land and pipelines to shore can be constructed with minimum impact on the delicate coastal environment.

At least three SPM's are planned initially. These buoys will be in up to 110 feet of water so as to be capable of handling ships in the 500,000 ton class. These buoys will be connected to a pumping platform by buried pipelines capable of unloading rates of 125,000 barrels per hour or more. Buried pipelines will move the oil from the platform to an onshore terminal or tank farm.

The initial offshore facilities will be equipped with sufficient pumping capacity to move the crude the 35 to 40 miles to the Freeport onshore terminal. An offshore pumping and control platform which is very similar to existing production platforms in the Gulf will also house the living quarters for the offshore crews and will be equipped with a weather station and monitoring and communication facilities. Additional platforms, buoys and lines to shore will be added as needed. The modular design of Seadock insures easy expansion so that future, deeper draft ships can be accommodated.

Crude oil arriving at the Freeport terminal through the pipelines from the platform will be metered and diverted into large tanks. The terminal will provide segregated storage for the various crudes shipped. The tanks will be 500,000 barrels or more in capacity and will be equipped with floating roofs to control hydrocarbon vapor emissions. The onshore terminal will also house the primary communications and control center.

From this terminal, the oil will be moved by existing and new pipeline systems to the refineries. Seadock is coordinating its studies with others engaged in development of the most efficient pipeline system for distribution to the refineries.

Systems such as Seadock require a substantial investment. The segment of Seadock extending from the buoys to the onshore terminal is referred to as the marine portion. Our current estimate fixes its cost at \$310 million. The Freeport terminal is estimated to require an ultimate expenditure of \$80 million. Beyond Seadock, a substantial additional investment will be required for the pipeline distribution network to refineries. Seadock expenditures to date have already amounted to about \$1 million for organizational and legal activities and preliminary engineering and environmental work. By the end of the year, these expenditures will reach \$3 to \$4 million.

A cost comparison may be made between Seadock and other types of offshore installations by utilizing that portion of Seadock's marine investment which includes the platform, monobuoys and connecting pipelines or about \$150 million. The remainder of the Seadock \$310 million marine investment consists of the pumping equipment and pipelines to shore which would also be required for other types of offshore installations. Using the \$150 million Seadock SPM investment as the base, it is estimated that a fixed pier installation with protecting breakwater would require three times the Seadock expenditure and a manmade island and breakwater between five and six times the Seadock expenditure.

An estimate has also been made of the cost to dredge a 30 mile long, 100' deep and 1000' wide channel in the Freeport area including a turning basin,

jetty and fixed pier berths. Using conventional U.S. dredging equipment, our preliminary estimate indicated a cost of \$600 to \$700 million. If foreign dredges were utilized, this cost might be reduced to about \$450 million. These costs compare to the \$310 million Seadock marine investment and are based on our offshore seismic studies and other data which indicate about 25% of the material to be removed would be clay. The estimates reflect only a minimum distance haul of the spoil and environmental considerations could greatly increase the cost. The 30 mile long and narrow 1000' channel also poses serious maneuvering, safety and pollution hazards for VLCC's since currents and wind can easily ground a ship if it stops or loses way for any reason. The requirement for tug assistance and one-way traffic would greatly reduce the capability of a long narrow channel system. We have therefore rejected the dredged channel alternative. The Corps of Engineers came to the same conclusion in their study.

#### ENGINEERING AND TIMING

The construction of Seadock requires considerable planning and lead time. The timetable we hope to follow would allow Seadock to be in operation by 1976. However, the actual schedule will be greatly dependent on such factors as when Federal enabling legislation is provided, the time required for processing the permit application, environmental impact preparation and review by Federal agencies, completion of necessary public hearings and so forth. The project is currently being implemented by Seadock's Management Committee that functions much like a board of directors. Other committees provide special expertise in areas such as technical design and legal research. A full time engineering group is located in Houston. This engineering group is staffed with experts from the participating companies having engineering design and operating experience in each of the project segments such as tanker operations, SPM design and operation, underwater pipelines, deepsea platforms, onshore storage, environmental assessment and so forth. The 17 man staff represents an average experience of 16 years with individual experience ranging from 6 to 32 years.

Seadock has been in close contact with various Texas State agencies and officials to advise them of our plans, to offer our assistance and to receive their ideas. They support the concept of deepwater terminals and are cooperating with Seadock in every possible way. To promote establishment of a deepwater terminal off the Texas coast, the Legislature, in 1972, established the Texas Offshore Commission. We think this Commission can be a major asset to the State in meeting its goals and that it will be a critical link between Seadock and the government. Although existing Texas law and regulations appear adequate to cover the onshore terminal facilities and that portion of the pipelines within its territory, one of the Commission's important tasks will be to insure that efforts directed at developing deepwater terminals are kept moving in the various State agencies that will be involved.

Discussions have also been held with those in State government responsible for land use planning and management of the coastal zone. Although no formal application has been made, these discussions indicate that the location of the Seadock installation is consistent with plans for the coastal region.

Seadock has completed a considerable amount of design and engineering work and is currently concentrating on finishing that work as well as environmental studies that will be necessary in seeking a construction permit. Our Houston based engineering staff is completing the conceptual design phase with sizing, optimization and engineering design of all facilities well under way.

Environmental studies have been started to gather data required for an environmental assessment. Dames and Moore, a leading environmental consultant, and Texas A&M University have been awarded a joint contract for this work. Specialized segments of these studies will be handled by subcontracts, such as the measurement of air quality parameters being conducted by Southwest Research Institute. Seadock estimates that the environmental studies will take until early 1974 to complete.

The final phase, actual construction of the Seadock facilities, can begin in 1974 if all permits have been obtained. Construction activities, including pre-

construction engineering and material acquisition will take between 18 and 24 months. Initial operation could commence in early to mid-1976. This timetable demonstrates why we must move now if we are to have a deepwater terminal when it is needed.

#### ECONOMIC IMPACT

Now let's turn our attention to the impact that deepwater terminals like Seadock will have on the U.S. Let's look first at the economic impact. While the future cost of petroleum products will undoubtedly rise in response to the law of supply and demand, these terminals will help minimize this cost by reducing the cost of transportation. This is important not only to the individual in what he pays for gasoline and other products, but to U.S. industry that depends on minimum cost energy to remain competitive. The recent trend in shipbuilding is aimed at reducing transportation costs. The 30,000 ton vessel is the average size ship that has called on Gulf Coast ports in the past few years. Let's consider the newbuilding cost of moving a barrel of crude from the Persian Gulf to the Gulf Coast on a 30,000 ton ship during 1980 as equal to 100 per cent. The ship of today, the 250,000 ton vessel, could cut this cost to 45 per cent of the 30,000 ton ship if it could be unloaded at a U.S. port; and the 500,000 ton ship of tomorrow could cut shipping cost to 38 per cent. The 50,000 tonner is the largest ship that can get into most U.S. ports when fully laden; and no U.S. port is deep enough to allow entry of a fully laden 250,000 ton and larger ship. The economies provided by large ships can be partially realized by transshipping, where the VLCC is unloaded at a Caribbean port and a smaller vessel, capable of entering existing U.S. ports, is loaded for the final delivery. Although more economical than utilizing small ships for the entire voyage from the Persian Gulf, the cost of transshipping would still increase the transportation and handling cost for U.S. imports by about \$0.75 billion in 1980 increasing to about \$1.5 billion in 1985 when compared to direct VLCC deliveries to U.S. deepwater terminals. Transshipping further introduces the same traffic congestion and pollution risks inherent in the delivery of U.S. imports by smaller ships. Only U.S. deepwater terminals provide all the benefits of a modern, efficient transportation system for the nation.

#### ENVIRONMENTAL IMPACT

All knowledgeable sources concur that there are no "short term" viable or publicly acceptable U.S. energy supply alternatives to increased imports of petroleum. Because of current rising import levels and somewhat declining domestic production, deepwater terminals are needed to supply existing refinery capacity. The actual land requirements for a deepwater terminal are minimal including pipelines for delivering oil to refineries. Studies to date indicate that construction and normal operation of the Seadock facility at the Freeport location should result in only minor short term impact on the environment. Biological considerations appear favorable at the proposed location. There will be little overlap with commercial shrimp fishing as the platform and buoys are at the shallow end of most commercial harvesting. The offshore facilities are located in an area not especially productive for other commercial trawling, and most sport fishing is in shallow water closer to shore. Onshore advantages are that the pipeline will not cross any biologically productive bays or estuaries, and extensive dredging in marshy areas is not required.

The environmental impacts associated with the downstream development of petroleum refining and processing industries would occur for the most part if the same amount of oil were imported in small tankers. Deepwater terminals will provide incentive for greater inland dispersal of downstream development by making more economical the movement of oil to interior areas through high volume economic pipeline transportation. Downstream industrial developments are already subject to state and local legislation and regulation. Such developments can thus be restricted in some areas but allowed to develop in others. To the extent development is desirable, deepwater terminals do provide a

means to attract new industry and assure continued economic growth for the U.S.

Now let's look at the environmental impact of big ships and deepwater petroleum unloading terminals such as Seadock. The number of tanker arrivals required in the Western Louisiana and upper Texas Gulf Coast ports to supply the three million barrels per day of Seadock throughput I just mentioned will increase dramatically if a deepwater terminal is not provided. If 30,000 ton ships were used, 13 port arrivals per day would be required. This drops to 1½ calls per day for a 250,000 ton VLCC. In addition, with expected growth in refining capacity, oil products shipped from Texas ports will also increase, either with or without deepwater terminals. We estimate that the total load on Texas ports will double by the early 1980's without an offshore terminal. This illustrates the positive effect VLCC's will have in reducing port congestion.

On a national basis, the number of waterborne crude oil import deliveries to U.S. ports is expected to increase fivefold between 1970 and 1985 without deepwater terminals, or from about 5,000 ship calls to over 20,000 ship calls. Utilizing deepwater terminals for Eastern Hemisphere imports will actually decrease the number of these ship calls to about 4,000 in 1985.

Historical data analyzed by the U.S. Coast Guard on collisions and groundings dramatically demonstrate that most oil spill accidents occur where harbor congestion is great and where maneuvering of ships is restricted by narrow, winding channels. These accidents are quite rare on the open sea. Clearly, Seadock's location far offshore will reduce this type of incident.

The President's Council on Environmental Quality, in its East Coast study, concluded that deepwater terminals and VLCC's would cut spills to about one-tenth (1/10th) of what they would be if small ships were used in direct service of transshipment.

#### TANKER PROCEDURES

Extensive safety precautions and operating requirements will be established for the tankers utilizing the Seadock installation. First, the deepwater terminals themselves will permit the newest and most modern ships afloat to be used for movement of oil to the U.S., the VLCC's of today and tomorrow. The Masters entrusted with the large capital investment tied up in the VLCC's will be highly trained and experienced. Intergovernmental Maritime Consultative Organization (IMCO) regulations will apply to the facility as well as regulations of the U.S. Coast Guard. The International Oil Tanker and Terminal Safety Guide will be utilized to govern operations at the facility. A specific Seadock Terminal Procedures Manual outlining required safety regulations and other terminal information will be prepared and made available to all tankers calling at the terminal. The procedures under which the ships are directed to the buoy, moored and operated will be subject to U.S. regulation including traffic control, communications equipment, lighting, shut down equipment, drip pans, etc. Dedicated approach and departure sea fairways and anchorage areas will be established and marked in conjunction with the U.S. Coast Guard. SPM's, SPM hoses and offshore platform will be equipped with navigational aids in accordance with the U.S. Coast Guard regulations. In addition to the required navigational aids, radar transponders will be installed on the SPM's and platform and radar units will be installed at the platform control center. Seadock will dispatch a Mooring Master and other trained personnel to board each tanker and to direct all mooring and unloading operations. Any tanker failing to comply fully with all required safety features will not be permitted to unload at the terminal.

#### SAFETY DESIGN FEATURES

The Seadock facility will back up these tanker operating requirements with safety design features and precautions of its own. First of all, Seadock will be an unloading terminal not subject to the two major problems of ballast disposal and overfilling of ships' tanks during loading operations. Seadock will handle only petroleum; operations will not be complicated by multi-purpose equipment

or procedures. The facility will be highly automated with a centralized control center and manual back-up capability. The control center, located at the Freeport terminal, will direct the operation of the Seadock system. The control center will utilize a computer based supervisory control system operating over both microwave and leased communication circuits for remote control and monitoring of each Seadock facility. Continuous monitoring of pressures, temperatures and flow rates will be utilized to indicate operating problems and permit rapid shutdown of pumping operations. The control center will have the capability to remotely shut down all Seadock pumps and to remotely close critical pipeline valves. Automatic high pressure shutdown systems will be installed for extra protection as well as surge and thermal relief systems. Hoses will be visually inspected and pretested prior to unloading. Offshore pipelines will be buried a minimum of three feet in open areas and significantly deeper at shore approaches, fairway crossings and at SPM and platform areas. Such pipelines have proven safe during years of extensive experience with similar installations. An Army Corps of Engineers' report indicates that oil spills should be almost completely eliminated through the use of buried submarine pipelines. Water treatment facilities will be installed at potential points of contamination; and facilities will include drip pans, curbing, drain systems, waste treatment and sumps. The onshore tanks will have floating roofs to control emissions, and there will be no excessive sound levels associated with Seadock.

#### POLLUTION CONTROL

In the unlikely event of a spill, the oil must first be contained, then picked up. This is an area of new and rapidly improving technology. I can assure you that Seadock will have the most appropriate equipment available. A capability exists on the West Coast through Clean Bay Inc. to handle a spill of 100,000 barrels with booms and skimmers capable of operating in 6' to 8' seas. Similar equipment is operating satisfactorily in the Gulf. The U.S. Coast Guard is working on booms which might be deployed by helicopters. There are dozens of new booms and skimmers, and extensive research is continuing. The American Petroleum Institute, the Environmental Protection Agency and the U.S. Coast Guard have research programs totaling at least \$10 million per year; and substantial expenditures are being made by individual oil companies. Given the current state of the art, we have the technology to clean up very large oil spills on the Gulf Coast. In addition, through the research and development going on, we are confident of significantly expanding technology.

Acting as another line of backup to the manpower and equipment on site at Seadock would be the industry cooperatives formed to marshal the equipment and trained personnel of a particular geographical area in the event they are needed. For example, the Clean Channel Association operates along the Houston Ship Channel and has at its disposal over 10,000 feet of spill booms, several floating skimmers, boats, vacuum trucks, etc.

In addition to the good intentions of tanker and terminal owners and operators, there are significant financial incentives for avoiding oil spills. The first, and most obvious, of these is that every barrel of oil lost is a barrel of product that cannot be sold. In addition, industry has voluntarily established two international compensation programs covering tanker spills. One is the Tanker Owners Voluntary Agreement concerning Liability for Oil Pollution (TOVALOP) which requires participating tanker owners either to remove any oil negligently discharged or to reimburse the government of a country whose shoreline is damaged by such a spill. Under TOVALOP, a tanker owner has a liability up to \$100 per gross registered ton of the tanker, with a maximum of \$10 million per vessel per incident. At this time, more than 99.5% of the world's non-governmental tanker tonnage is covered under TOVALOP. The second program is the Contract Regarding an Interim Supplement to Tanker Liability (CRISTAL), which has been developed by cargo owners to provide

additional protection (for private citizens as well as governments) by extending the limit for each incident up to as much as \$30 million. CRISTAL is, literally, a legal contract that now binds more than 90% of the international petroleum industry, as measured by the volume of crude and fuel oils that participants transport by tanker. Under CRISTAL, participants have a contractual obligation to provide their pro rate share of funds needed to pay compensation for pollution damage up to a maximum of \$30 million per incident, less the sums available from the shipowner under applicable law and from TOVALOP. An important feature is that funds are available to start clean-up procedures immediately, before responsibility for the accident is assigned. Both TOVALOP and CRISTAL are designed as interim measures pending the time when the International Liability and Fund Conventions come into effect.

In addition, United States waters are subject to the provisions of the Water Quality Improvement Act of 1970 which assigns legal liability up to \$14 million to the owner or operator of vessels and up to \$8 million for pollution from terminals. This act also requires every terminal to have a contingency plan for handling spills. This plan must be approved by the United States Coast Guard and would include provisions for handling even the largest, most improbable spill. Clearly, the participants of Seadock and similar facilities have strong incentives for reducing the potential for oil spills.

#### SUMMARY OF ENVIRONMENTAL CONSIDERATIONS

I hope this discussion has given you a feel for the attention that is going into designing Seadock. I have discussed the environmental aspects of the Freeport site and the downstream effects of deepwater terminals. I have discussed how Seadock's ability to serve VLCC's will reduce the number of tankers required for imports and will keep the ships far offshore where accidents are less likely to occur. We have seen that SPM technology is proven and that Seadock will not utilize novel, untried concepts. In addition, spill clean-up capability is continually improving with the design of new equipment, the formation of cooperative organizations and the financial backing of insurance groups. In short, we believe that deepwater terminals like Seadock will be beneficial to the U.S. environment.

#### LEGISLATION

A Memorandum on Federal Legislation has been developed by the Legal Committee of Seadock; and with your approval, I would like to submit such memorandum under separate cover and ask that the memorandum be made a part of the record.

The memorandum establishes legislative guidelines and also analyzes the Administration bill (S. 1751 and H.R. 7501) and makes recommendation for amendments or changes therein. We feel that the Administration bill, so amended, would be the type of legislation needed in this area. Thus, the legislation would be designed to cover the authority of one Federal agency to issue a license for the construction and operation of a deepwater petroleum terminal while at the same time giving adequate safeguards and consideration to the various effects the facility may have on the environment, the national interest and the jurisdiction of the state and Federal government.

Private industry will be expending millions of dollars in the development of deepwater terminal facilities to meet a national need for adequate supplies of energy at a reduced risk to the environment and at the lowest possible cost to the consumer. Under such conditions, we must avoid the environmental and legal delays which have hampered us in the past. Therefore, we urge Congress to act expeditiously in order that deepwater port facilities may be constructed and placed in operation thereby serving the interests of the nation and the consumers.

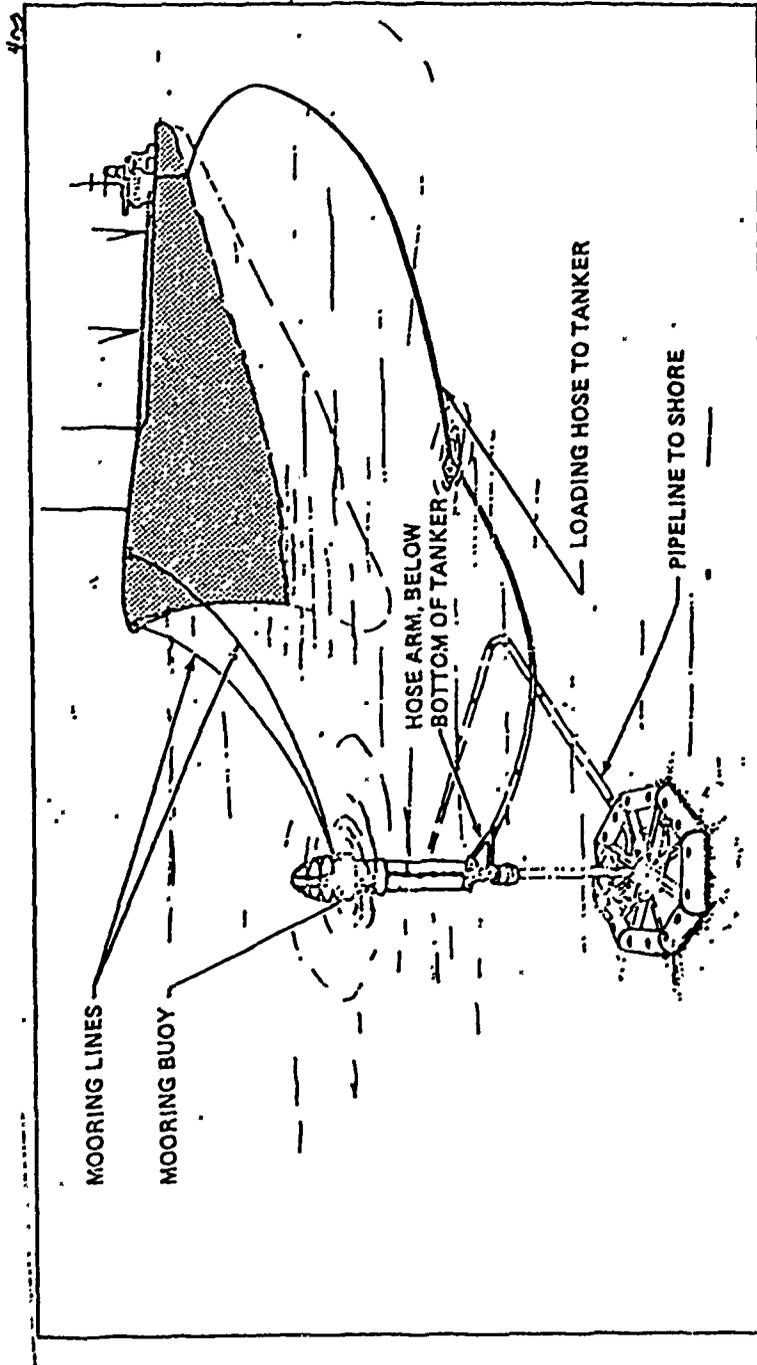


FIGURE 1A

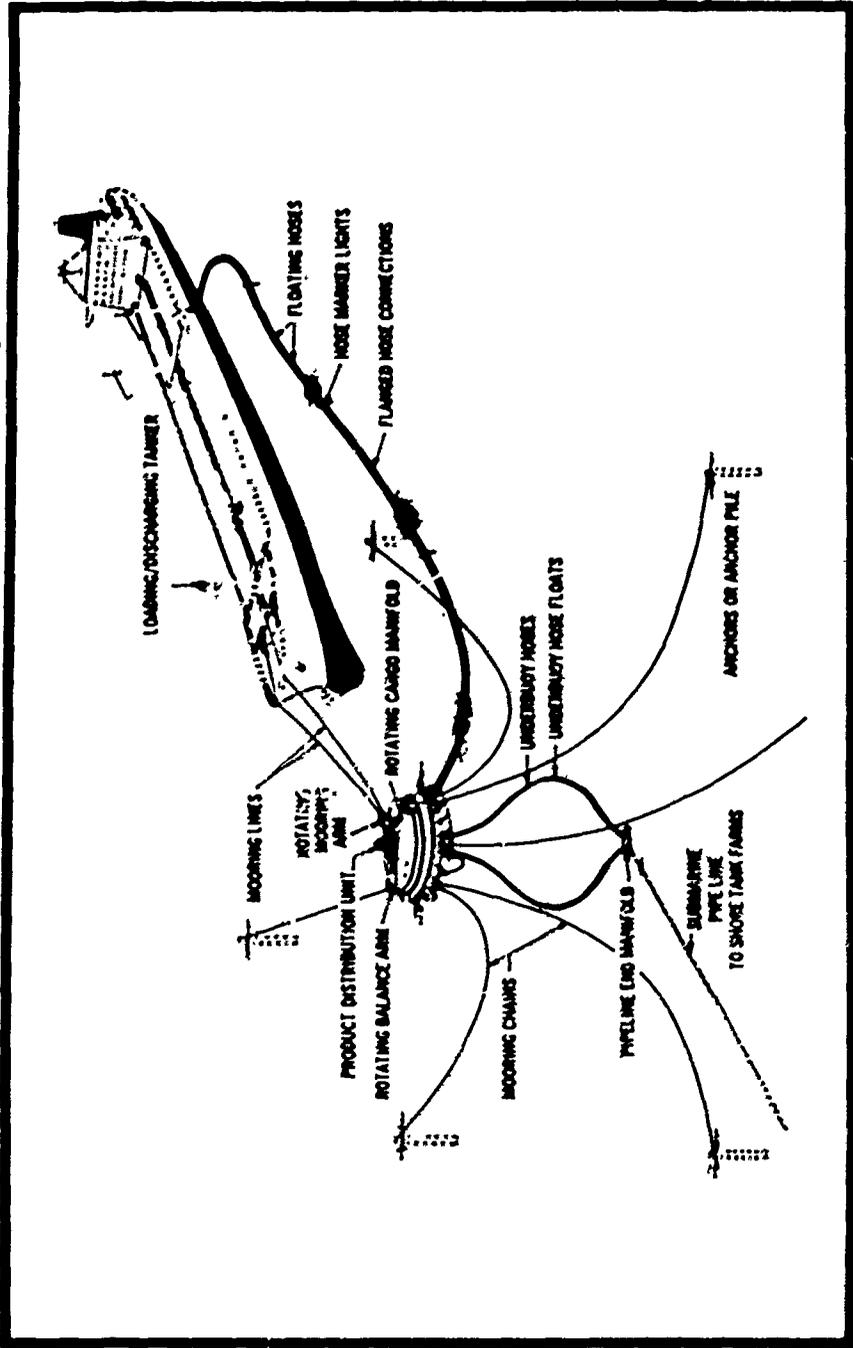
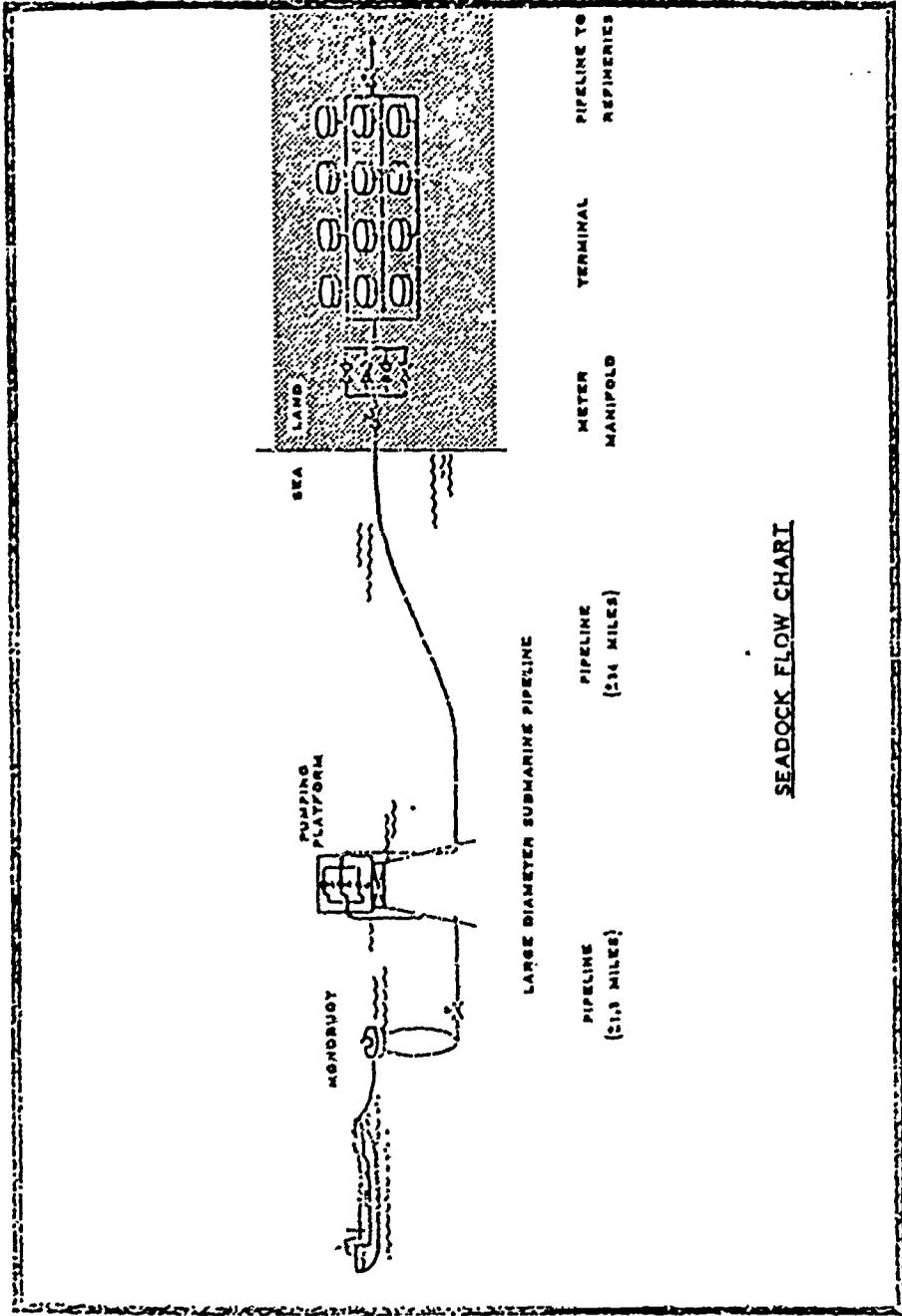


FIGURE 2



# SEADOCK TIMETABLE

FIGURE 3

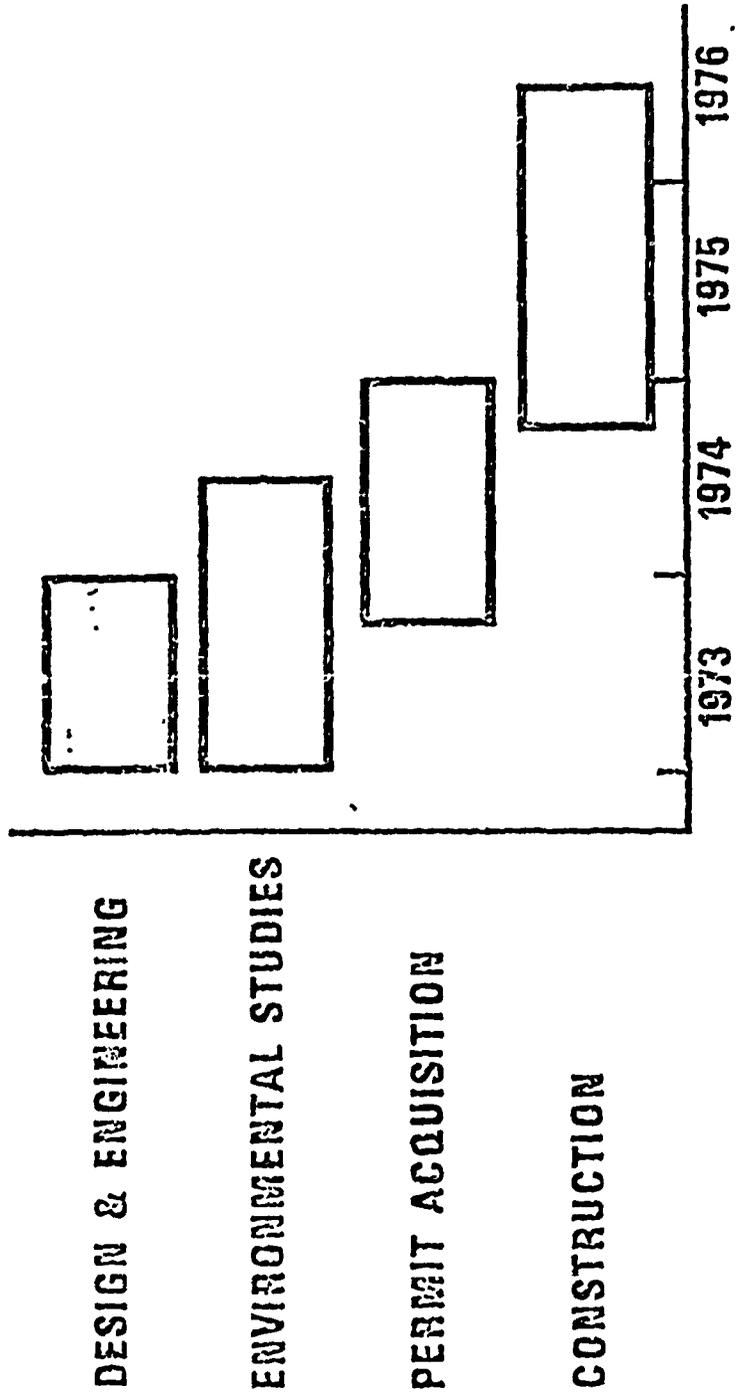
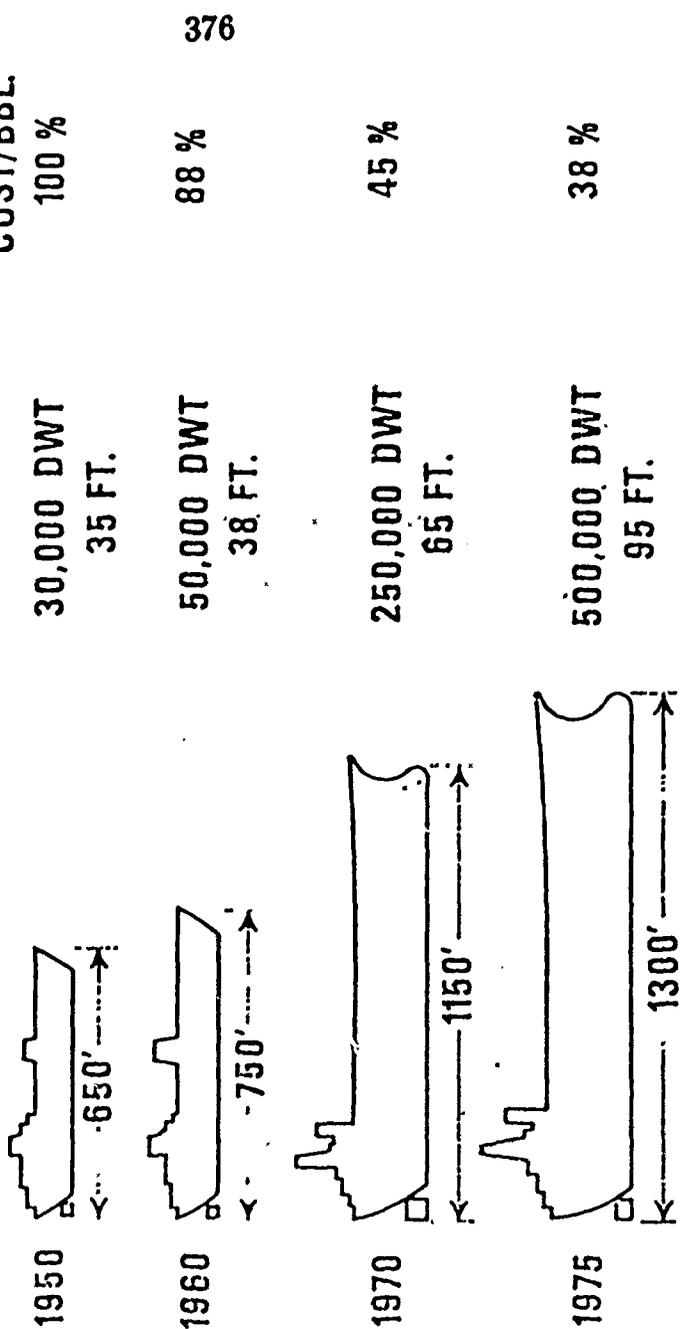


FIGURE 4

# TRANSPORTATION COST - 1980 PERSIAN GULF TO U.S. GULF COAST

## SHIP CARGO & DRAFT



# TRENDS IN TANKER SIZE

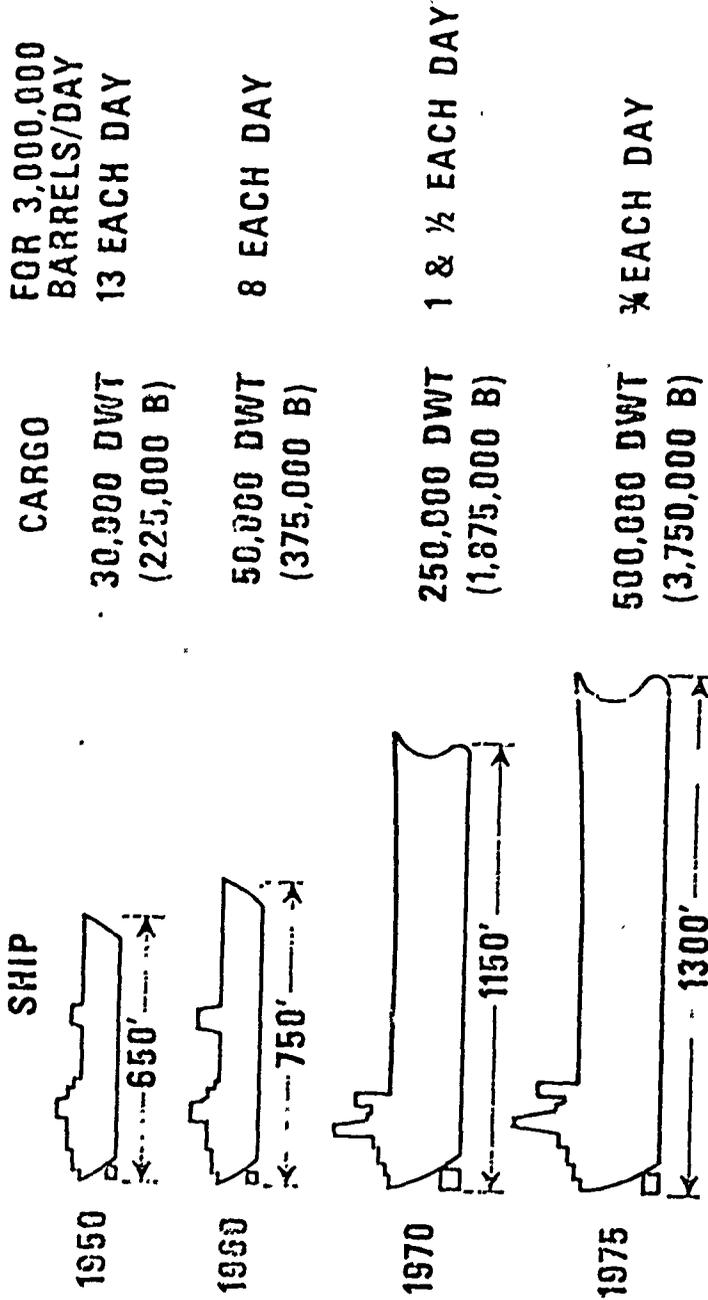


FIGURE 5

FIGURE 6

# ANNUAL SHIP CALLS TO SUPPLY TOTAL UNITED STATES WATERBORNE CRUDE OIL IMPORTS

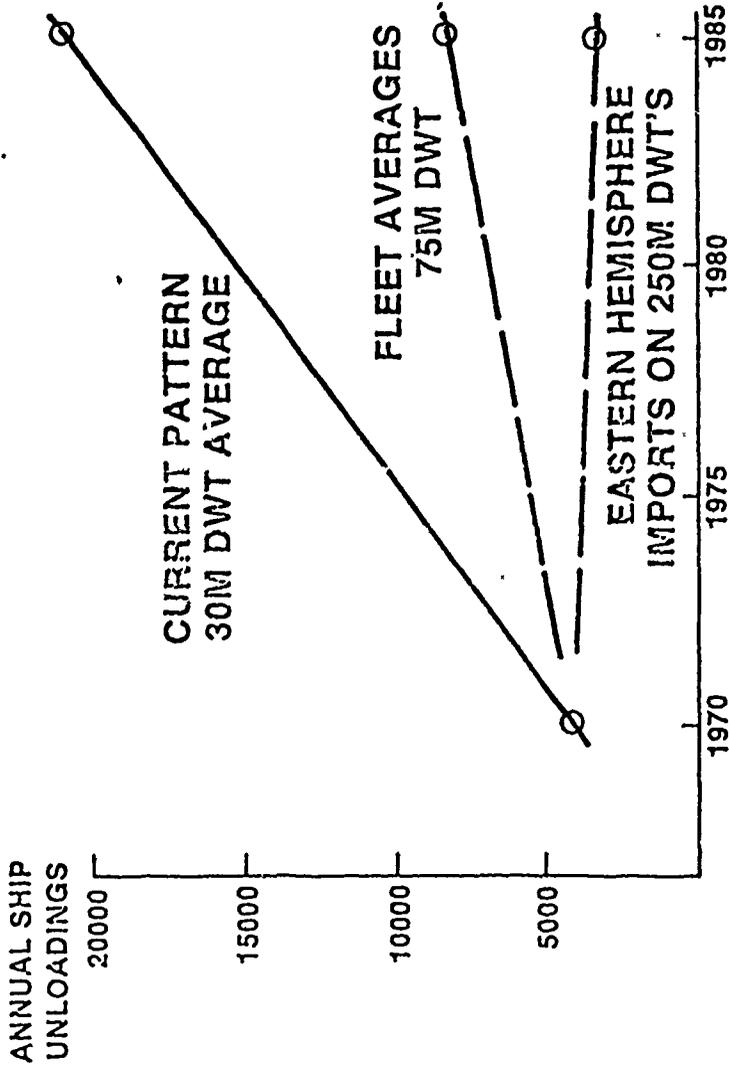
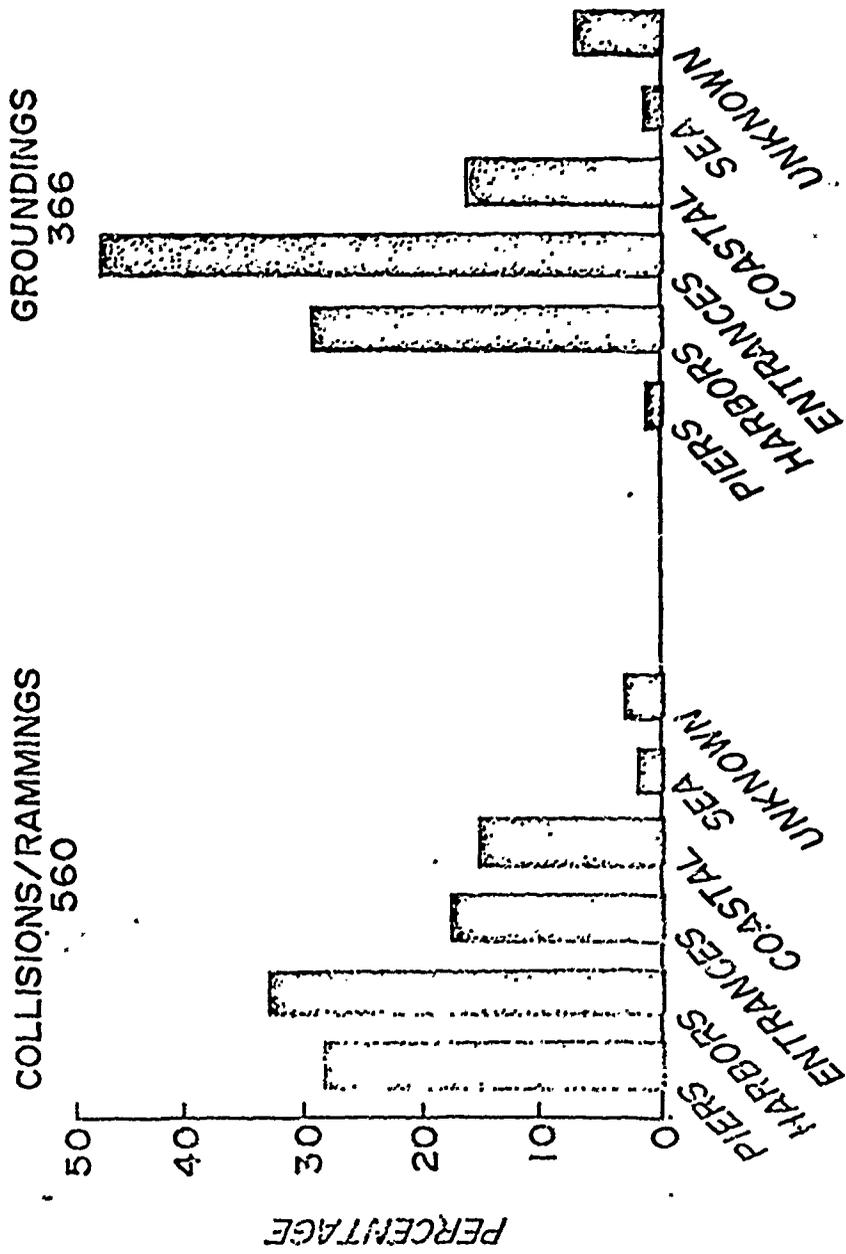


FIGURE 7 LOCATION OF TANKER ACCIDENTS



**Figure 8.—Design Aspects Which Reduce Pollution Risk****Unloading terminal:**

- No ballast problems
- No overfilling of tanker

**Petroleum only:**

- No dry products
- Uncomplicated

**Drip pans****Electronic monitoring****Facility invisible from shore****Pipelines for final delivery****Emission control****No excessive sound levels****Figure 9.—Industry's Liability for Oil Pollution****TOVALOP**

Tanker owners voluntary

Up to 10 MS

Immediate action

**CRISTAL**

Major oil companies voluntary

Secondary liability up to 30 MS total

Immediate action

**WAQUA**

Water Quality Improvement Act of 1970

Tankers to 14 MS

Terminals to 8 MS

**STATEMENT OF J. MASCENIK**

The importance of ocean transportation of oil is demonstrated by the growth in both volume carried and in ship size over the past 20 years.

Free World consumption in 1950 was 10MM B/D and doubled each decade until it reached 40MM B/D in 1970. Some forecasts indicate a further doubling to 80MM B/D by 1980.

Even greater growth patterns are seen in tanker size. The marine transportation industry has seen tankers grow in size from T-2 of World War II to the 340,000 dwt tankers ordered by Shell for delivery in the mid 1970's; a greater than 30-fold increase in size in less than 30 years. (It has recently been reported that Globetik has ordered a 706,000 dwt tanker.)

The principal incentive for the growth in tankers was transportation cost reductions. Other considerations were the lower demand for trained sea-going manpower, for fewer berthing facilities and for lesser shipyard capacity because of fewer ships. An important benefit derived from the larger ship is the reduction in number of ships; hence, the reduction in traffic congestion and associated reduction in the risk of collision and stranding in ports and restricted waterways due to the fewer number of ships.

However, the Very Large Crude Carrier (VLCC), 140,000 dwt and larger in size, had created the need for and resulted in the development of offshore deepwater oil terminalling facilities. Required water depths were not available in protected and/or man-made harbors. Thus, the concept of "bringing the mooring facilities to the ship" was implemented.

***U.S. Crude Needs And The Deepwater Terminal***

Figure 1 is the latest National Petroleum Council Case III Intermediate Demand forecast of U.S. crude import requirements. This figure shows that by 1985 over 50% of the U.S.'s crude needs will be imported. Although there are a number of alternatives available to the industry for providing this supply (such as the use of VLCC's and transshipping terminals outside the U.S., lightering of VLCC's or direct trading with smaller vessels), many believe that the use of VLCC's and the construction of offshore deepwater oil terminals to be the optimum approach economically and environmentally.

From an environmental viewpoint, the U.S. Army Corps of Engineers have concluded that dredging and the disposal of the dredged spoils to be the most

critical aspect of deepwater port development (Ref. 1). Furthermore, they stated studies made by the Council on Environmental Quality indicated that offshore sites are preferable to estuarine sites from an environmental point of view and that the Environmental Protection Agency concurred in this view. This viewpoint resulted from two factors: (1) oil spills occurring at an offshore site would be less likely to reach the shore than those at an inshore site and (2) oil reaching the coast from an offshore site would have weathered and would be less likely to contain more toxic fractions.

An offshore oil terminal would undoubtedly be located away from congested waterways. It would also be located in an area where sufficient water depth would be available for maneuvering. Thus, the offshore facility would eliminate dredging and reduce the probability of collisions and groundings which have proven to be a substantial source of pollution (Ref. 2).

Offshore deepwater oil terminals appear to be the most desirable approach in meeting the U.S.'s requirements for the importation of large volumes of crude.

#### *Requirements For An Offshore Terminal*

A safe, reliable offshore oil handling facility requires a systems approach, including a knowledge of tankers, their handling characteristics, and their mooring and cargo equipment capabilities. The offshore terminal should be kept as simple as possible to avoid complex operations and to reduce investment and operating costs without sacrificing safety and ecological considerations. To select and design an offshore facility to accomplish the foregoing requires a knowledge of each type of system, the operational requirements for each, site operational environment conditions, and the design requirements for the system.

Various types of offshore berths have been found suitable for mooring tankers of certain sizes for specific environmental conditions. The oil industry's experience, however, has shown the Single Point Mooring (SPM) to be a safe, reliable means for mooring VLCC's and for transferring cargo in moderate to severe wind, waves, and currents. The development of the SPM cluster concept will enhance the use of SPM's by improving the control of mooring and cargo transfer operations and by reducing the overall costs of a multi-SPM installation.

The following discussion will cover: types of offshore oil facilities, selection of type, SPM's available, SPM operations and requirements, SPM design and reliability, and the SPM cluster concept.

#### *Types Of Offshore Oil Facilities*

Offshore Oil Facilities are classified as sea islands (offshore piers), multi-buoy moorings (MBM), and single point moorings (SPM). All have a means for mooring the tanker, a means for connecting the ship's manifold to a terminal manifold, and an underwater pipeline to shore.

Offshore terminals are found worldwide. Sea islands (Figure 2) have been installed; for example, in Kuwaiti, Iraqi, and Saudi Arabian waters for crude loading and at Bantry Bay, Ireland for crude discharge (and for loading into shuttle tankers). BMB's (Figure 3) are used at marketing, refinery, and crude loading/unloading terminals. SPM's (Figure 4) are being used to an increasing extent worldwide for crude loading and discharge.

Approximately 100 SPM's are in use today. Most of their locations can be found on Figure 5. There are approximately 35 in the Far East, 17 in the Mid East, 11 in Europe, 21 in Africa, 11 in Latin America, 1 in North America, and 3 in the Australian area. The first SPM was installed in 1959. Twenty-six were installed by 1968. Approximately 16 SPM's per year have been installed since then.

#### *Selection Of Type Of Offshore Facility To Install*

The type of offshore berth to install is dependent upon many factors:

- Tanker fleet composition and tanker operational characteristics
- Type of terminal (loading or discharge), number of products, their characteristics and throughput
- Site and operational environmental conditions

### Investment and operating costs

#### Tanker safety and ecological considerations

Site conditions, number of products and throughputs for each, and maximum tanker size are instrumental in determining the major portion of the investment costs; the operating environment determines port closure and hence a major portion of the operating costs. The type of berth and its operating environment will determine the type of craft required to assist in berthing and to perform maintenance work; and in many cases, the type of craft and number and their crews input substantially to investment and operating costs. Tanker safety is a function of the ease to berth and to get underway (with or without assistance) and to remain safely moored.

Figure 6 provides quantitative limits for berthing, while berthed, and while transferring cargo at each type of berth. In addition, it provides qualitative information regarding maneuvering and sea bed area requirements, ease in getting underway, auxiliary craft requirements, and susceptibility to damage. These data are used in determining weather down time for each type of berth.

Unless a type of berth is precluded by some situation peculiar to the site, a Marine Terminal Simulation Computer Program is used to determine the effects of berth outages on the tanker fleet and on tankage requirements for determining the type of berth to install. The costs for tanker delay, along with investment costs for berth, pipelines, and tankage and other operating costs, are used in determining the type of facility to install. In order to determine investment costs, preliminary designs are made utilizing information on site conditions that had been developed to that time.

Realistic estimates of loading/discharge rates should be established based on the tanker fleet composition. For example, in one recent study involving a number of oil companies, it was determined that very few tankers in the 250,000 to 300,000 dwt category would accept loading rates in excess of 140,000 BPH. A review of H. Clarkson's *The Tanker Register—1972* revealed that only nine ships had pumping capacities of 150,000 BPH while the vast majority were around 100,000 BPH.

In many instances a detailed study of berth requirements has shown the SPM to be most attractive for mooring VLCC's. For multiberth installations, a newly developed Single Point Mooring Cluster Concept (described later) has proven to be optimum for multi-grade crude and high volume single grade transfer.

#### *SPM's Commercially Available*

Many types of SPM's are available. The three in use today are the SPM Tower (with and without floating hose), the single buoy with multi-leg (CALM) mooring, and the single buoy with single anchor leg mooring (SALM).

The SPM Tower (Figure 7) was installed in Brega, Libya in 1962 to handle 100,000 dwt tankers. As seen in the figure, it is basically a trylon (protected by a ring of fender dolphins) on which a boom has been mounted. A trussed frame connected to the boom extends to the tanker's midship and contains the cargo piping. At the end of the trussed frame (loading arm) is a loading platform on which the hoses are located for connection to the tanker manifold.

Figure 8 is the SPM installed at Fiumicino, Italy in 1964. It has a turntable that rotates. However, it does not have an attached loading arm. It utilizes floating hose that is connected at the water line to the piping canistered from the turntable.

Figure 9 is a monotubular tower tanker mooring. This is essentially a modification from the Fiumicino type. As far as is known, it has not been installed as yet.

Figure 10, the SPM Pier, is a refinement on the Brega type tower. It consists of single point to which a floating pier is attached. The frame of the floating pier contains the cargo piping. The loading arms are located to correspond to the midship location of the manifolds on the tankers to be loaded or unloaded. The tanker moors alongside the floating pier.

A schematic of the CALM is shown on Figure 11. This type of mooring was first installed in 1959 to moor a 3,000 ton vessel.

Essentially, a CALM is composed of a moored buoy to which a tanker is connected by a mooring line. Cargo transfer takes place from the buoy to the tanker through a floating hose that is connected to the ship's manifold and to a fluid swivel on the buoy. The connection to the sea bottom manifold is made by using underbuoy hose. While the buoy is relatively fixed in space, a turntable on top of the buoy (to which the mooring line is connected) permits the tanker to weathervane about the buoy in response to changes in wind, wave, and current.

The SALM is a recent development which was installed at Brega, Libya in 1969 for mooring 300,000 dwt tankers. Figure 12 is a schematic of the Brega mooring. The major differences between the CALM and SALM are:

(1) The CALM utilizes four to eight anchored catenary chain legs whereas the SALM has a base which is piled to hold against mooring line loads.

(2) The floating hose is connected to the buoy in the CALM system whereas the connection is made below the active wave zone for the SALM system.

(3) The buoy remains stationary in the CALM system (the turntable mounted on the buoy revolves) but turns with the weathervaning ship in the SALM system.

(4) The buoy in the CALM system always remains on the surface. In the SALM system, it is designed to submerge with increasing hawser loads.

Variations on the CALM using floating hose connected to the buoy at the water surface are seen in the next two figures. Figure 13 depicts the Woodfield-Rochester SPM. This is a buoy system moored by pretensioned lines to the bottom. The buoy has a swivel arrangement that permits the ship to weathervane and a hose system that is connected to the buoy overboard piping at the waterline.

Figure 14 is a rigid arm mooring (RAM). The RAM is a form of single anchor leg mooring which is anchored to the sea bed by a base. At the base, horizontal bearings and a rotating ring permits the rigid trussed arm which is welded to the surface float to move in response to the weathervaning ship. The underbuoy hose connects the sea line to the piping attached to the rigid arm. Floating hose transfers the cargo from the tanker to the float and then to the underwater pipeline.

#### *SPM Operations*

The procedure used to maneuver a vessel into a single point mooring (SPM) varies between terminals. However, the berthing and mooring procedure usually requires the services of a Pilot and/or Mooring Master and one or two launches.

The Pilot or Mooring Master assists in mooring the vessel, and the Mooring (SPM) varies between terminals. However, the berthing and mooring procedure usually requires the services of a Pilot and/or Mooring Master provides guidance in taking the ship out of the mooring.

The launch crew assists the ship's crew in bringing onboard portable items of hose and mooring equipment which are to be rigged by the ship's crew as indicated by the Mooring Master. The launch is also used to move the floating hose to one side if it appears that the hose is in the way of the mooring operation.

The procedure used, while it varies between terminals for berthing, is essentially as follows:

The Pilot and/or Mooring Master boards the vessel at some distance from the mooring and advises the Captain of the requirements for the berth. This involves setting out the mooring gear, preparing the ship's manifold, and planning an approach to the buoy, which is consistent with existing wind and sea conditions.

The tanker will approach the mooring at a speed sufficient to maintain steerage. By the time the vessel is sufficiently close to bring aboard the mooring lines, she should be practically dead in the water (100 to 300 feet from the mooring). The approach is planned to avoid the vessel being carried bodily down on the hoses or the mooring and to permit the ship to pass the buoy

on the side away from the hose and to make a second approach should the maneuver be aborted.

The mooring launch attaches the messenger lines (small diameter ship ropes) to the mooring line which is provided by the terminal. These are then hauled aboard and the mooring line is made fast to complete the mooring.

Connection of the hose is usually done by the ship's crew with the advice of the Mooring Master. The floating hose is lifted with the ship's gear, stopped off by the snublines, and connected to the ship's manifold.

At all offshore berths, precautions are taken aboard ship such as placing drip pans under ship's manifolds, plugging scuppers, and setting valves. Agreements between the ship and terminal will be set regarding transfer rates, signals to be used, and emergency procedures. Once this has been done, the cargo transfer operation, directed by the ship's Cargo Officer, commences. Cargo transfer is at a reduced rate until all connections are checked before increasing flow rate to capacity.

During cargo transfer frequent inspections are made of the operations. Records are made at regular intervals of pressure onboard the ship and of the quantity transferred. Any discrepancies in quantities and sudden changes in pressure are immediately investigated.

When loading, care is exercised in topping-off to avoid spills. This operation is done at reduced flow rates. When disconnecting the loading arms or hoses, the pressure is first removed. The manifold connection is then broken and drained, and the blind flange is connected.

After cargo transfer, the hoses are disconnected, lowered into the water, and towed out of the way. The moorings are then cast off, and the ship departs. The departing maneuver is dependent on the conditions existing at the time and is planned to permit the ship to pass the buoy on the side away from the floating hose. In an emergency the ship could get underway without launch assistance.

#### *SPM Design Requirements*

Single point moorings are suitable for operations at offshore locations where sea and weather conditions may be severe as the tanker by weathervaning in response to the natural forces reduces the loads in the mooring components. A tanker can remain moored at an SPM in over 15 foot significant seas in combination with winds and currents. However, launch operations are precluded in six to eight foot seas (depending on wave period and type of launch) and winds of approximately 25 knots. Therefore, although a vessel can remain moored or leave the berth during more severe weather, it can berth only during periods when launch operations are possible.

An SPM requires a swinging circle with a radius of about one and one-half ship lengths to allow the vessel to rotate completely around the SPM on its bow hawsers. This area must be kept clear of all other shipping. Minimum clearance under the design vessel's keel in this circle varies depending on the ship's movements (roll, pitch, and heave) and type of sea bottom.

Furthermore, the vessel should approach an SPM heading into the predominant wind, wave, and/or current. To have this maneuvering capability and to allow some leeway for the vessel to fall away from the berth under wave or current action, a maneuvering circle with a radius of three to four ship lengths is generally required. If local weather and set conditions are fairly constant, it may be possible to always approach and exit the berth from a limited sector or sectors, thus decreasing the required maneuvering circle. Similarly, if tugs are available, they could assist in berthing at an SPM and thus reduce maneuvering circle requirements.

#### *SPM Design*

To properly design the mooring component of an SPM requires a knowledge of the operating environment at the site; i.e., wave, wind, and current conditions. However, knowledge of these conditions alone is not sufficient; a means of translating operating environment into design loads is necessary. This is usually done by model testing. For instance, Esso Research and Engineering Company has conducted over 400 model tests at the Netherlands Ship Model

**Basin on models ranging in size from 100,000 to 500,000 dwt in various operating environments.**

Based on the model tests a procedure for calculating design loads has been developed. To verify the results of this procedure, full-scale measurements were made. These measurements indicated that ERE's procedure provided conservative values.

Using appropriate data (operating environment and site) sound engineering and good construction practices will result in a safe mooring for design conditions.

#### *SPM Reliability*

The SPM has proven to be a reliable and safe mooring for tankers and for transferring petroleum. It has been estimated that some nine to ten billion barrels of petroleum have been moved via SPM's, the bulk of this occurring within the past four to five years.

The Royal Dutch Shell Group recently reported that they handle over 450 million barrels of oil through their SPM's annually and have handled over 3.6 billion barrels since the installation of their first SPM without serious pollution of the environment. Exxon's affiliated companies' ten years plus experience has also been excellent. Over 1.2 billion barrels of oil have been handled at their SPM tower in Brega, their CALM at Singapore, and their SALM's at Brega and Okinawa.

While overall industry experience has been good, problems, as with all new developments, have occurred. These problems have been the result of both tanker and terminal equipment and practices—just as they are at conventional piers. To focus on these problems and to encourage their solution, the oil industry established the Single Point Mooring Forum. The Forum has been very valuable in pinpointing problem areas and providing a means for coordinating the views of tanker and terminal operators and designers.

The Forum has established a number of committees to work the mooring and cargo transfer problems. So far, this has resulted in the issuance of Ship Manifold Standards, Hose Standards, Standard Mooring Line Arrangements and Attachments, and a Guide For The Handling, Storage, Inspection, and Testing of Hoses in the Field. For instance, the Hose Committee working with Vendors of large bore SPM hose has developed more stringent requirements than those previously used as standards. The Guide provides information to the operations in the field and should result in less accidental damage to hose while stored or being installed, similarly, the recommended inspections and testing programs should result in the removal of defective hose and in the installation of only fully acceptable hose. The Guide also recommends what records should be kept and how this can be accomplished. These records will provide the statistics to assist in the development of even better hose.

Other committees are working with the rope manufacturers to determine causes of failure and to develop better mooring hawsers. Also, because of the advent of even larger VLCC's, the Mooring Arrangements Committee is developing recommendations for equipment to be installed aboard these VLCC's and at the terminals. The Hose Committee is continuing its work and is planning to develop standards and specifications for the ancillary equipment used in conjunction with SPM hoses. The Forum has proven to be an active group in attacking and helping to solve problems related to SPM's.

Recently, the Forum and the International Oil Tanker and Terminal Safety Group were placed under the auspices of the Oil Companies International Marine Forum (OCIMF). OCIMF has consultative status with the Intergovernmental Maritime Consultative Organization (IMCO) so that it can contribute and respond to considerations relating to the safety and pollution aspects of tanker and terminal operations.

#### *SPM Cluster*

A new concept, the cluster arrangement, has been developed which has as its key feature an offshore control platform surrounded by SPM's. Figure 15 illustrates the concept.

The control platform (CP) is equipped with suitable equipment and control devices and functions as the nerve center for ship and oil movements. Good control of berthing, loading/unloading, and unberthing operations is obtained by installing radar, communications equipment, launch landings, manifolding, surge relief tanks (when required), onshore pump control equipment, booster pumps (if necessary), metering and other miscellaneous equipment.

The Berthing Masters would be dispatched from the CP to ships entering or at anchor for the purpose of mooring the tanker. These Mariners would be in constant contact via radio with the control room. The control room would provide up-to-the-minute wind, current, and wave information as well as providing radar advisory information as to speed and distance from buoy.

Once moored and when ready for loading or discharge, the CP would be advised and either loading or discharge would proceed at reduced rates while all connections, fittings, valves, etc. are checked to ensure security of loading.

Although the optimum scheme is one in which the SPM's are arranged in the CP, other configurations may prove to be desirable for some areas. The a circular cluster spaced at appropriate distance from each other and from type of configuration will be dependent on sea bottom topography and locations of danger areas, such as shoals.

In addition to estimated lower investment and operating costs, the SPM cluster concept offers a number of operating advantages when compared to multi-offshore pier berths. These include: lower berth outages due to weather, less risk of damage to berth facilities by collision, etc., ship berths and unberths without tugs (unberthing is possible without launch assistance), and a catastrophic occurrence to a ship berthed at one SPM would not likely affect a ship berthed at another, nor affect the berth itself.

The SPM cluster is being applied to one loading port and is being seriously considered for three discharge ports. A Persian Gulf port is currently under design. Two industry groups in the Gulf of Mexico are using this concept in their planning and feasibility studies. These are LOOP (Louisiana Offshore Oil Port) and SEADOCK (offshore Texas). In addition, this concept has been proposed by the U.S. Corps of Engineers for possible installation off the coast of New Jersey.

#### *Summary and Conclusions*

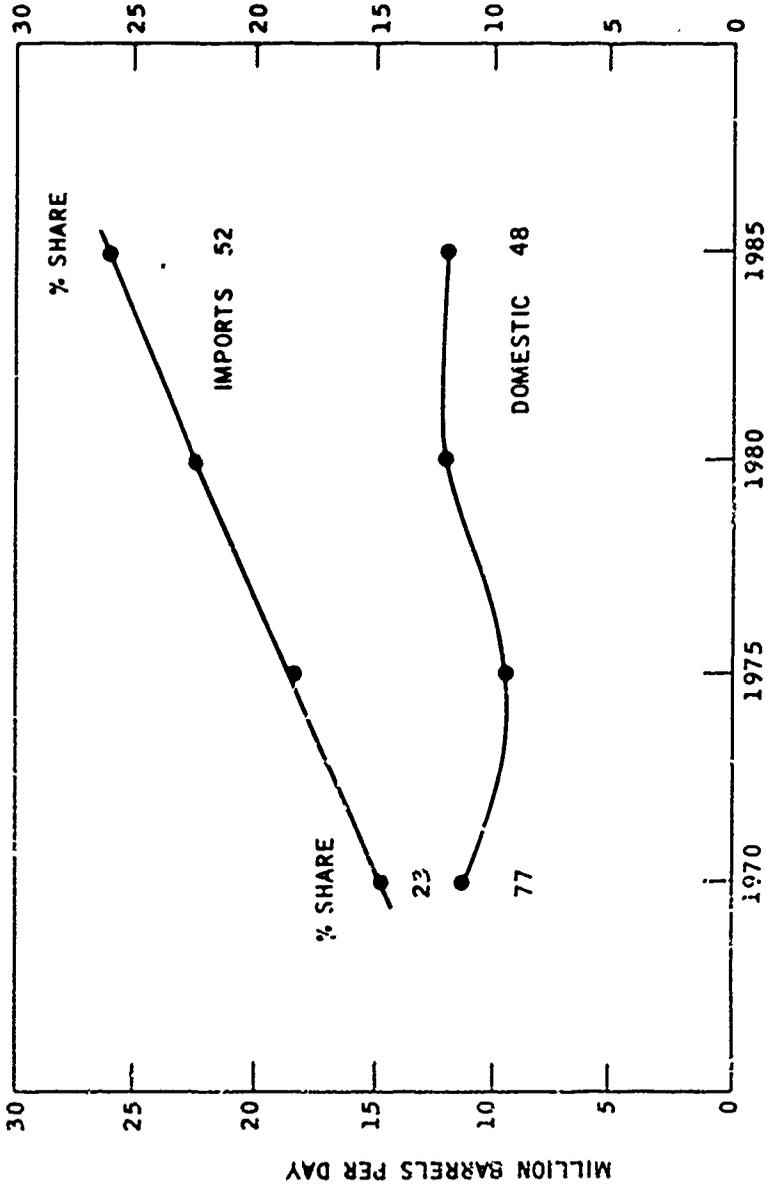
The use of VLCC's and the construction of deepwater offshore oil terminals are economically and environmentally desirable in meeting the U.S.'s need to import large volumes of crude oil. A number of offshore terminal alternatives are possible, depending on site and operating environment conditions. However, the single point mooring has proven to be very suitable for installation in unprotected waters where the operating environment is moderate to severe.

Engineering studies indicate the use of the SPM cluster improves the economics of a multi-SPM installations. The cluster also would improve the control of mooring and cargo transfer operations. This concept is being designed and/or proposed for several large crude oil terminals at the present time.

#### *References*

- (1) Corps of Engineers, Philadelphia District, "Notice—Atlantic Coast Deepwater Port Facilities Study: Eastport, Maine to Hapton Roads, Virginia" dated January 8, 1973.
- (2) Porricelli, J. D. et al: "Tankers and the Ecology," presented at the Annual Meeting of the Society of Naval Architects and Marine Engineers" November, 1971, New York, N.Y.
- (3) Mascenik, J., "Deepwater Offshore Petroleum Terminals"—presented at ASCE National Transportation Engineering Meeting—July 17-21, 1972, Milwaukee, Wisconsin.

Figure 1  
UNITED STATES OIL SUPPLY BY SOURCE



Source - MPC

Figure 10

SINGLE POINT MOORING PIER

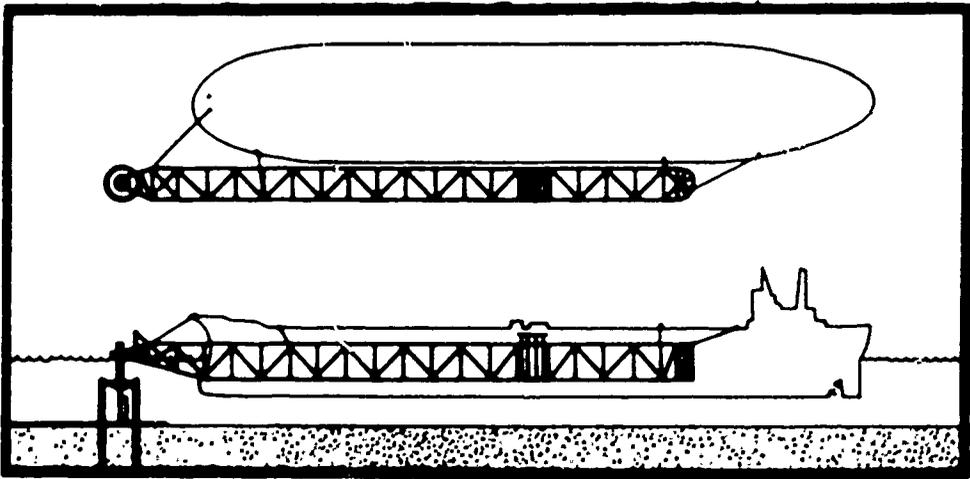


Figure 11  
CATENARY ANCHOR LEG MOORING SYSTEM

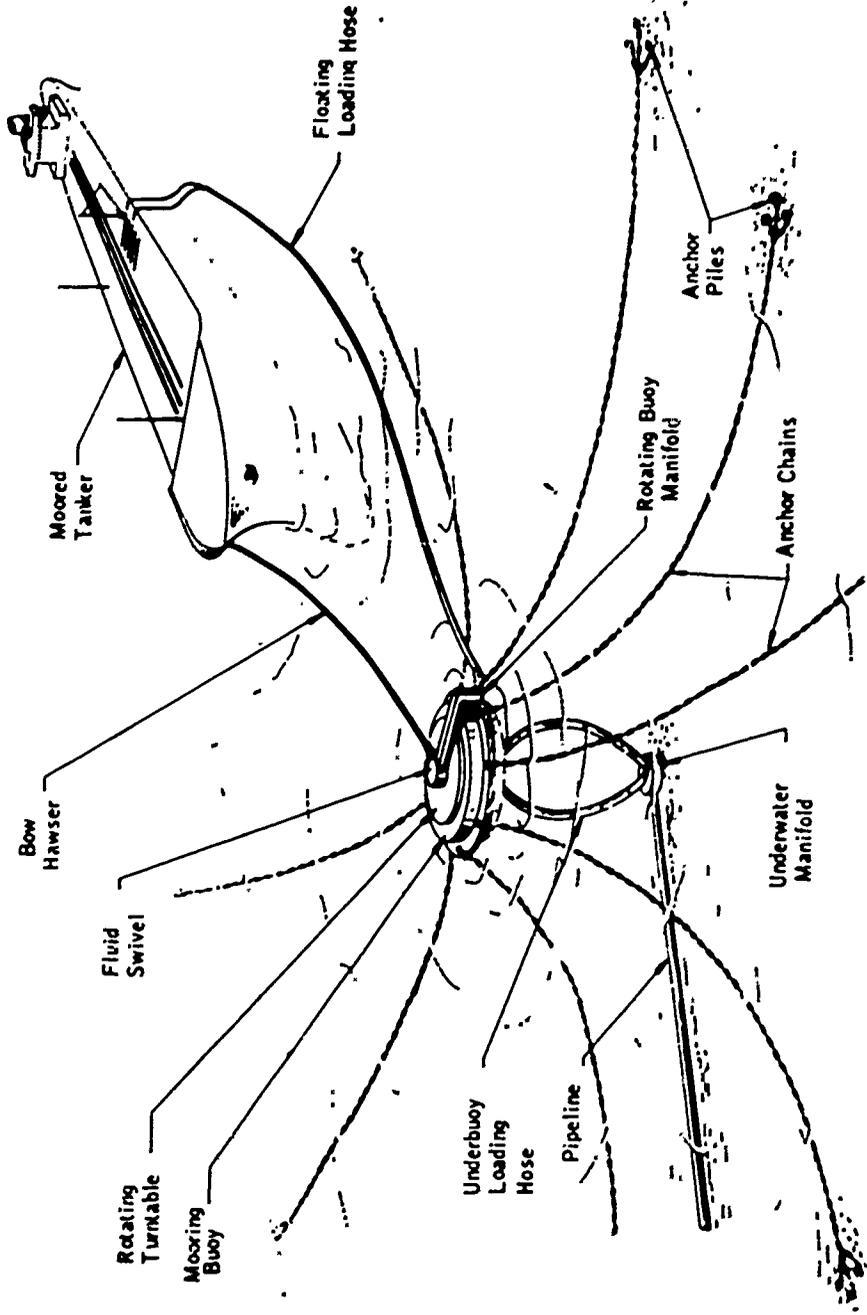
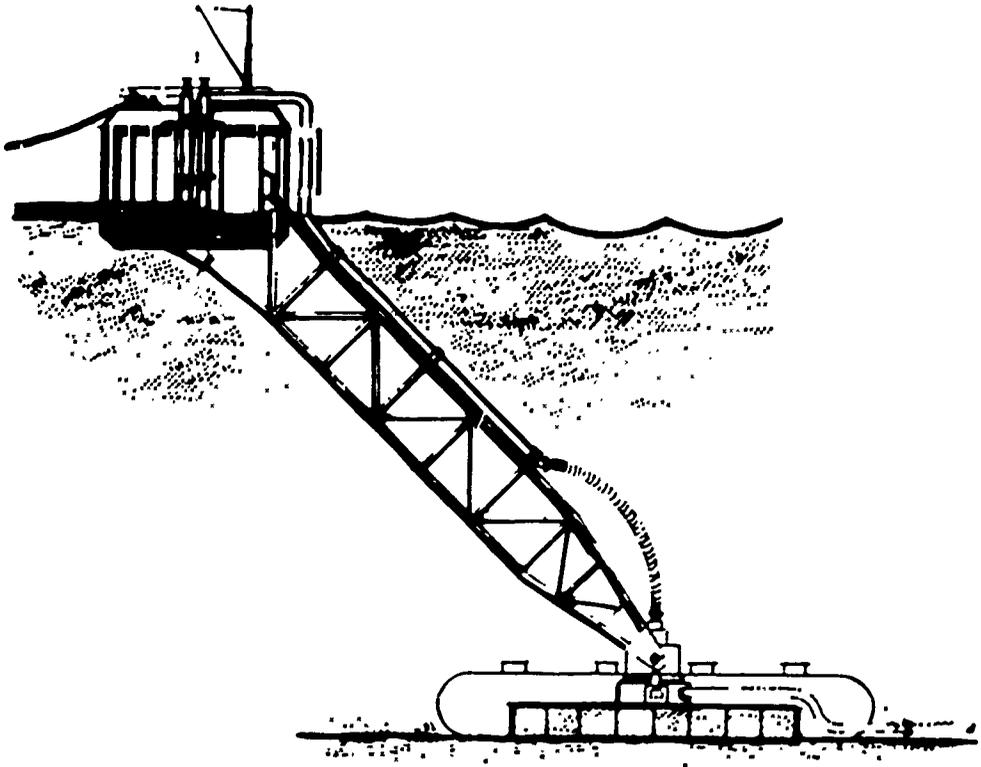


Figure 14

RIGID ARM MOORING





Best bet  
for U.S.?

## Offshore deepwater crude-oil terminals

The author says . . .

OFFSHORE deepwater oil terminals have been successfully operated in many areas of the world. Choosing the proper type of terminal and ensuring its reliability of design and operation requires:

- Having detailed knowledge of environmental and physical site conditions.
- Knowing the operating limitations for each type of terminal.
- Using model test or prototype data for establishing design criteria.
- Using sound engineering and suitable construction practices in design and installation.
- Operating the facilities with properly trained personnel and reliable equipment in a safe, workmanlike manner using time-proven operating and maintenance procedures.

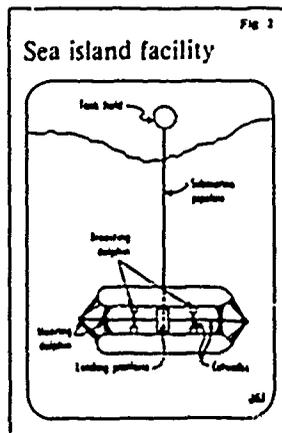
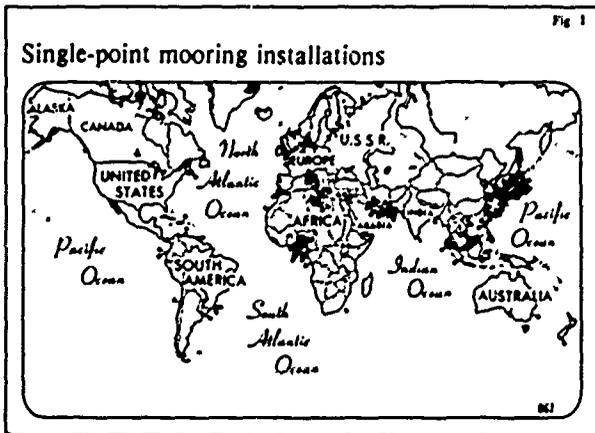
Single-point mooring terminals have proven very suitable for handling VLCC's in unprotected waters where the environment is moderate to severe. Engineering studies indicate the SPM cluster improves the economics of a multi-SPM installation. The cluster also would improve control of mooring and cargo-transfer operations. This type of concept is now being designed or proposed for several large crude-oil terminals.

JOHN MASCENIK  
Esso Research & Engineering Co.  
Linden, N.J.

OFFSHORE deepwater crude-oil terminals appear to have favorable economic-benefit/cost ratios. Compared to other types of terminaling facilities being considered for the U.S., such terminals would apparently have the least effect on the ecology of a region.

Studies have been made for the U.S. Corps of Engineers' on use of very large crude carriers (VLCC) and the construction of offshore deepwater oil ports. These studies indicate the facilities to be the most economic means available for delivering crude petroleum to meet U.S. needs.

In addition, U.S. Government experts have examined the ecological impact of various port facilities. These men have favored offshore deepwater terminals. For example, the district





LOADING ARMS mounted on an offshore pier's loading platform could connect the ship's manifold with the manifold on the platform, as on conventional piers such as this. Fig. 3.

engineer, Philadelphia District, U.S. Corps of Engineers, in the Notice of Jan. 8," states:

"Studies made by the Council on Environmental Quality indicate that from an environmental point of view, offshore sites are preferable to estuarine sites. The Environmental Protection Agency shares that view."

Use of offshore terminals is commonplace in the oil industry, particularly at crude loading ports outside the U.S. They have been used for a number of years with favorable results where natural harbors were not available or where the cost of man-made

harbors were prohibitive. However, they have had only limited use in the U.S. and thus are not well known.

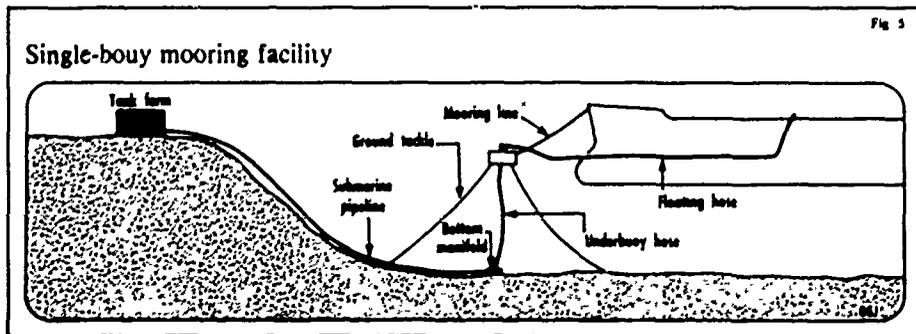
Since many articles have been written on the subject, U.S. energy problem and its potential solutions are not covered herein. Instead, emphasis is on the technical aspects of offshore facilities, i.e.: type of offshore mooring facilities available; how they are operated; effects of sit conditions; and limits on their use.

Single-point mooring (SPM) has been found particularly attractive for mooring VLCC's in moderate to severe sea and wind conditions. Hence, a new

cluster concept is outlined along with the oil industry's effort to make SPM more reliable.

### Types of facilities

Offshore terminals are classified generally as offshore piers (sea islands), multibouy moorings, and single-point moorings. They are found in all areas of the world. Offshore piers have been installed, for example, in Kuwait, Iraq, Iran, and Saudi Arabia in the Persian Gulf for crude loading. At Bantry Bay, Ireland, and Okinawa they have been installed for



crude discharge, and at many locations in the world for product loading.

Multibouy moorings (MBM) are used at marketing, refining, and crude-loading terminals throughout the free world. SPM's are being used increasingly throughout the world at crude-loading and receiving terminals, especially since the advent of the VLCC.

About 100 SPM berths have been installed worldwide since 1960, Fig. 1.

Each type has three major components:

- A means for holding the tanker in position.
- A means for transferring the cargo from the tanker's manifold to a manifold on the loading platform or

on the sea bottom.

• An underwater pipeline between the manifold and shore.

Like conventional pier. The offshore pier, Fig. 2, is similar to a conventional pier except that it is connected to shore by a submarine pipeline in lieu of having a trestle connection. Main components of an offshore pier are breasting dolphins, mooring dolphins, and a loading platform. The breasting dolphins take the impact load during berthing and the loads imposed while moored.

The mooring dolphins contain bollards or quick-release hooks to which the ship's wires are attached. The wires hold the ship in a fairly fixed envelope in space and permit the use of loading arms, Fig. 3, mounted on the loading platform to connect the ship's manifold with the manifold on the platform.

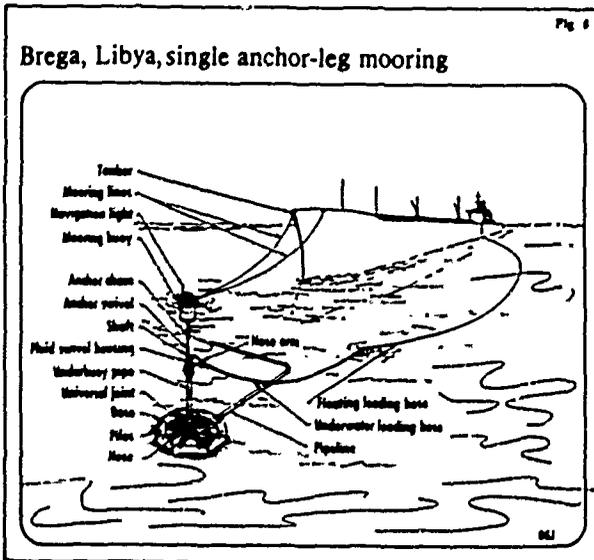
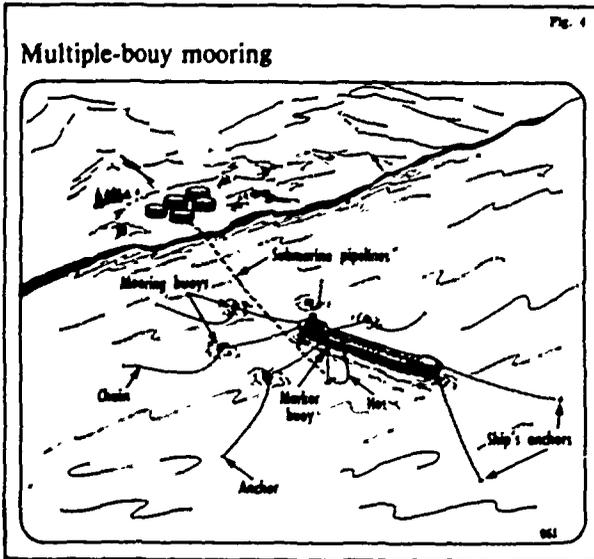
Other devices such as meters, fire-fighting equipment, control room, etc., are contained on the loading platform.

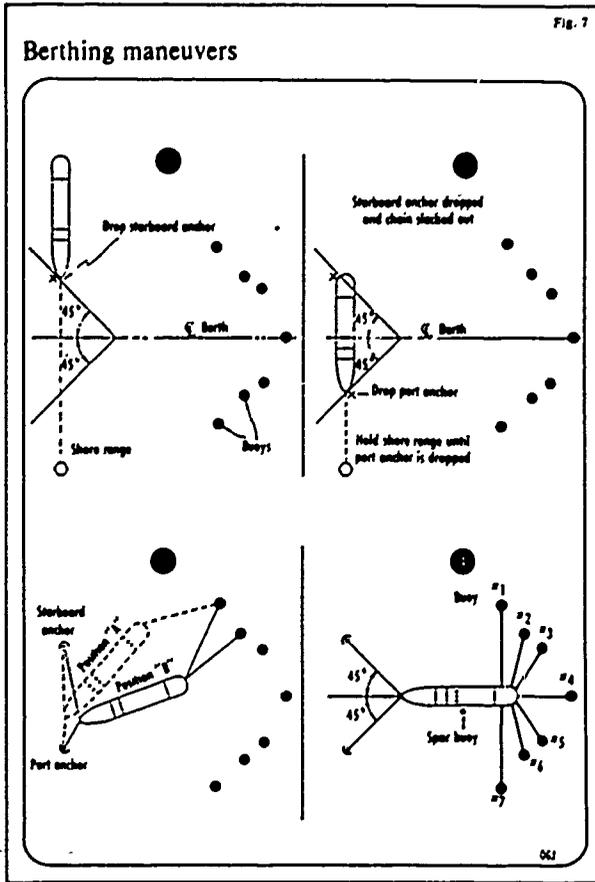
MBM system. Fig. 4 is a schematic of multiple-bouy mooring. Three to seven moored buoys are used, depending on ship size and environmental conditions. The buoys are installed in a general semicircular pattern around the desired position off the stern of a tanker. Ship's anchors are normally used for the mooring points forward.

While this mooring arrangement permits greater ship movement than at a sea island, the ship is held much more rigidly than at an SPM. The connection to the ship's manifold is made by the use of submerged hoses that are lifted from the sea bottom once the vessel is moored. Submarine pipelines connect the pipeline end manifold (PLEM) to shore.

SBM system. Single-point moorings are very common for mooring VLCC's. The types in use are the catenary anchor-leg mooring (CALM), the single anchor-leg mooring (SALM), SPM tower with rotating trussed arm (Brega, Libya) and SPM tower with floating hose (Fiumicino and Genoa, Italy). Most common is the CALM; newest is the SALM.

Essentially, a CALM, Fig. 5, is composed of a moored buoy to which a tanker is connected by a mooring line. Cargo transfer takes place from the buoy to the tanker through a floating hose that is connected to the ship's manifold and to a fluid swivel on the buoy. The connection to PLEM is made by using underbuoy hose. While





the buoy is relatively fixed in space, a turntable on top of the buoy to which the mooring line is connected) permits the tanker to weather-vane about the buoy in response to changes in wind, wave, and current.

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- The floating hose is connected to the buoy in the CALM system, whereas the connection is made below the active wave zone for the SALM system.
- The buoy turns with the weather-

vaning ship in the SALM system but remains stationary in the CALM system (the turntable mounted on the buoy revolves).

• The buoy in the CALM system always remains on the surface. In the SALM system, it is designed to submerge with increasing hawser loads.

Other types of SPM's have been studied and patented; however, none has been installed. Also, with regard to SPM towers, comments made here on berthing procedures, operations, etc., are generally applicable.

### Design

How does one determine the optimum type of berth to install and the criteria for design such as underkeel clearances, maneuvering areas, design

loads, etc.? It requires detailed knowledge of site conditions and marine environment at the proposed location and their effects on each type of facility. Site conditions are instrumental in determining investment costs. Knowledge of the marine environment will tell port closure time (period when berthing and loading/unloading cannot occur) and hence, a substantial portion of the operating costs for the various types of berths.

Main site and marine environmental data required are:

- Wind, wave, and current conditions.
  - Water depths and maneuvering areas.
  - Soil and sea-bottom conditions.
- Environmental conditions in which a berth can safely operate are limited by: the differences in operation for each type of berth; effects of environment on marine auxiliary craft requirements for berthing and unberthing; and the loads induced in the restraining elements of the berth.

In addition, the procedure for berthing and the effects of the elements on the vertical motions of a vessel profoundly influence the minimum underkeel clearance for a loaded tanker and the maneuvering-area requirements. Mode of operation and limitations on each type of berth will be covered in detail later.

**Environment loads.** However, knowledge of the environment is insufficient. A means is necessary to translate this environment into forces acting on the tanker and subsequently into loads induced in the restraining elements of the berth. There is complex interaction of wind, current, and wave at the various types of berths. Because of this and the present state-of-the-art in analytically determining induced loads, model test data are usually necessary. Such tests have been conducted for oil companies at the Netherlands Ship Model Basin, the British Hydraulics Research Station, and other model test facilities for a wide range of tanker sizes and environmental conditions. Without these data or prototype measurements, the determination of load criteria would be difficult, if not impossible.

It is also essential for design purposes to know the soil and sea-bottom conditions. For example, poor soil may preclude using ship's anchors at an MBM; thus, the berth would have to be an all-buoy berth. Or, because of

poor soil conditions, stake piles would be required for anchoring the buoys at an MBM or the buoy at a CALM.

Bearing and uplift capacity of piles are also affected by soils. Thus, good soils data are essential to the successful design and operation of the facility.

**Vessels handled.** Design must also consider: characteristics of the tanker fleet to be handled; tanker loading or discharge rates; crude or product viscosity; and other pertinent characteristics of the material to be handled, etc.

Tanker characteristics such as draft, length overall, maneuvering capabilities, and tanker swell, pitch, and heave responses to the waves must be known. These are required to provide sufficient maneuvering area for safe berthing and to determine necessary underkeel clearance to prevent damage to the tanker. The possibility of dredging, berthing on high slack water in tidal areas, or lightening the tanker before entering must be considered if water depths are inadequate. General maneuvering area guidelines are discussed later.

Provisions for maintaining the facility should be provided; i.e., small boat harbors, onshore areas, etc. Other design considerations affect the number of berths and the cargo-transfer operation, such as number and size of pipelines and pumping rates. These do not usually affect the safety or reliability of offshore moorings, but do enter into the economics. Generally, the optimum number of berths, number and size of pipelines, etc., are determined by the use of marine-terminal simulation programs that are usually available in-house.

**Berth operations, environment**

There is a need for a systems approach in design and for establishing environmental limitations for each type of berth. To illustrate, let us examine berthing procedure and cargo-transfer operation for each type berth. In addition, let us consider the empirical limitations on the use of each for various environmental conditions and on the special requirements for maneuvering.

Berthing procedure and connection for cargo-transfer operations are dissimilar for the various types of offshore oil facilities. However, once the cargo conduit is connected to the ship's manifold, the procedures for

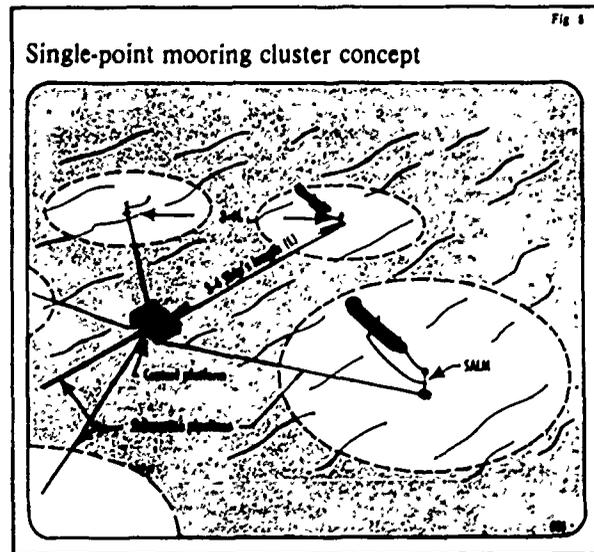


Table 1

**Offshore mooring comparison**

Limitations on use <sup>1,2</sup>	Offshore piers	Tower	SPM CALM	SALM	Multiberry berth
<b>While berthing</b>					
Waves	3-4 ft	6-8 ft	6-8 ft	6-8 ft	6-8 ft
Wind	25 knots	25 knots	25 knots	25 knots	25 knots
<b>While moored</b>					
Waves	4-10 ft <sup>4</sup>	over 15 ft.	3-10 ft. <sup>4</sup>	3-10 ft. <sup>4</sup>	3-10 ft. <sup>4</sup>
Wind	50 knots <sup>3</sup>	80 knots	30-50 knots <sup>3</sup>	30-50 knots <sup>3</sup>	30-50 knots <sup>3</sup>
<b>While transferring cargo</b>					
Waves	4-10 ft <sup>4</sup>	10-12 ft.	3-10 ft. <sup>4</sup>	3-10 ft. <sup>4</sup>	3-10 ft. <sup>4</sup>
Wind	35 knots	40 knots	25-35 knots <sup>3</sup>	25-35 knots <sup>3</sup>	25-35 knots <sup>3</sup>
<b>Distance offshore</b>	Least	Farthest	Medium	Medium	Medium
<b>Maneuvering and seabed requirements</b>	Smallest	Largest	Medium	Medium	Medium
<b>Ease in getting under way</b>	Average	Easiest	Most difficult	Most difficult	Most difficult
<b>Tugs required</b>	Yes	None	Not usually	Not usually	Not usually
<b>Launches required</b>	Sometimes	Yes	Yes	Yes	Yes
<b>Susceptibility to damage</b>	Moderate to high	Moderate to high	Moderate to low	Moderate to low	Low
<b>Investment</b>	High	Moderate to high	Moderate	Moderate	Low

**Notes:**

- (1) Wave heights are significant (average of highest 1/5 of waves).
- (2) Limitations are approximate. Can vary slight amount depending on ship size, number, type, and strength ship's lines and winches, pier design, tug design, etc.
- (3) Depends on wind velocity and direction, e.g., blowing ship on or off pier or from ahead or abeam, etc.
- (4) Depends on wave height, direction, and period, e.g., mooring ship on pier or off or from ahead or abeam, etc.

initiating cargo transfer are similar.

**Cargo transfer.** A prudent operator, at all offshore berths, takes such pre-

cautions aboard ship as placing drip pans under ship's manifolds, plugging scuppers, and setting valves. Agree-

ments between the ship and terminal will be set regarding transfer rates, signals to be used, and emergency procedures. Once this has been done, the cargo-transfer operation, directed by the ship's cargo officer, commences. Cargo transfer is at a reduced rate until all connections are checked before increasing flow rate to capacity.

During cargo transfer, frequent inspections are made of the operations. Records are made at regular intervals of pressure on board the ship and of the quantity transferred. Any discrepancies in quantities and sudden changes in pressure are immediately investigated.

When loading, care is exercised in topping-off to avoid spills. This operation is done at reduced flow rates. When disconnecting the loading arms or hoses, pressure is first removed. The manifold connection is then broken and drained, and the blind flange is connected.

**Offshore piers.** Berthing, mooring, and cargo-transfer operations at an offshore pier are similar to those at conventional piers. The principal difference is caused by the effects of location on berthing and mooring operations. Both require the use of tugs in berthing; both use the ship's hawsers to moor; and both require loading arms or hoses for the transfer of cargo.

Normally, at an offshore pier, the pilot uses the tugs and ship's power to approach the berth. The tanker is stopped 100 to 300 ft away from, and parallel to, the berth. The ship is then either pushed, pulled, or warped in. Appropriate corrections must be made in the procedure for wind, wave, and current conditions. Tugs then hold the tanker in until the ship's lines are made fast to the bollards or quick release hooks on the mooring dolphins.

At VLCC berths, berthing-velocity sensors are often installed to assist the pilot in his maneuvers to come alongside safely. Similarly, installation of wind, wave, and current-measurement equipment is becoming commonplace to assist the pilot, the ship's captain, and the terminal operator. This equipment helps determine whether (and how) a ship should be berthed and when it should be removed from the berth. This equipment is considered a necessity at all locations exposed to moderate or severe sea and wind conditions.

Disconnecting arms and getting under way are similar to the proce-

dures at a conventional pier.

**Wind, waves, water.** Offshore piers require an area more sheltered from waves than SPM's or MBM's. Any waves that prevent the tugs from maintaining complete control of the berthing operation will cause a closing of the berth. Normally, this is a significant wave height of 3 to 4 ft. (The significant wave height is defined as the average of the 1/3 highest waves, i.e., the wave height that was reported by a trained observer as maximum.)

Similarly, the height and direction of waves affects the vessel when moored. The tanker can remain moored in higher waves from the bow or stern than it can from the quarter or abeam. Ten-foot significant waves from ahead or astern and 3 to 4 ft significant waves (roughly 5 to 7-ft maximum waves) from abeam are usually considered to be limiting to prevent damage to either the ship or breasting-dolphin components. Due consideration must be given to the ship's mooring lines and winches in determining limits for remaining moored when waves and/or winds are moving the ship off the pier. Number of wires and winches, strength of wire, winch-brake setting, etc., are several factors to be considered.

Also, beam and quartering currents, along with or apart from beam and quartering winds, affect a berthing tanker. Currents other than from ahead or astern can affect a moored tanker especially when this current is 1 knot or greater. If currents are severe, but are due to tidal action, berthing can take place on slack water. In many locations, berthing is precluded when the wind exceeds 25 knots, particularly at loading ports with light, ballasted tankers.

Sufficient water depth and seabed requirements are necessary to permit safe approaches to the berth and to permit the berthing to be aborted. Tanker motions caused by waves (such as roll, pitch, and heave) must be assessed to determine if adequate underkeel clearances are provided in the approaches and in the berth to guard the tanker against bottom damage. These criteria vary depending on weather and sea conditions.

**Multiple-buoy mooring.** The exact procedure used to maneuver a vessel into an MBM, Fig. 4, varies with local environmental conditions and berth layout. One procedure is:

- A pilot and/or mooring master

boards the incoming vessel prior to making its approach to the berth. The mooring master or his relief remains on board the tanker as an advisor to the ship's captain during the entire mooring, loading (or unloading), and unmooring operation. (In the context used herein "pilot" refers to an employee of a government or port authority or to a member of a pilot's association. "Mooring master" refers to an employee of the terminal.)

- The vessel makes a "running" moor. While proceeding ahead in line with shore-steering ranges, either the starboard or port anchor is dropped (step 1, Fig. 7). The tanker then continues forward while paying out the appropriate anchor chain into position for properly placing the other anchor (step 2, Fig. 7). Location of the second anchor is not always marked because distance between anchors depends on the size of tanker.

- After the other anchor has been dropped, some of the first anchor chain is picked up while paying out the other anchor chain.

- The vessel then backs into the berth with the use of its engines, slackening or tensioning both chains as necessary (step 3, Fig. 7).

- Using the terminal launch, the vessel puts out ropes or wires to the mooring buoys (step 4, Fig. 7). By heaving on the lines and slackening the anchor chains, the tanker moves into position to pick up the cargo hoses. The order in which the lines are run out depends on wind, current, and wave conditions at the time of the mooring.

- The launch carries the necessary equipment for connecting the submarine loading hose to the ship's manifold. This equipment is placed aboard the tanker. Standard techniques are used to handle the hoses at multibuoy moorings.

A launch tows the hose buoy to a position where the tanker's tackle can be attached to the hose-lifting line. The tanker then lifts the hose until the end of the hose is the required height above the tanker rail. The hose is then tied off to the ship's rail, bent over the rail, and bolted to the tanker's manifold.

At the conclusion of transfer operations, the hose is released from the rail and lowered by the derrick while the launch pulls the hose away from the tanker side by means of a second line. The launch then tows the hose

away from the tanker before lowering them to the bottom. Each hose is lowered individually to avoid tangling.

When the tanker leaves the berth, the mooring procedure is reversed. The ship's lines are slack and slipped off the buoy's quick-release hooks by the launch. Once the lines are cleared, the ship's anchors are retrieved. If forward breast lines are used, they are usually released before the stern lines. The procedure for berthing and unberthing seem quite simple, but can be difficult under certain wind, wave, and current conditions.

**Unseamable conditions.** MBM's usually become unseamable when seas with a height of 4 ft or more approach the berth at a small angle off the bow or stern. If the vessel is moored directly into the predominant direction of the waves, the berth may be tenable in 10-ft or greater waves.

However, mooring operations require the use of a launch. Since launch operations are generally precluded in 6-8 ft seas, berthing operations are halted under these conditions. In an emergency, such as a sudden storm, it is possible to leave the berth without launch assistance by slipping the mooring lines from the ship. However, the retrieval of ship's anchor is time consuming and requires excellent ship-handling to avoid accidents.

MBM's require wind conditions to be more moderate than other offshore berths. They generally become untenable in beam or quartering winds greater than 25 to 35 knots. Limiting current conditions are normally 1 knot for beam or quartering currents and 2 knots or more for head currents.

Minimum required underkeel clearance over the seabed and pipeline at the berth varies with predicted vessel movement and type of bottom.

Minimum swing area is provided at an MBM such that a loaded vessel could lose power and swing on either bow anchor with full scope of chain out without being in danger of grounding or contacting the submarine pipeline. Distance which the berth must be located offshore therefore, depends upon: length and draft of the largest tanker to be handled; length of anchor chain used; and slope of the seabed. For a particular location, it may be possible to modify these criteria.

**Single-point mooring.** The procedure used to maneuver a vessel into an SPM varies between terminals. How-

ever, the berthing and mooring procedure usually requires the services of a pilot and/or mooring master and a launch.

The pilot or mooring master assists in mooring the vessel; and the mooring master or his relief usually remains on board during the loading or unloading phase. In addition, the pilot or mooring master provides guidance in taking the ship out of the mooring.

The launch crew assists the ship's crew in bringing on board portable items of hose and mooring equipment which are to be rigged by the ship's crew as indicated by the mooring master. The launch is also used to move the floating hose to one side if it appears that the hose is in the way of the mooring operation.

The procedure used varies between terminals for berthing, but is essentially:

- The pilot and/or mooring master boards the vessel at some distance from the mooring and advises the captain of the requirements for the berth. This involves setting out the mooring gear, preparing the ship's manifold and planning an approach to the buoy, which is consistent with existing wind and sea conditions.

- The tanker will approach the mooring at a speed sufficient to maintain steerage. By the time the vessel is sufficiently close to bring aboard the mooring lines, she should be practically dead in the water (100 to 300 ft from the mooring). The approach is planned to: (1) avoid the vessel being carried bodily down on the hoses or the mooring; (2) permit the ship to pass on the other side of the buoy and; (3) make a second approach should the maneuver be aborted.

- The mooring launch attaches the messenger lines (small-diameter ship ropes) to the mooring line which is provided by the terminal. These are then hauled aboard and the mooring line is made fast to complete the mooring.

Connection of the hose is usually done by the ship's crew with the advice of the mooring master. The floating hose is lifted with the ship's gear, stopped off by the snub lines, and connected to the ship's manifold. Cargo transfer is accomplished as described earlier.

After cargo transfer, the hoses are disconnected, lowered into the water, and towed out of the way. The moorings are then cast off, and the ship

departs. The departing maneuver depends on conditions existing at the time and is planned to permit the ship to pass the buoy on the side away from the floating hose.

**Allowable conditions.** Since the tanker weather-vanes in response to natural forces, single-point moorings are suitable for operations at offshore locations where sea and weather conditions may be severe. A tanker can remain moored at an SPM in over 15-ft significant seas in combination with winds and currents. However, launch operations are, as with MBM's, precluded in 8 to 8-ft seas, depending on period and winds of approximately 25 knots. Therefore, although a vessel can remain moored or leave the berth during more severe weather, it can berth only during periods when launch operations are possible.

An SPM requires a swinging circle with a radius of about one-and-one-half ship lengths to allow the vessel to rotate completely around the SPM on its bow hawsers. This area must be kept clear of all other shipping. Minimum clearance under the design vessel's keel in this circle varies depending on the ship's movements (roll, pitch, and heave) and type of sea bottom.

Furthermore, the vessel should approach an SPM heading into the predominant wind, wave, and/or current. In addition to this maneuvering capability, there must be some leeway for the vessel to fall away from the berth under wave or current action. This generally requires a maneuvering circle with a radius of three to four ship lengths.

If local weather and sea conditions are fairly constant, it may always be possible to approach and exit the berth from a limited sector or sectors. This decreases the required maneuvering circle. Similarly, if tugs are available, they could assist in berthing at an SPM and thus reduce maneuvering circle requirements.

**Comparing of limitations.** Table 1 compares requirements and limitations for various types of offshore oil facilities that have been previously discussed. This comparison clearly demonstrates that the SPM is superior in ensuring the safety of a tanker under severe environmental conditions. And it does permit cargo transfer under severe conditions. The SPM does have some drawbacks such as longer pipeline lengths and larger

maneuvering and seabed-area requirements. However, it does not require tugs. The buoy-type SPM's are generally less susceptible to damage; and, when damaged, they can generally be put back in service more quickly than an offshore pier.

### SPM cluster

A new concept, the cluster arrangement, has as its key feature an offshore control platform (CP) surrounded by SPM's, Fig. 8.

The CP is equipped with suitable equipment and control devices and functions as the nerve center for ship and oil movements. Good control of berthing, loading (or unloading), and unberthing operations is obtained by installing radar, communications equipment, launch landings, manifolding, surge-relief tanks (when required), onshore pump-control equipment, booster pumps (if necessary), metering, and other miscellaneous equipment.

The berthing masters would be dispatched from the CP to ships entering or at anchor for the purpose of mooring the tanker. These mariners would be in constant contact via radio with the control room. The control room would provide up-to-the-minute wind, current, and wave information as well as radar advisories or speed and distance from buoy.

Once moored and when ready for loading or discharge, the CP would be advised. Then, either loading or discharge would proceed at reduced rates while all connections, fittings, valves, etc., were checked to ensure security of loading.

The CP would handle all switching of crudes, pump arrounds, flow rates, etc. Radio contact with the berthing master, the terminal's representative on the tanker, would promote better control of the operation and should result in a safer, more operable terminal. This, in turn, would result in a lower probability of pollution.

The cluster, optimum scheme would be one in which the SPM's are arranged in a circular cluster spaced at appropriate distance from each other and from the CP. Other configurations, however, may prove desirable for some areas. The type of configuration would depend on seabottom topography and locations of danger areas, such as shoals.

In addition to probably lower in-

vestment and operating costs, the SPM-cluster concept offers a number of operating advantages compared to multioffshore pier berthing:

- Lower berth outages due to weather.

- Less risk of damage to berth facilities by collision, etc.

- Ship berths and unberths without tugs (unberthing is possible without launch assistance).

- A catastrophic occurrence to a ship berthed at one SPM would not likely affect a ship berthed at another, nor affect the berth itself.

The SPM cluster is being applied to one loading port and is being seriously considered for three discharge ports. A Persian Gulf port is currently under design. Two industry groups in the Gulf of Mexico are using this concept in their planning and feasibility studies. These are LOOP (Louisiana Offshore Oil Port) and Seadock (offshore Texas). In addition, this concept has been proposed by the U.S. Corps of Engineers for possible installation off the coast of New Jersey.

**SPM reliability.** Captain A. F. Dickson, Shell International Marine Inc., states that the SPM has demonstrated its attractiveness where berths must be provided outside of sheltered areas.<sup>3</sup> The Royal Dutch Shell Group also reports it handles over 450-million bbl of oil through their SPM's annually. The firm handled over 3-billion bbl since installation of its first SPM without serious pollution of the surrounding environment.

Our affiliated companies' 10-yr-plus experience has also been good. Over 1-billion bbl of oil have been handled at their SPM tower in Brega, their CALM at Singapore, and their SALM's at Brega and Okinawa.

While overall experience has been good, problems have occurred as with all new developments. These problems have been the result of both tanker and terminal equipment and practices—just as they are at conventional piers. To focus on these problems and to encourage their solution, the oil industry established the Single-Point-Mooring Forum. The forum has provided a very valuable means for coordinating the views of tanker and terminal operators and designers.

**Forum publications.** The forum has established a number of committees to work the mooring and cargo-transfer problems. So far, this has resulted in the issuance of: ship manifold stan-

dards; hose standards; standard mooring-line arrangements and attachments; and a guide for handling, storage, inspection, and testing of hoses in the field.

For instance, the hose committee working with vendors of large-bore SPM hose has developed more stringent requirements than those previously used as standards. The guide provides to operations in the field information which should reduce accidental damage to hose while stored or being installed. Similarly, the recommended inspections and testing programs should result in removal of defective hose and in installation of only fully acceptable hose.

The guide also recommends what records should be kept and how to keep them. These records will provide the statistics to assist in development of even better hose.

Other committees are working with the rope manufacturers to determine causes of failure and to develop better mooring hardware. The mooring arrangements committee is developing recommendations for equipment to be installed aboard the increasingly large VLCC's and at the terminals. The hose committee is continuing its work and is planning to develop standards and specifications for the ancillary equipment used with SPM hoses. The forum has proven to be an active group in attacking and helping to solve problems related to SPM's.

Recently, the forum and the International Oil Tanker and Terminal Safety Group were placed under the auspices of the Oil Companies International Marine Forum (Ocimf). Ocimf has consultative status with the International Maritime Consultative Organization (IMCO) so that it can contribute and respond on matters of safety and pollution avoidance in tanker and terminal operations.

**Handling other commodities.** Operation of an oil terminal is relatively simple in principle. The mode of operation is the same for every vessel that uses it. Personnel at the terminal are trained specifically to berth, load (or unload), and unberth oil tankers. Can such a terminal adapt to multiple use by handling other commodities? Doing so complicates the procedures by requiring a variation in techniques.

Consider that a multiuse offshore facility would require:

- Construction of a harbor.
- Land areas for storage.

• Piers for unloading of large dry-bulk carriers and, for the loading of smaller vessels.

These are not required for an oil terminal.

To keep the breakwater and port-development costs within reasonable limits would require minimum spacing between piers. Moreover, the increased number of vessels would increase not only the danger of collision but also the possibility that some catastrophic occurrence at one berth would affect a vessel at another.

It is true that the harbor may have slightly lower berth outages. This reduction in outage alone, however, does justify the increased cost and time for construction compared to use as an oil terminal only.

The harbor would not reduce outages due to wind or fog; it can only affect those due to waves. Here again,

the effect it would have on waves would be influenced by such factors as:

• Configuration and length of breakwater.

• Direction, height, and period of the incident wave.

It is expected that if the outage at an SPM cluster were on the order of 15%, the outages at a man-made offshore harbor at the same location might be on the order of 10%. (This comparison is order-of-magnitude only and would vary depending on local conditions.)

#### References

1. Robert R. Nathan Associates, Inc. "U.S. Deepwater Port Study"—IWR Report 72-8 dated August 1972. Prepared for U.S.

Army Engineers Institute for Water Resources.

2. Strider, C. D., "NOTICE, Atlantic Coast Deepwater Port Facilities Study: East Port, Maine to Hampton Roads, Virginia" dated Jan. 8, 1973—Philadelphia District, U.S. Corps of Engineers.

3. Dickson, Capt. A. F., "Single Buoy Mooring"—Presented at the 16th Annual Tanker Conference sponsored by API Division of Transportation, Point Vedra Beach, Fla., May 10-12, 1971.

4. Flery, J. F., Macozik, J., Pederson, I. J., "The Single Anchor Leg Mooring"—Presented at the Offshore Technology Conference, Houston, Texas, May 1-3, 1972, OT Paper Number 1644.

5. Howe, R. E., "Design and Operation Requirements for Oil Transfer, Offshore Terminals"—Paper presented to a Conference on Ocean Oil Spills held by NATO Committee on Challenges of Modern Society in Brussels, Nov. 2-6, 1970.

6. Langsvold, J. M., "Offshore Tanker Terminals"—Presented at Conference on Tanker and Bulk Carrier Terminals, London, U.K., Nov. 13, 1969.

7. Macozik, J., "Deepwater Offshore Petroleum Terminals"—Presented at ASCE National Transportation Engineering Meeting—July 17-21, 1972, Milwaukee.

LOOP INC.,  
New Orleans, La., August 1, 1973.

Hon. JOSEPH R. BIDEN, Jr.,  
U.S. Senate, Washington, D.C.

DEAR SENATOR BIDEN: Enclosed is an unsolicited letter from Captain E. G. Thompson answering a question posed during the recent deep water port hearings. You may recall that Captain Thompson's answer was interrupted by a Senate vote. Upon your return Senator Johnston had the floor and was questioning along a different line.

I hope you enjoy the Captain's refreshing and sincere letter as much as I did. If you would like us to provide you with any further information, please let me know.

Sincerely,

W. B. READ, *President.*

Enclosure.

DEAR SENATOR BIDEN: On July 24th. 73 the writer was requested by the Gulf Oil Corp. to appear before your Committee along with the Representatives of the "Sea Dock—Loop" project so that I could possible give some evidence of the success this SPM could be, which knowledge I had gained from four other systems I had operated in four foreign countries.

As you may recall that due to lack of sufficient time for you to complete the interview with me I thought that perhaps you might appreciate if I wrote a brief as possible explanation as to how this type of berthing is done at an SPM system.

Up until a few years ago we moored the vessels at the bow by its own—mooring lines, however, we no longer use the vessels ropes and have resorted to a much more—efficient method by having two very large floating mooring lines made of nylon and about 200 feet in length, these are specially constructed lines and have great strength.

As the tanker approaches the SPM no less caution is used than if it were—approaching a land based terminal dock. The vessel is brought to a stop position about 300 feet from the SPM where an attendant launch vessel takes a strong pendant line from the tanker's bow, secures it to the ends of the floating hawsers which are then pulled on board the tanker and—the ends made securely fast to a so-called strong-point on the bow of the tanker. This strongpoint has a built in quick release mechanism so that in a case of an emergency and should it be necessary for the tanker to depart or vacate the SPM it can be instantly used to drop the lines in the sea and with no damage to the mooring lines.

During the period of the vessel mooring, a small tug boat is normally used to hold the hose strings out of the path of the vessel as it approaches the SPM, after the vessel is securely moored the said tug pulls the hoses along side the tanker at a point where the hoses are lifted on-board with the vessels lifting gear.

The hose connecting manifold on the SPM and mooring line swivel are both—so constructed that they both move in unison whenever the vessel's heading swings to winds and prevailing currents and is quite capable of swinging in a 360° Arc, and never interrupts the flow of cargo through the system.

I have on a number of occasions moored to the SPM with a 6 and 7 foot sea, a good deal in this regard depends on the experience of the men making the mooring rope connection. I have operated on the buoy while discharging cargo with sea conditions up to 10 and 12 foot seas, and have heard of others who have done so with 18 foot seas.

If it should be that a leak develops on the hose strings while discharging cargo, the discharge can be promptly shut down, and the defective hose line can be promptly displaced or purged of all oil content by use of the tanker's pumps which can take sea water from the sea suction and isolated from cargo, and pump it directly through the hose and into the line that is taking the oil to on-shore storage.

I feel very convinced that the SPM system in so far as I know it, is the safest method of receiving crude oil from the mammoth type tankers which is contemplated to transport crude oil to our shores in the near future. We have no adequate waterways or harbors that could accommodate such a vessel of the mammoth class.

I wish to add that at the present time I am in retired status from Gulf Oil, and I am in no way engaged in the planning of "Sea Dock—Loop project. Hoping I have been of some service to you, I am,  
Very Truly Yours,

CAPT. E. G. THOMPSON.

Senator BIDEN. Our next witness will be Mr. Moody and Mr. Edmondson, and I will run back as quickly as I can.

Thanks a lot.

[Recess.]

Senator BIDEN. How are you, Mr. Moody? I apologize for the delay. Proceed at your pace, Mr. Moody. In spite of the hour, I have all the time in the world and the staff just told me they would be happy to stay here until 9. Seriously, take your time.

**STATEMENT OF G. WILLIAM MOODY, MARITIME TRADES DEPARTMENT, AFL-CIO**

Mr. MOODY. I very much appreciate that and I think you and the other members of the committee are to be congratulated for your patience, and to be admired for your stamina, because you have heard a great deal of repetition today from the various witnesses who have tried to establish what they see and what we see as a need for deepwater ports, and with the permission of the chairman, we would file our statement for the record at this point, and I would like to attempt to briefly summarize it.

I would like to address myself to some of the questions which I heard you put earlier today and which I must say were quite interesting to me, and on which I have a point of view from our side.

The AFL-CIO Maritime Trade Department which as my statement says, Senator, is a constitutional arm of the AFL-CIO that speaks on maritime issues for 44 international unions affiliated with our department, and we are in support of the intent of this bill, S. 1751, and we believe it merits top priority consideration.

We think that a central issue here is the environmental aspects of the situation, and we think that the environmental interests of this country would best be served by a superport, or superports.

First of all I don't know how we are going to stop the importation of oil. I think it is going to continue, and I think it is going to probably escalate as the Department of Interior projections indicate that it will.

What we are really talking about then is how do we get that oil here most economically, and in a manner that would guaranty as much as is humanly possible that we not do violence to our environment in transporting it here.

Now when we talk in terms of the way this oil is brought in now, what we are talking about is that the very large crude carriers that would come into the deepwater terminals if we had them, are coming instead into the Bahamas and Canada. The oil is being transshipped here in smaller ships, ships in the 45,000 to 50,000 and 60,000 tonnage range.

That means that so long as we have to depend on this transshipment method of getting the oil imports into this country we are

going to have vastly more ships in our coastal waters and in our harbors than we would have if we were using the VLCC's and the deepwater terminals and pumping the oil into shore.

In 1971, for example, the last figure that we have available, there were some 67,000 tanker arrivals in U.S. ports and about 85 percent of those were in the east coast ports. I was interested in the question you posed to the witnesses that preceded me on whether or not establishing these deepwater terminals, we would not simply be moving the harbor congestion someplace else.

With all due respect, Senator, I don't think that is a valid concept. I know you have been across the Verrazano Bridge, and if you look down in that harbor there is all kinds of traffic that has to run through that narrow, confined area and the worst accidents that they have had in that port involve tankers that have been involved in collisions and in any coastal waters, you have this ever present danger of running aground.

We see the deepwater offshore facilities as a way to reduce to a great degree this hazard, this tanker travel, and get it out there where first of all you reduce the number of ships that are approaching the coast, because you are using a ship that is equivalent to at least five of these smaller ships and second of all, you are keeping them out there away from the regular traffic lanes that are used by a great many other watercraft that are engaged in ocean transportation.

We think, also, that there is a very important national security consideration in this whole thing. I am sure I don't have to tell you that there are political changes taking place in the Caribbean. The Canadians have adopted a most ambivalent stance as far as our oil imports are concerned.

They tell us they don't want tankers from Alaska going off the coast of British Columbia but one of our main east coast sources of oil imports are deepwater Canadian ports.

By the same token the Canadians don't want to let American-flag tankers serve private interests that are trying to build a petroleum refinery in Maine.

So to the degree that we subject ourselves to these kinds of potential political dangers from foreigners who control these transshipments, I think there is a real national security consideration that is built into this thing that would be better served if we had our own offloading points that were completely under our own governmental control.

I was interested when you were discussing the job factor with the previous witness. Frankly I am not an expert on the job factor related to deepwater ports.

I don't know what jobs would be generated in the construction of these facilities and in their operation, but I think admittedly there would be some jobs. But there would be a great many jobs that would hopefully be developed by the construction of American flag, American built VLCC's to serve these terminals.

I think Mr. Cook with the Maritime Administration said today that we now have nine of these ships being built in the United

States, and without these terminals they won't really serve American-flag interests except to the extent that they would be able to transport oil as far as the Bahamas for transshipment here.

Senator BIDEN. If I could interrupt at that point, Mr. Moody, this question of jobs is a very important one, I think, and let me see if I understand how the jobs go.

Let us talk about your unions. There are 44 unions.

Mr. MOODY. Let's narrow it down to the seagoing union, the Seafarers International, of which I am a member.

Senator BIDEN. You represent 8 million people?

Mr. MOODY. That is the whole 44 unions.

Senator BIDEN. What do the Seafarers do, for the record?

Are they construction unions? Are they the ones that construct the ships, or are they the ones that work on the ships, or what?

Where are your jobs concentrated, in what aspect of this whole picture?

Mr. MOODY. First of all, I will talk about the Maritime Trades Department. We are a service organization for unions that are involved in building ships, handling cargo, manufacturing steel, electronics, all of this kind of gear that goes into the construction of the ship. So that disposes of that aspect.

Now, let me talk about the Seafarers.

Senator BIDEN. About how many men does that comprise, out of the 8 million?

Mr. MOODY. I can supply the figure for the record.

[The following information was subsequently received for the record:]

According to figures obtained from the Maritime Administration of the Department of Commerce, there are some 65,000 workers engaged in actual ship construction work in privately operated U.S. shipyards. We estimate that for each of these workers, three additional workers are required to produce the materials that go into ship construction and in other supporting activities. We are informed by MARAD that some 31,000 seamen are engaged in the operation of U.S. flag ships.

Mr. MOODY. Then we are talking about the memberships of the Steelworkers Unions and so forth. Let me talk about the ship thing for a moment.

The Seafarers International Union supplies the crews that sail ships, but don't be misled by that, because none of these ships that we are talking about, virtually none, carry American crews. These ships that we are talking about, Senator, are foreign-flag ships.

Let me amplify that a little bit, because that goes to the environmental question, and it goes very pointedly to it. We carry less than 5 percent of our total petroleum imports in American-flag ships and I promised you I would not read from my testimony, but I would like to read something on that.

Senator BIDEN. It cannot cost you many jobs if you are not on the ships to begin with.

Mr. MOODY. As a matter of fact, it should have the reverse application because this is the only way that we can ever hopefully make the American-flag tanker fleet internationally competitive,

to build these kinds of ships. That led me to the environmental aspects of the ships, and I would like to talk about that.

Last year, the Organization for Economic Cooperation and Development reported on the hazards of allowing foreign-flag ships, most of them registered under flags of convenience such as Liberia and Panama, to serve the ports of major industrial countries.

I would like to read just briefly what their findings were. These findings highlighted the really extreme comparison between the safety of American-built, American-manned ships as opposed to these foreign-built, foreign-manned ships and this is a quote from that:

It has often been said that the flag of convenience fleets include a large proportion of low-quality vessels operating under minimum maritime safety conditions. In the period of 1950-1970, total loss figures for Liberia were, in proportion to total fleet, twice as high as those for OECD Member countries, for Panama three times as high, and for the Lebanese and Cypriot fleets very much worse. Loss figures are closely related to age and these figures are all the more striking in that the average age for Liberian-registered ships over this period was 8.7 years compared with 12 years for the OECD countries; moreover a large part of Liberian shipping, particularly tankers and bulk carriers, is employed permanently on long hauls and spends relatively little time in congested waters. . . .

Senator BIDEN. The point is well taken.

Mr. MOODY. If I may say so, that is one of the reasons why we so strongly support S. 2089, which was introduced just recently by Senators Magnuson and Beall to require that at least 20 percent of oil imported into this country be carried in American flag ships as a means to stimulate the construction and American manning of ships which are more environmentally sound than those which are now serving us.

Senator BIDEN. You had the full support of the oil companies, I am sure.

Mr. MOODY. Senator, if you had been around the last session, you would have known what kind of support we had. I guess it is a bit ironic that we find ourselves on the side of the oil companies on the deep water ports and 180 degrees apart on that issue, because there is no doubt about it that the reason that these foreign-flag ships are now serving us rather than American-flag ships results in large part from the heavy investments since World War II of the U.S. oil companies in foreign-flag fleets for the transportation of foreign oil. That brings me to another thing.

I heard Senator Johnston ask questions about the *Torrey Canyon* today. I think that disaster is the only thing that points up the environmental reason why we should have these deepwater terminals, because the *Torrey Canyon* ran aground and broke up in coastal waters and not at the kind of offloading facilities that this legislation envisions.

But off that point for a minute. As I said in the beginning, we support in principle this legislation, but we do have a problem with the jurisdiction. We believe that the primary jurisdiction for the licensing and the administration and regulation of these facilities should be in the Department of Commerce. We think it should be in the Department of Commerce for two reasons.

First, in the Department of Commerce, we find the NOAA, which has for its primary purpose the protection of oceanic environment as well as the environment of the atmosphere.

This agency of government has the primary responsibility for weather forecasting. There has been conversation here about the possible impact of hurricanes on tank farms and so forth. I certainly think that in all of this area we need the expertise of NOAA in the planning of these facilities and so forth without having whatever influence they can bring to bear being filtered through the Department of Interior.

The same thing applies even in greater degree when we talk about the Maritime Administration, because in this agency is housed the engineering expertise for shipbuilding in this country.

Here are the most knowledgeable people about the kind of ships that are engaged in this type of transportation and this is the administration that ought to be given some input into the construction of deep water terminals that will most safely accommodate these very large carriers that we are talking about.

There is one other thing that is not covered in my prepared statement that I want to make very clear, that as a matter of oversight we did not deal with the question of the Coast Guard. We think by all means that the Coast Guard needs to be heavily involved in this matter.

These are the people who have regulated marine safety for years, and have experience with our own ships and foreign ships.

Senator BIDEN. What you are saying is that it is more logical to move the oversight and the responsibility for the siting and the maintenance of these facilities and the safety aspects of use of the facilities to agencies that are better designed to handle it, and you think that happens to be commerce, and heavily relying on the Coast Guard?

Mr. MOODY. Yes, sir, that is what I am saying.

Senator BIDEN. The legislation we've enacted in the past, the Secretary of the Interior will soon have a great deal of responsibility, authority and "discretion" to exercise on a number of very important issues. He is going to be a very powerful fellow, or woman, more powerful than he already is. We may not need a Secretary of Defense when it is all finished.

But at any rate, you have raised the question of Canada and our national security. You pointed out that Canadians are concerned now about oil spills and pollution along Puget Sound or up that way, and along their west coast.

I thought it was a very interesting conference I was in today. The Canadian parliament asked about the Alaskan pipeline bill. They felt they were put in jeopardy, and I know you recognize that by the statement you have made.

Mr. MOODY. I recognize that they think that, Senator.

Senator BIDEN. Yes. I didn't mean to imply that you agreed with their position.

I recall on the Senate floor and in caucus and on the press there was constant talk about the Canadians didn't want that trans-

Canadian pipeline, that they were not interested in negotiating, and that the United States had to move ahead in the national interest, and so on. Then this Canadian official stands up today to say: "That Mackenzie Pass is what we wanted, and I don't know what all this was about saying we won't negotiate."

As my young brother might say, I was far out. I don't know where that brings us, you know. We passed a bill on the basis of national interest and the Senate voted down a provision fortunately now, I noted with Senator Mondale, but the amendment was defeated to delay for 6 months to study the alternative on the ground that the Canadians obviously aren't going to talk.

A whole delegation today comes down saying the single biggest interest they have was that, and wanting to know "Why didn't you ask us." It is getting late.

I answered the big question I had. It would seem to me that I was unaware of the fact that only 5 percent of the ships had American crews, and it would seem to me if you supplanted a number of large tankers for the greater number of small tankers, some of your boys would be out of work, but if they are not out there to begin with, they could not be out of work.

Let me ask you one question in this regard: Were it the case that we were going to build a requisite number of smaller tankers and a national policy is set here that we would only import crude in American bottoms with American crews, would you still feel as strongly about this deep port legislation? It seems to me that would create more jobs for you.

Mr. MOODY. Of course, that is true, but I think it would create more jobs for us at the expense of the national interest. I think it would create more jobs for us at the expense of the consumer, because we are talking about an awful lot of cargo. Someone said 8 million barrels a day.

Senator BIDEN. Fifteen million a day by 1985.

Mr. MOODY. The only way you can keep from punishing the consumer with this thing, it seems to me, is to be able to reduce the transportation cost through being able to accommodate the very large crude carriers, but we would welcome the jobs.

Senator BIDEN. I appreciate the attitude expressed in your response to that.

Mr. MOODY. Senator, we are Americans, too, and whatever is in the national interest, it certainly serves our membership, also.

Senator BIDEN. I understand that. The question of national security, I have some questions about which you and I can talk over coffee some day, but it seems to me our national interest isn't necessarily best served by making this major commitment to the Persian Gulf and putting our cards on the table, saying "look at the billions of dollars we have invested and we are relying on you to supply our needs between now and the year 2000."

In terms of national interest—

Mr. MOODY. You might find me in agreement with you, Senator, because I think it is extremely perilous, the position we have ourselves in, where a source of energy that is so vital to our industrial machine and national security, that the whole bit is tied up in the

kind of political instability that we have in some of these oil producing countries.

But the fact is, we have to get it somewhere until we find a better source of energy.

Senator BIDEN. The question is raised by a staff member relating to testimony by Dr. William A. Johnson, Energy Advisor to the Deputy Secretary before the Special Joint Subcommittee of Senate Committees on Interior, Insular Affairs, Commerce and Public Works, and in his testimony under the general heading of "some general conclusions of the study," No. 1 says, "Under most circumstances, the construction of a U.S. deepwater port would result in significant savings to the United States."

That is one of the justifications for building the deepwater ports.

The question has been raised as to whether or not that economic advantage which is to be gained by construction of the deepwater facilities would not be lost, and an oilman, the last time around, raised this objection to your union's position, if I am not mistaken, by the additional cost of having to carry it in U.S. bottoms. You fellows cost a little more because of wages to be paid and conditions which, in my opinion, justifiably request working under, and my question really comes down to this:

Will not the increased cost of having to carry it in U.S. bottoms negate the savings, or at least eat into the savings of being able to carry larger tonnages over the long distances to these deepwater ports?

Mr. MOODY. Not really.

You see, this is not just a U.S. shortage of oil. The shortage of oil is worldwide. It seems that the only countries which really have adequate supplies are the Communist nations and the Mideast. Because of the worldwide shortage of oil, tanker rates, world tanker rates are so high that the few American flag ships that we now have are able to compete with the foreign flag ships despite paying higher wages to American crews.

But the other side of that coin is, how long does this shortage of tankers exist, because everybody is going to be building tankers. So the only way to meet that economic factor is in the very large tankers, because when you project that scale out against a crew that is not much bigger than it is on a ship one-fifth the size, the wage cost becomes almost negligible in the cost of transportation of the oil.

In that connection, we proposed, in testimony before the House Ways and Means Committee, that the import fees that are charged under the oil import system ought to be waived whenever American flag ships are used for the carriage of that oil.

Senator BIDEN. So you pick it up at the other end, too.

Mr. MOODY. That is right, because the oil import fee system is not intended as a tax- or revenue-generating measure anyway.

Senator BIDEN. I would like to read a footnote to this article, and I have no further questions.

I quote from the same page 26 of this study:

This assumes that crude oil must also be transhipped from Canadian to U.S. ports by U.S. flag tankers. Legislation requiring the use of U.S. tankers for 50 percent of the oil imports was narrowly defeated by the last Congress. The same legislation has been introduced again in this Congress.

Our results suggest that the effects of such legislation may well be to drive oil importers away from both US tankers and US deepwater ports.

I mention it to you only to be prepared, as I am sure you already are, that legislation like this going through, you may find this article turned around against you.

Mr. MOODY. I am not worried about their driving importers away from U.S. flag ships. We have virtually none. You can't subtract something from zero. But what people really ignore, or don't understand in this oil transportation business, is that the same companies that own these vast fleets of foreign flag ships which are less safe and less competent than American flag ships, the same people that own the ships own the cargo.

So they determine who gets the cargo, and that is why we think if we are ever going to get American flag capability, which we insist is in our national interest, in this transportation field, it is going to have to be mandated legislatively.

Otherwise, the oil companies will never give U.S. ships a share of the cargo.

Senator BIDEN. If we used supertankers, wouldn't that reduce the demand for building smaller ships, for which I understand the United States has a much greater capability? Aren't you guys building those already?

Mr. MOODY. The small foreign ships involved in the transshipment are not U.S. built.

Senator BIDEN. So the percentage of the ships now transporting the oil back and forth are not manned or built in America?

Mr. MOODY. That is right. They are foreign built and foreign manned.

Senator BIDEN. I don't have any more questions.

Mr. MOODY. Senator, I am indebted to you.

Senator BIDEN. Dr. William A. Johnson is in the Department of the Treasury. I wouldn't be surprised to see this argument again used when you fellows come around to ask us to report that legislation. I thought I would mention it.

Mr. MOODY. Thank you very much.

[The statement follows:]

**STATEMENT OF O. WILLIAM MOODY, JR., ADMINISTRATOR, AFL-CIO MARITIME TRADES DEPARTMENT**

My name is O. William Moody. I am the Administrator of the AFL-CIO Maritime Trades Department, which is a constitutional arm of the AFL-CIO and is composed of 44 unions representing some 8 million American workers.

We are pleased to have this opportunity to testify before a joint session of the Senate Commerce, Interior and Insular Affairs, and Public Works Committees. The uniqueness of holding such a joint hearing is clear evidence of the importance of deepwater ports to our nation.

The Maritime Trades Department strongly supports the intent of S. 1751. As we have done in the past, the MTD strongly supports the creation of superports to serve the needs of the United States. These ports are a first priority if the present and ever increasing petroleum shortage facing the United States is to be overcome.

**NEED FOR DEEPWATER TERMINALS**

Consumption of oil in the United States has steadily risen, and domestic supplies have not been able to keep up.

The dependence of the United States on imported petroleum has been increasing at a rapid rate. In 1967, imported crude oil and products represented

about 20 percent of domestic demand. This increased to nearly 30 percent in 1972, and is currently running at nearly 34 percent, or approximately 6 million barrels of imported oil per day.

It has been variously estimated that imported oil will, by the 1980's, provide this nation with more than half of its supply, or between 12 and 15 million barrels of imported oil each day.

At that time, at least 50 percent of our imports will come from the Persian Gulf and North Africa. The North African and Persian Gulf routes to U.S. North Atlantic Ports involve round trips of 8,400-24,000 nautical miles.

The Department of Commerce has determined that the optimum size vessel for a 24,000 mile round-trip would be one in the 280,000-350,000 DWT class.

By the end of this decade, the number of ships with a capacity of more than 100,000 DWT should well exceed 1,000. At that time, the 200,000 to 300,000 DWT tanker is expected to become the standard vessel in large-scale world trade movements.

Today, there are no East or Gulf coast ports that can handle a tanker larger than 80,000 DWT. Although the United States is the largest trading nation in the world, none of the world's 50 deep draft ports in operation or under construction are located in the United States.

But the size of American ports will not deter the construction of supertankers. These vessels are going to continue to be built, and they will need facilities where they can discharge cargo.

A deepwater oil terminal to serve U.S. East Coast oil needs is under construction off Grand Bahamas Island. This terminal, scheduled to go into operation in mid 1974, will accommodate vessels up to 350,000 DWT. It is estimated that this port, together with an expanded refinery, will generate over \$500 million in revenue in its first five years of operation.

Canada is also strengthening its economy by providing deepwater ports for vessels carrying oil destined for the United States. The oil is initially sent to Canada in supertankers and is then transhipped in smaller vessels to U.S. East Coast ports.

There are very serious national security considerations involved in our reliance on foreign-based facilities to accommodate the giant tank ships needed to supply our energy requirements. The political climate in the Caribbean is undergoing change. The Canadians only recently indicated to private interests seeking to build a refinery in Maine that use of Canadian waters for the passage of ships to this refinery would be denied. This kind of dual dependency on foreigners for both the source and the transportation of our petroleum imports is why we support so strongly S. 2089 introduced by Senators Magnuson and Beall to require that a percentage of oil imports be carried on U.S.-flag ships.

*Cost to the Consumer.*—It costs up to 50 percent more to use smaller tankers to import U.S. oil needs than it would to use larger tankers of 200,000 DWT or more. These large tankers would allow U.S. consumers to gain the advantages of the economies of scale "supertankers" produce.

Maritime industry studies involving the cost of shipping oil from the Persian Gulf to U.S. North Atlantic ports show great savings as the size of the vessel increases.

*Environmental Safety.*—The large numbers of small foreign-flag tankers using U.S. ports have created a safety and environmental hazard that can only increase as our reliance on imported oil increases.

Trade routes along the coasts of the U.S. are severely congested with tankers serving our oil needs. Tanker arrivals in U.S. ports totaled 67,770 in 1971, with 84 percent on the East Coast. Tanker traffic in the large eastern refining centers is still considered manageable but it will get clearly out of hand if ships of the present average size of 30,000 DWT continue to deliver our rapidly rising import volume.

The Department of Interior has forecast that if there is no improvement in East Coast port facilities, and therefore no increase in the average size of tankers used, there would, with present import projections, be a 265 percent increase in the number of tanker visits carrying crude oil imports.

It takes more than five small tankers of 45,000 DWT to equal the transporting capability of one 250,000 DWT tanker. Thus, the use of supertankers in America's oil trade could considerably reduce both port and terminal congestion, as well as the danger of ship collisions and oil spills.

Most of the tankers presently serving our oil needs are foreign-flag vessels, built to standards that are lower than those in the U.S., and they are manned by crews which are not as qualified as their American counterparts. Last year the Organization for Economic Cooperation and Development (OECD) reported on the hazards of allowing foreign-flag ships, most of them registered under the flags of convenience of Liberia and Panama, to serve the ports of major industrial countries.

The OECD report highlighted accident data for flag of convenience fleets. These fleets carry more than half the oil imported into the U.S. According to the OECD report:

" . . . It has often been said that the flag of convenience fleets include a large proportion of low-quality vessels operating under minimum maritime safety conditions. In the period 1950-1970, total loss figures for Liberia were, in proportion to total fleet, twice as high as those for OECD Member countries, for Panama three times as high, and for the Lebanese and Cypriot fleets very much worse. Loss figures are closely related to age and these figures are closely related to age and these figures are all the more striking in that the average age for Liberian-registered ships over this period was 8.7 years compared with 12 years for the OECD countries; moreover a large part of Liberian shipping, particularly tankers and bulk carriers, is employed permanently on long hauls and spends relatively little time in congested waters . . ."

The best solution to this situation is to build a number of deepwater terminals off the coasts of the United States. These terminals would produce numerous benefits for the United States.

They would enable American consumers to benefit from the economies of scale of supertankers.

Deepwater ports could be built without the severe ecological destruction associated with port dredging and deepening.

They would provide American refiners with a steady flow of competitively priced oil, thus stemming the flight of American refining capacity to the Bahamas, Virgin Islands and other Caribbean areas.

The development of an American-flag supertanker fleet would be encouraged, and would stimulate the entire economy. For a 250,000 DWT tanker, costing \$62 million, jobs could be created for 1,674 men for a full year. And, the large deficit in the transportation sector of our balance of payments could be dramatically reduced by curbing the outflow of dollars to foreign shippers.

#### S. 1751 AND DEEPWATER PORTS

S. 1751 has taken many necessary steps to ensure that these ports will be environmentally sound. This matter is of deep concern to the Maritime Trades Department. We represent thousands of shoreside workers and seafarers, many of whom will work or dock their vessels at these ports, once they are certified and built.

The Maritime Trades Department commends the authors of S. 1751 for specifically setting out many existing Federal laws which will be applicable to the port facility. We are pleased to note that section 27 of the Merchant Marine Act of 1920, commonly referred to the Jones Act, was included in those mentioned.

Thus, this legislation provides a framework for insuring that the deepwater port facility, the vessels using it and the vessels carrying the oil from the deepwater port to existing U.S. ports will all work toward protecting our environment.

However, in respect to the question of Departmental jurisdiction over the construction and operation of the deepwater port facilities the Maritime Trades Department believes that placing that authority in the Commerce Department, rather than in Interior, would be more appropriate—for a number of good reasons.

It has been suggested at hearings on similar legislation that since Interior already licenses offshore drilling rigs, it is a logical step for that agency to also license offshore port facilities. (It should be noted that the General Accounting Office issued a report dated June 29, 1973, which severely criticized the Interior Department's regulation and inspection of offshore oil operations.) Regardless of the merit of this contention, the Maritime Trades Department

feels that there are more important reasons for making the Commerce Department the licensing department.

In constructing and operating a deepwater port, two equally important areas must be considered: domestic and international shipping, and the marine environment. These fields are part of the expertise of the Commerce Department.

The Maritime Administration, a part of the Commerce Department, has the responsibility to administer programs to aid in the development, promotion and operation of the U.S. merchant marine. The Administration constructs or supervises the construction of merchant-type ships for the Federal Government. It helps industry generate increased business for U.S. ships; conducts programs to develop ports, facilities, and intermodal transportation systems; and promotes domestic shipping. Moreover, it appears to us that advancement of maritime activities, it would have greater incentive than Interior for moving forward with greater enthusiasm and vigor in promoting and implementing the construction of superports.

In short, the Maritime Administration, through its research and development activities to improve the efficiency and economy of the merchant marine, is the only agency with the expertise required to guarantee that the deepwater port will, in fact, be suitable for shipping. There is no similar Administration within the Department of Interior.

The Maritime Trades Department believes that the National Oceanic and Atmospheric Administration (NOAA), another branch of the Commerce Department, is extremely qualified in terms of protecting our environment. This Administration, when it was established in 1970, was given the mandate to study our marine environment so that commerce may become consistent with sound conservation principles; and that the resources of the seas can be properly managed and employed. We feel that once a deepwater port terminal plan is certified by NOAA, many of the nation's concerns about the environmental safety of deepwater terminals will be alleviated.

#### CONCLUSION

The Maritime Trades Department again wishes to state that the intent, as well as many of the provisions of S. 1751, have our wholehearted endorsement.

At the same time, we urge that S. 1751 be amended so as to give the Department of Commerce the authority to put its expertise in maritime matters and the marine environment into effect. This Department, not the Interior Department, should regulate the construction and operation of America's deepwater port facilities.

—  
MARITIME TRADES DEPARTMENT, AFL-CIO,  
Washington, D.C., August 13, 1973.

HON. JOSEPH R. BIDEN,  
U.S. Senate, Washington, D.C.

DEAR SENATOR BIDEN: In response to your question during my testimony before the Special Subcommittee on Deepwater Ports Legislation in which you asked for certain information about the number of U.S. workers engaged in building ships and operating American flag ships, I am submitting the following information:

According to figures obtained from the Maritime Administration of the Department of Commerce, there are some 65,000 workers engaged in actual ship construction work in privately operated U.S. shipyards. We estimate that for each of these workers, three additional workers are required to produce the materials that go into ship construction and in other supporting activities. We are informed by MARAD that some 31,000 seamen are engaged in the operation of U.S. flag ships.

If you desire further information in this regard, please advise me.

Sincerely yours,

O. WILLIAM MOODY, JR.,  
Administrator.

Senator BIDEN. Mr. Amundsen is our next witness. You get the award for today, Mr. Amundsen. When I chair these hearings with

my vast amount of experience, I make up these rules, and the rule we have for today is that the last person to testify gets whatever he wanted in the legislation.

**STATEMENT OF PAUL A. AMUNDSEN, EXECUTIVE DIRECTOR,  
AMERICAN ASSOCIATION OF PORT AUTHORITIES.**

Mr. AMUNDSEN. We are not here to ask for anything. We are here to shed light, if we can.

If I may, I would like to quickly read about my statement.

Senator BIDEN. Please do.

I am Paul A. Amundsen and I am appearing before this distinguished subcommittee as a representative of the American Association of Port Authorities. The association consists of those boards, commissions, authorities, and similar agencies of local government responsible for public development throughout the United States. There are some 85 such agencies in the United States responsible for deepwater port development, all of which are AAPA members. Virtually all other ports of this hemisphere, Latin America and Canada, also maintain AAPA membership for interchange of technical information.

Our U.S. ports are a highly competitive group, very sensitive to the flow of commerce, and keenly alert to measures which might affect such flow.

The port industry endorses the concept of superport development on a regional basis, provided that such developments are confined to the handling of liquid bulk cargo superships with dimensions, particularly drafts, so excessive that it would be physically and economically impractical to accommodate them at existing harbors, even if they were improved through a national program to maximum feasible depth.

However, we do not see passenger, container, breakbulk general cargo, petroleum "light product" and many lesser dry bulk cargo vessels in this lack of channel depth predicament. Thus, for such categories of ships, we oppose the regional concept as unnecessary and continue to support the Federal harbor improvement programs they may from time to time require.

The port industry therefore, to the extent and for the purposes indicated, supports regional deepwater port development for the handling of liquid bulk cargo supertankers. However, it is essential that all relevant factors be taken into consideration, including the need to safeguard the environment for the "host area," assurance that the benefits from such development are shared down to the consumer level in price and supply and that the ports to be served from any such development derive equitable benefits in a manner that will not cause shifts in their industrial structures, employment or basic economics to the advantage of one area and the disadvantage of one or more other areas.

We note that most of the legislation taking shape goes to the issuance of licenses for the development of offshore port facilities, these to be issued by an appropriate Federal agency. We feel that this concept is basically sound and offers avenues for private and local initiative such as have been traditional with the large-scale

movements of bulk cargoes. Terminal facilities for bulk purposes are basically links in a processing-distribution cycle. Bulk cargo facilities are generally financed, developed, and operated by private enterprise.

The additional requirement of Federal licensing will, hopefully, resolve the various complex issues which have surrounded the off-shore terminal concept, permitting much needed development. Such licensing legislation should, in our opinion, meet the basic tests of: (1) Required consultation with affected States; and (2) required consultation with affected and interested Federal agencies.

In its endorsement of regional deepwater bulk port development where genuinely needed to meet the problems mentioned above, the port industry opposes any termination, slowdown, suspension, or underfunding of existing, authorized Federal navigation construction projects during the course of Federal deepwater port development efforts unless studies establish to the satisfaction of the local interest affected, that regional deepwater bulk port development is necessary in the area involved and will be a timely and viable substitute.

That concludes our statement, Mr. Chairman.

Senator BIDEN. Thank you very much.

I have several questions.

In your statement you emphasize the need to confine the handling to liquid bulk cargo ship. Would you want that written into the legislation?

Mr. AMUNDSEN. Yes, sir.

Senator BIDEN. On the last page, you talk about—I assume your concern is that you may be bypassed “in the national interest” in terms of moneys available for development.

I know that we are shedding priorities in the administration and Congress, and you want to make sure that superports are not a priority over our existing funding of harbors and existing ports; is that correct, and you want that written into the legislation?

Mr. AMUNDSEN. Yes, sir, if it can be written in.

Senator BIDEN. It could be written in.

I wonder how you feel about it.

Mr. AMUNDSEN. We think it is basic.

Senator BIDEN. You say such licensing should meet with the consultation of the State. I don't know what you mean by that.

Mr. AMUNDSEN. I think it has been discussed pretty thoroughly here today about how you go about licensing this thing, whether through a State or through a Federal agency.

Senator BIDEN. You wouldn't give a veto power to the State to decide they don't want the facility, or would you?

Mr. AMUNDSEN. I think where the State has a going concern and expertise in this area, such as Louisiana already does, then it might very well be that the licensing passes through that agency.

On the other hand, there may be a need for a Federal decision in some other area of the country, for example, the North Atlantic, or an arbitrarily licensed location, so that in that case the national concern might overtake the State concern.

Senator Biden. I have one more question for you, if you will give me a moment here.

Sir, keeping in mind that, as I understand it, you believe that offshore deepwater ports should not compete with existing ports, what do you think about section 103(c) of the administration bill, and I will read it to you in a moment, which says in effect that the economic effects on deepwater ports on existing transportation systems will not be considered in determining whether or not a license is granted.

Let me read it specifically.

**The Secretary shall not limit the number of licenses or deny licenses on the ground of alleged economic effects of deepwater facilities on the commodity and transportation markets served by them or by other port facilities.**

It seems clearly to say to me that you all are not to be considered in determining whether or not there be such a facility.

Do you read it as I do? I know you don't have it in front of you.

Mr. AMUNDSEN. I think I understand it the way you read it, and we would not agree with that, sir.

Senator BIDEN. I would appreciate it if your organization would take a look at section 103(c) and for the record give a written response, because I have taken sort of unfair advantage of you, because you don't have it in front of you, and give a written response as to whether or not you think that section should remain in the bill, or any similar bill.

Mr. AMUNDSEN. I would be glad to.

[The following information was subsequently received for the record:]

**THE AMERICAN ASSOCIATION OF PORT AUTHORITIES,  
Washington, D.C., August 16, 1973.**

**CHAIRMAN, JOINT SUBCOMMITTEE ON DEEPWATER PORTS,  
c/o Ms. C. Suzanne Reed  
Washington, D.C.**

**DEAR MR. CHAIRMAN:** During my testimony of Tuesday, July 24th on behalf of The American Association of Port Authorities Senator Biden asked me a question concerning Section 103 (c) of S. 1751, asking for a written response from our organization.

We have now had a chance to consider this matter and would suggest that the following language, when added to Section 103 (c) would substantially set aside the misgivings held by the United States public seaports as to the effect of 103 (c) as currently written.

On page 6, line 9, after the word "facilities," insert the following new sentences: "When such effects are alleged, he shall promptly determine whether or not they will occur and evaluate the probable consequences thereof, in reaching a decision as to whether or not the license applied for should be granted. If, in the judgment of the Secretary, it is appropriate, hearings pursuant to Section 105 (d) hereof may be ordered with regard to any alleged economic effects of the grant of the license in question."

We thank you for this opportunity to respond in more detail, supplementary to the recommendations contained in the original statement and drawn from Senator Biden's questioning.

Cordially,

**PAUL A. AMUNDSEN,  
Executive Director.**

Senator BIDEN. I don't have any further questions.

Do you have anything further?

Mr. AMUNDSEN. No.

Senator BIDEN. Thank you.

We are recessed until tomorrow morning at 10 o'clock.

[Whereupon, at 6:15 p.m., the hearing was adjourned, to reconvene at 10 a.m., Wednesday, July 25, 1973.]

# DEEPWATER PORT ACT OF 1973

WEDNESDAY, JULY 25, 1973

U.S. SENATE,  
COMMITTEES ON COMMERCE, PUBLIC WORKS  
AND INTERIOR AND INSULAR AFFAIRS, SPECIAL JOINT  
SUBCOMMITTEE ON DEEPWATER PORTS LEGISLATION,  
*Washington, D.C.*

The subcommittee met at 10:10 a.m. in room 5110, Dirksen Senate Office Building, Hon. Mike Gravel presiding.

Senator GRAVEL. The hearings will come to order.

The first witness we have today is the Honorable Jimmy Carter, Governor from the State of Georgia.

The floor is yours. Make yourself at home. It is a pleasure and honor to have you here testifying before the committee.

## STATEMENT OF HON. JIMMY CARTER, GOVERNOR, STATE OF GEORGIA, REPRESENTING THE NATIONAL GOVERNORS CONFERENCE

Governor CARTER. Thank you very much.

Mr. Chairman, before I begin, I would like to make a part of the record the National Governor Conference policy position for this year. Several of the policy positions, although they are not directly related to superports or deepwater ports do infringe on them in different manners, environmental protection, and so forth, and if it is permissible with the Chairman, I would like to make this part of the official report.

Senator GRAVEL. Without objection, so ordered.<sup>1</sup>

Governor CARTER. I have a statement to read, and I would like to add comments to it:

I come here this morning speaking not only for the State of Georgia, but for the National Governors Conference. I do not expect my remarks to be completely compatible with each of the 50 governors' position, but I have been on the committee for a number of years, and as its chairman, I am fairly familiar with it.

First of all, I appreciate very much this opportunity to come before you today both as the Governor of Georgia and as a representative of the National Governors Conference.

I have been asked to advise you of the intense interest of the governors of all the 23 coastal States in the legislative matters which you have convened to consider.

<sup>1</sup> See p. 730.

We all want to resolve the energy crisis.

We all want to promote the economy of our respective States and of our Nation.

And we all want to preserve the integrity of our natural environment.

There is no national energy policy at this time, Mr. Chairman, and this is one of the points I would like to comment on at the completion of my prepared statement.

It is probable that the construction and operation of deep-water ports to facilitate increasing our oil imports could be part of a very acceptable solution to our energy problem. However, the crisis-reaction nature of this proposal, in and of itself, creates an atmosphere of distrust. We have seen too many Federal policies and programs in this present administration that created more problems than they cured simply because they were implemented in a hurried, stab-in-the-dark manner which did not give full consideration to all possible consequences.

Our Nation cannot afford, and our people would not tolerate, a "phase three and one-half" deepwater ports program.

Taking a long-range view of the consequences of constructing superports, I respectfully submit the following points for your consideration:

1. It is reliably estimated that most of our oil reserves in the United States will be exhausted within the next 10 years. Obviously, when our own supplies are exhausted, we will be forced to depend entirely upon imports to meet our needs for oil.

2. There is little doubt that the development of deepwater ports would encourage continued dependence upon this source of energy by American industry.

3. With domestic oil supplies diminishing and dependence upon imports increasing, the posture of the United States as a world power would be seriously jeopardized. A vital ingredient of our national defense machinery would be subject to the caprice of foreign governments.

4. As the importation of oil became more and more mandatory, our current balance of payments problem would be in danger of being escalated.

As I stated earlier, the development of superports shows great promise of providing an acceptable partial solution to our energy problem. However, I submit that, at best, it can only be viewed as a short-range, stopgap kind of solution. It should be employed only in conjunction with other sound and long-range remedies.

The following points are recommended for your consideration:

1. The extremely limited nature of our domestic oil reserves demands that we increase our efforts to make practical the utilization of other more abundant energy sources.

2. It should be accepted as a fact that the thinking people of our Nation will not tolerate the abuse of their natural environment as an "unavoidable compromise" in providing an adequate energy supply.

3. The continuing increase in our per person energy usage rate could be curtailed through both education and legislation, thus con-

servicing present energy supplies and allowing more lead time for developing sound, long-range solutions. Some of the measures in which State governments are taking the lead are: (a) Taking inventory of each State's energy supplies and needs, both current and future, while establishing interstate exchange programs, (b) The utilization of tax rates to encourage the use of energy-saving devices and practices, such as smaller cars and rapid transit, (c) Reviewing utility rates to assure that they discourage waste, and (d) Reviewing State policies in all areas to assure patterns of minimum energy consumption.

I would like to add parenthetically here, and pursue it later on, that it is difficult for all 50 States to move wisely without conflicting with one another without Federal overall policy that is obvious to us and to our citizens.

Given that deepwater ports are a desirable element in an overall, comprehensive plan to meet the energy needs of the United States, we can then turn to the questions of how and where such ports should be built. A close examination of the "Administration Bill," S. 1751, reveals a number of unacceptable features:

1. First of all, in total contradiction of the administration's espoused policy of a "new federalism," this bill places the fate of our coastal areas almost entirely in the hands of the Secretary of the Interior. Token consultation with the States by the Secretary is totally inadequate as a safeguard for such precious resources as our coastal waters, our beaches, and our marshlands.

We are particularly proud and jealous of our 600,000 acres of coastal marshes and barrier islands in Georgia. On the islands off the Georgia coast, we have three national wildlife refuges, two scientific research institutions, and the Cumberland Island National Seashore, recently established by Congress.

Since the States will be required to live with the consequences of any plan, good or bad, the States should have a decisive voice in determining not only locations, but also the design and regulation of any deepwater ports built along our coastal areas.

2. The public hearing provisions of S. 1751 again bypass the authority of the elected officials of the various States and place unwarranted responsibility for this vital permitting function in the hands of the Secretary of the Interior.

Public hearings should be a routine part of the permitting procedure and should provide for proper notice to allow all legitimately concerned parties to voice their views.

Again, parenthetically, I think the hearing procedure should be the standard procedure used, and I will come to that later, Mr. Chairman.

Governors of States adjacent to any proposed superports, as representatives of the citizens of their respective States, should at least have a strong voice in decisions on such important matters as location, construction, and regulation of any superport.

3. The administration bill falls far short of providing sufficient protection for the environment. Pollution, by whatever means, must be prevented and not merely "minimized." S. 1751 neither regulates the whole coastal zone nor the whole of the facilities involved.

In addition, any superport legislation should provide for a mechanism and adequate funding to deal with potential environmental hazards and emergencies that might be encountered in the construction and operation of a superport.

4. The bill is too exclusive in nature, considering the deepwater port issue in almost total isolation. Superports are but one component of the pressures of population and economic development which threaten to overwhelm us in our efforts to preserve through rational utilization our invaluable and irreplaceable coastal resources.

The Governors of the various States, in conference, expressed concern that while the administration seems anxious to permit the development of deepwater ports, it is not willing to provide the States the funds required to carry out coastal zone management programs which would insure a safe and practical incorporation of these superports.

Concerning this last point, I would ask you to recall that the Coastal Zone Management Act of 1972 authorized \$45 million for grants to the States, and then the act was left unfunded in the upcoming budget. Thus, the act remains little more than a piece of paper.

While we support the concept of integrated and comprehensive land-use planning, it is vital that coastal zone management funds be made available at the earliest possible time to prevent the continuation of haphazard development of our coastal resources and their consequent degradation.

The various States must be permitted to conscientiously weigh the potential environmental hazards against the potential advantages of having a superport constructed off their shores and then to make their own decisions.

Delaware has elected to reject an early proposal for a location in Delaware Bay because the economic pluses did not seem to outweigh the environmental minuses.

Texas, on the other hand, has already taken the initiative in setting up a mechanism for establishing a superport off her coast deed compatible with environmental considerations.

Alabama and Mississippi have taken positive and optimistic steps jointly with hopes of securing a superport off their coasts.

The Coastal Plains States of Georgia, North Carolina, and South Carolina, as you probably know, are in the process of having a deepwater ports feasibility study conducted by the Coastal Plains Regional Commission.

In 1970, a bill was passed by the Georgia Legislature that established the Coastal Marshlands Protection Agency, which was charged with the responsibility of permitting any alterations of our marshes. Since that time, the functions have been transferred to the Department of Natural Resources, insuring that these critical areas will be protected for generations to come.

Finally, I would like to assure this committee that Georgia and other coastal States are always on the lookout for new industry which will bolster our economy and add to the standard of living

of our people. However, we can afford to be selective. In fact, we cannot afford not to be selective.

Where fishing boats sail beyond our territorial limits is of no concern to the States. But, where an oil tanker risks spilling its cargo onto our shores, whether 3 miles out or 30, is of concern to us, and legitimately so.

Our primary concern, as Governors, is that we be assured of an adequate and equitable role in the planning, locating, and permitting of any deepwater port facilities, in order that they might be developed in a manner consistent with the objectives established by the states for the protection of their precious coastal resources.

I trust that the distinguished members of this committee will endeavor to grant us such assurance.

To summarize, Mr. Chairman, and to elaborate upon a couple of points, I would like to make these closing comments:

First of all, this Nation has no national energy policy, and it is almost impossible for the states, no matter how dedicated or concerned the Governors and the legislatures and other leaders might be, to devise and effectuate the optimum utilization of what energy resources we have, or have the prospect of acquiring.

And because there is no national energy policy, it seems to me it is going to be very difficult to determine the optimum places and the number of superports to be constructed.

Second, we need to have a permanent Federal-State agreement or contract firmed up in the law and not subject to abrupt administrative policy changes which are often decided in secret, and which are often based on consultation with those charged with the responsibility for the issue on which the decision is abruptly made.

Third, I would like to point out that each city differs, and therefore should have a final voice in approving the deepport proposals. Federal law should insure uniformity and completeness of regulation, but the States themselves vary so widely in their attitudes toward deep-port facilities and environmental matters and economic development and energy problems that the Secretary of Interior should not be given the right to override the inclination of the leaders of the citizens of the States involved.

In the southeastern part of our country, Texas, Louisiana, Mississippi, and Alabama are committed publicly to the establishment of deepwater port facilities. Georgia and South Carolina are inclined to have a professional analysis made of the needs and processes of our coast before we make a decision, and I would object strongly, and I believe I speak for the other Governors in saying they would also object strongly, to giving the Secretary of the Interior the unilateral right to make a decision over the objection of the Governors and the legislatures involved.

Another point that ought to be made along with this is that there should be a standard hearing procedure. Our people and those in other States have a right to be forewarned about a major public decision of this sort, and any deviation from the standard notice required, and the format of a hearing, and the clearcut understanding of the agenda to be discussed and the participation of those

involved might very well subvert the will of the people who live in a particular state and who might be intimately involved in a mistaken decision by the Secretary.

I do not know why the standard procedures are specifically excluded from this legislation, but that concerns me very much.

The next to the last point I want to make is that adequate pollution prevention should be assured, and the responsibilities for the pollution and cleanup should be assigned. I think if the legislation just says that pollution or other environmental deterioration factors should be minimized, this automatically sets a very low standard for industry to meet or for the Secretary of Interior to meet when he makes a decision.

Although there are some exclusions in the bill which concern me, there is no regulatory responsibility assigned for the pipeline, for instance, that might come from the island or the monobuoy the tankers are unloaded, and there is a specific exclusion in paragraph 13-C in paragraph 51 concerning economic responsibilities of the industries involved and preventing the Interior Secretary from taking those economic factors into consideration when he makes a decision.

The last point I want to make, Mr. Chairman, is that coastal zone management, in my opinion, ought to be a prelude to a decision made concerning the establishment of a major facility of this sort.

There are States which have completely ignored for literally scores of years their coastal areas as far as national resources and environmental equality and recreation are concerned.

Georgia, as I said, has 600,000 acres of undisturbed marshland, which each Georgian feels belongs to him personally. Until we can adequately plan for the coastal zone management or development through a State, Federal and local partnership, as envisioned in the legislation passed in 1972, a major impacting factor such as a superport should not be established or even considered.

These are the major points I would like to make, Mr. Chairman. I appreciate very much the opportunity to be here. I have tried to be both brief and specific in my comments, and I would be glad to answer any questions you might have, or let this matter be made a part of the record for your committee.

Senator GRAVEL. Very good, Governor, thank you very much for your statement.

Of the 23 coastal states, how many would you say are in favor of deepwater ports and how many against? You specified some of them who are taking the initiative, like Alabama and Texas. How many from your knowledge would you say are for development and how many would be against development?

Governor CARTER. I would say, Mr. Chairman, at this time, a substantial majority would favor economic development, including the establishment of superports, but I think a number are increasingly concerned about it and want to be into the matter cautiously, that number would be increasing.

As you know, in the last 10 years there has only been one major oil refinery built in this country. Part of the problem has been

environmental concern of the people involved, and obviously another major factor has been the economic factors of the oil companies themselves. But to repeat the essence of my answer, a majority of the states would be inclined toward the development of superport establishment, and I think others are becoming increasingly concerned about the environmental impact about having that much oil material along our coastlines.

Senator GRAVEL. You expressed objections to S. 1751. What kind of a bill, or combination of bills that you have knowledge of that might fit the need as you define it?

Governor CARTER. Mr. Chairman, in preparation for this testimony, I looked over the key factors in five or six different bills, and I tried in my own remarks, rather than referring to other particular bills, to point out factors that I thought would be very important.

For instance, in H. Res. 2020, the author of which is Mr. Howard, the State which is affected is jointly charged with the responsibility of making the final decision. I would favor that particular feature, and although I didn't refer to that bill, it is included in my remarks, and I think it would be a very clear prospect.

In that same legislation, by the way, the area involved includes the shore line of the states and a definite extension of those boundaries out to sea.

As far as most of the Georgia coast is concerned, you have to go out to sea a little more than 30 miles to reach the depth required of approximately 100 feet or more, and there is a very hazy delineation of the area involved in the regulations and supervision of environmental regulations by the Secretary of the Interior, or EPA in S. 1751, so in that respect I would favor H. Res. 2020.

I think there is another feature that is important, and that is a regulation of the equality of construction and the maintenance of the pipeline which might very well extend 20 miles from the mooring buoy or the artificial island to the coast, and this is a portion of the legislation that in my opinion would be very important.

I also mention the standardization of the hearing procedures. It is hard for me to discern exactly which particular bill would be compatible with my recommendation to you, sir, but I think that my statement could very well be compared with those or more knowledgeable people who are thoroughly familiar with the feature.

Senator GRAVEL. I understand there have been some proposals within Georgia, for a port. Could you give us some of the details surrounding that?

Governor CARTER. I don't know of those proposals. There has been a fairly widely publicized effort on my part and that of Governor West to have a detailed analysis made by the oil companies and by professional consultants, utilizing funds available to the Coastal Plains Regional Commission to make a study of this problem, but there has been no concerted effort to locate a superport by any responsible route, so far as I know, at this point.

There is a proposal to install a refinery in the Brunswick area, and we have had public hearings on this matter, but the decision has not been reached.

Senator GRAVEL. From your experience, what agency in the Federal Government do you think should be the lead agency with respect to the establishment of a superport? Should it be Interior?

Governor CARTER. Yes, sir. I don't have any qualms about Interior being the lead agency, but I do feel very strongly that the governor of a State, as is the case in many instances involving other aspects of that department, should have a veto power, in effect, or at least the legislature should have a veto power, in effect, over a decision made by the Secretary of the Interior to permit the establishment of a superport.

I do not favor for the Secretary of the Interior to make a unilateral decision to establish a superport.

Senator GRAVEL. You have made much on a couple of occasions about the lack of a national energy policy. Have you had a chance to review the President's energy message?

Governor CARTER. Yes, sir. I reviewed it again this morning. I think this is certainly a step in the right direction, and I have a great deal of respect and confidence in former Governor Love. I believe the energy problems have been obvious to those in a position of leadership, both geologists and government officials and oil companies and consumers and distributors and others, for a number of years.

I just recently returned from a trip to the Middle East and to Germany, Belgium, France, England and other European countries, and they were absolutely dumfounded by the fact that our own Nation has a so-called energy crisis, having been blessed with such tremendous reservoirs of energy sources compared to them.

They have very carefully worked out projections over the foreseeable future, ten or fifteen years, their anticipated mining of such materials within their own borders, which are very minute compared to our own, the prospect of acquisition from other nations, and distribution formulas for refineries, for major industrial consumers, and ultimately for the consumers, and the fact that we don't have any national energy policy at this late date, in my opinion, is a devastating circumstance with which we now have to deal pretty much on a crisis basis, and with no clearcut delineation of what the Congress is going to let them do.

So the most recent energy message, I do feel that the most recent message of the President has gone, for the first time in my opinion, toward some ultimate resolution of the problem. I think the message he gave in April was completely devoid of any substance, and I am proud to see the most recent decision, but there is a long, laborious process ahead of us, and until we as governors and you as a senator and others can work in harmony to the extent it is politically feasible to get a careful energy policy, I don't think that we can ever achieve a mechanism by which we can live within the bounds of present projected energy sources without working hardships on the people themselves.

I point that out as one of the most crucial needs. I think a superport with its own management and regulations on the types of automobile engines and all those things that are peripheral and tangential matters until we have a basic policy for the acquisition

of resources and the use of deposits in the country, and some circumstances of allotment of the resources we do have and also the development of more readily available, more heavily deposited energy sources like coal.

At the present time, I can't discern what the policies of the Federal Government might be. I might say in closing, and I probably said more than you wanted me to in this answer, but I tried last year as chairman of the National Governors' Conference Committee on National Resources to discern what Federal agencies I should consult to get answers to my questions. It very quickly became obvious that then and now, there are at least 60 Federal agencies who have specific responsibilities to some facet of energy acquisition and supply authority within the Federal Government itself.

I came up to Washington finally in desperation last February, having tried unsuccessfully to get an appointment with Mr. Erlichman, Haldeman and others, who I thought might give answers, and I finally talked to a person on the President's staff and I asked him who I could contact to give me definitive answers to the national energy policy questions.

He pointed out very proudly that there was a three-person committee making decision on energy matters. One was Henry Kissinger, who at that time, and I think now, was preoccupied perhaps with other matters related to foreign policy. The other one was Mr. Shultz, who apparently had his hands full with economic matters, including inflation, balance of trade, devaluation of the dollar; and the third one was Mr. Erlichman, who I understand has not left the President's staff.

So far as I know, until the recent appointment of Governor Love, there had been no improvement. I have confidence in Governor Love, but here, at a very late date, there is not discernible basic policy on either the acquisition, the development or the distribution of the Nation's energy sources, and until we have such a policy, it is going to be hard for me or you or anybody else not to make a well-considered judgment on how much of a crisis there is, how we can resolve it, and how we can alleviate the concerns in the minds of our people.

Senator GRAVEL. Very good, Governor.

Senator Hollings wanted me to be sure to tell you that he wants to commend you for your very strong support of the Coastal Zone Management Act. Of course in Alaska, with the Nation's largest coastal zone we also support this act and its immediate and full implementation.

Perhaps my colleague, Senator Biden, might have some questions.

I have to be absent myself a few moments, Governor.

Senator BIDEN [presiding]. They made the mistake of leaving it in my hands yesterday and I kept it going until 6:30. I will try to be briefer today.

First of all, the Coastal Zone Management Act, which we heard administration officials testify to over the previous 2 days of the hearings as being an essential component of this bill, one that was needed, and one that was supported I guess you know it has not been funded.

Governor CARTER. Yes. I was going to ask you a question.

Senator BIDEN. Go ahead.

Governor CARTER. I am glad that the administration representatives in the last 2 days announced their support of the bill. I had not discerned it in the budget requests.

Senator BIDEN. I was pleased myself. I thought it was nice of them to express that interest, but it is tied to—and I am probably not doing justice to their explanation—it is tied to the new national land use policy legislation which hasn't passed the Congress yet, and in the wisdom of the administration, it has been determined that we shouldn't begin to fund coastal zoning unless it works in conjunction with that bill that hasn't passed yet. Why ask the Congress?

But I suspect it is going to be funded when we come through the Congress, and when I say "we," I mean the House passes the national land use bill, and at that point it will probably be a Community Development Act or something. I don't know.

But, one of the explanations set out in the Interior Department's testimony of the safeguards that are implicit in the construction of superports, is the Coastal Zone Management Act. I thought that would give you some solace.

The Senator from Alaska asked you if you had any particular bill that you would support, and you said you really didn't know, but you ticked off some elements of bills. I might suggest a bill for you. There is a S. 1316 which some fellows named Biden and Muskie introduced, which I think encompasses many of the things that you are talking about, specifically veto power of a Governor.

Governor CARTER. I have not seen that legislation, sir, and I would like to see it.

Senator BIDEN. We will see to it that you get a copy of that one, because you are about the first witness who has agreed with much of it. To be more serious for a moment, one of my concerns is that a Governor of a State might be put in a situation where he would be forced, for political reasons, to exercise a capricious veto over construction of such a facility.

Governor CARTER. Yes, sir.

Senator BIDEN. Although I know of no particular instance where that is pending, I see the possibility. To guard against that in the bill which we wrote, we included specific provisions which would have to be met by the State in order, in effect, to entitle the Governor to exercise a veto.

In short, according to the mechanism in my legislation, the Governor can exercise the veto, but within a 2-year period from the time that veto is exercised, the State must have, on its books, legislation covering eight or nine specific areas. Otherwise, at the end of that 2-year period, that veto, in effect, expires, and the Governor can no longer say "We don't want that superport." Whomever the Federal lead agency is, whether it be Interior or Commerce, whichever one it happens to be, can then go forward in the licensing process.

The reason we did that is if, in fact, the Governor exercises the veto, I assume the reason for exercising that veto is that he feels

the environmental degradation as a consequence of the oil facility is something his state should not undergo.

Governor CARTER. Right.

Senator BIDEN. Some States are maybe not as far along as your State or maybe my State of Delaware in terms of coastal management of their own, in terms of industrial and commercial development which exists in the areas which the port would affect, and so on. There are a number of conditions, and I just wonder whether or not consentially you think that approach is a reasonable approach.

Governor CARTER. Yes, sir, I do. I do not know what the eight or nine provisions are. My own preference, just on the spur of the moment, would be that the legislature would have to confirm the Governor's veto within a 2-year period, and not go into detail about eight or nine different things that would be maybe suitable for one set of States and maybe completely inapplicable to another State.

I trust your judgment, and I am sure you thought about that. I think if both houses of the legislature, plus the Governor, all three agree that a superport should not be built, that, in itself, ought to be adequate.

I think you have very wisely pointed out that the reasons that a State would want a superport is not just the possibility of a major oil spill along the coast, but also the ancillary developments that might take place along the ports of that particular State. A State might have enough oil refineries already, in the judgment of its people, and it would be obvious that a superport established near the State's major port facilities would further encourage additional establishment of oil refineries. That is just one thing that might be of concern.

I think this would be an adequate protection if the State and the legislature, any one of those three, the Governor in either legislature agreed with the Secretary of Interior to have a 2-year waiting period to let it be built, I think that would be an adequate safeguard.

Senator BIDEN. The primary concern I have as a legislator is not the question of the oilspill, which is a major concern but an even more important concern, as I see it, is the related land use effects of constructing such a facility. I would not guess how many witnesses we have had so far, 10 or 12, or maybe more than that, including the panels that have come forward, and everyone seems to agree that it is almost impossible to envision constructing such a facility and not encouraging industrial development of petrochemical industries, if not at the shoreline where that pipe comes ashore, at least inland along that pipe. In pursuing that with some of the representatives of oil companies yetsrday, one of whom I see in the back of the room here, I asked the question whether or not we had the necessary number of refineries now to refine the oil that it is projected we will need, and everyone seems in general agreement that U.S. refineries are, at least in those areas to which we can get the crude, which excludes the Midwest at this point, operating at capacity at this point in time. We are talking about increases, if you accept the figures that

you have been given, between now and 1985, and the need for an additional 15 million barrels of crude a day to be imported.

Everyone seems to agree that the refining capacity today is such that it could not meet that additional burden of 15 million barrels of crude that we are told will be imported.

What I am leading up to is that of that 15 million barrels of crude, it seems to be established that the majority is going to be what is referred to as sour crude, as opposed to sweet crude.

Governor CARTER. That is right.

Senator BIDEN. There is some question in my mind, and in several other people's, that the technology to refine sour crude and meet the Clean Air Act standards as they now exist is not economically available.

Now, my question is, assuming what I said is basically correct, do you think we are going to have a move by the industry, once in fact it has been agreed to construct superports around the Nation, to reduce the Clean Air Act standards to accommodate in the national interest the refining of this sour crude?

Governor CARTER. I am not—

Senator BIDEN. I am asking you for a political judgment.

Governor CARTER. This was asserted several times in the Watergate hearings yesterday. I am not the best witness you have on that. I think there is a demonstrated and strong inclination on those who discern accurately or in a prejudiced way a degree of crisis that probably does not exist, an inclination to lower environmental standards in both water and air pollution, and I would think that as time goes on that the pressure to lower these standards, which I would deplore, will be increasing.

I would have referred to this while Senator Gravel was here, but I was somewhat concerned, not knowing the details of the decision, that the Senator has decided that no one could raise legal objection to the establishment of an oil line from Alaska down to this country.

Senator BIDEN. Some of his very good friends were equally concerned, knowing the details.

Governor CARTER. That was a departure from his normal attitude on environmental issues, but it involved his State very deeply, and I can understand that motivation, to care for the economic good of his people.

But I am afraid this is a precursor and a very tangible demonstration of the kind of trend about which you just inquired, and I would say that it would be greatly enhanced in the future by either a real or imagined degree of crisis in the energy field.

I think, to comment on an additional point that you made earlier, that the oil-producing countries, particularly those in the Middle East, over a period of time they will be inclined to deliver to use refined petroleum products, rather than the crude oil itself. I think they would probably prefer to sell to us more highly developed product for their own benefit, and so this might lessen the pressure for the establishment of additional refineries if we are indeed dependent, as we undoubtedly will be, on the importation of oil.

The other point that I want to make is that I do not see the concern justified that veto power by a Government and a legislature would stop the construction of superports. As I told Senator Gravel, I believe most of the States would like to have a superport built along their coast, a majority of the States, and that is my own subjective judgment. I think that ratio is probably going to change in the future as more States become protective against the establishment of a superport or a refinery center.

But there will always be enough States, in my opinion, in the foreseeable future, like Mississippi, Alabama, Texas, and Louisiana, in our own region, who are already committed to an active pursuit of the approval of a superport for their States, the fact that Delaware, for instance, has taken action already in a legal fashion to exclude the establishment of additional refineries in Delaware Bay is just an indication on the other extreme.

Georgia, I would say, would be in between this point.

Senator BIDEN. We also have an open mind in Delaware, Governor.

Governor CARTER. Right, but I think you would resent, no matter how your personal feelings might lie, to have the Secretary of Interior say that a refinery could be established.

Senator BIDEN. In the national interest.

Governor CARTER. Yes. And where the superport might be built in New York, New Jersey, or Maine, or in the gulf coast, and would serve almost as well.

Senator BIDEN. One of the things that concerns me about S. 1751, the legislation which you were discussing, is that we are making the Secretary of the Interior an awfully powerful fellow, or lady, whoever it happens to be. Really, I mean, the discretion that is granted in this legislation coupled with the discretion he has under the National Land Use Management Act, coupled with the discretion that he has in regard to the Alaskan pipeline, coupled with the existing discretion of the Department, makes him the most discretionary guy in the Government. He is really getting to be very powerful.

I am very worried about that concentration of the decisionmaking power at this point.

One last question, and I will let you go, Governor:

Yesterday, Governor Edwards of Louisiana advocated that the licensing authority be granted directly to the State affected by the proposed facility, and that such licenses could then be transferred by the State to a third party.

What are your views on this?

Governor CARTER. Was he referring to a third party as—

Senator BIDEN. As an oil company, or a consortium of some sort.

Governor CARTER. I would say, without having heard his testimony to justify his position, I would oppose it. I would have to keep an open mind, not knowing his own rationale on that.

Senator BIDEN. You would not like to see the State have the authority to then turn over the license to a third party, a consortium to run it, or you would not like to see the Federal Government turn over the licensing to the State? Which of those two, or both?

Governor CARTER. Well, my own belief is that even looking at Georgia, and knowing that I have a limitation of a 4-year term, I would hate to even give the future Governors of Georgia the right to turn off the regulatory function to a consortium of oil companies, so although I believe strongly that the States ought to have the right to make decisions, I do not think they ought to have the right to make a decision in one transient administration, no matter how enlightened or how much influenced by pressure from the oil companies or others that might exist, it would be binding on future administrations and take the right away from those directly responsible to the people.

Senator BIDEN. Not by way of a question, but by way of information, I think you might be interested, especially since your State is looking into this—Louisiana apparently has done some fairly thorough research in the area, and in a study done on the “Economic Impact of Louisiana Offshore Oil Ports,” by H. J. Kaiser Co., Gulf South Research Institute, they try throughout it, to look at the cost-benefit ratios of the construction of a port, as they affect the State, and the last paragraph of the entire report says that the revenue cost ratio of 1.09 to 1 is considered to be conservative on the low side, and it goes on from there.

Now, there was some discussion yesterday with representatives of the consortium, if that is the proper phrase, LOOP, Inc. that wants to construct this facility, as to exactly what that meant. I do not want to get into that discussion again, but I would think you would refer your people to this report and similar reports and determine whether or not the environmental degradation, as minor as it may be, is worth the price to pay for the construction of such a facility.

It may very well be. It may be that you and the State think that really is, but there is one last thing:

If I were a Governor, and I thank God I am not, if I were Governor, I would look very, very closely before—you do not mind a 30-year-old novice giving you some advice here—I would look closely now when these oil companies—and these oil companies want these ports badly—to see that they make a number of financial concessions to my State before such a facility is constructed.

Yesterday, Senator Bennett Johnston from Louisiana tried to discuss that subject a bit, and I do not think he got very satisfactory responses as to what the oil companies or whomever was going to construct the facility would be willing to give him in return, in terms of tax dollars on other things, but I would look real close at that one.

Governor CARTER. In closing, I would like to comment on the same matters that you raised.

I know that the phrase, “categorical grants,” for instance, is one that has fallen into some disrepute, but I think we should agree there is a clearcut delineation of responsibility between the Federal Government and the State government and others, through law, which in my opinion as a nuclear physicist and a farmer, is better—is similar to—a contract. It is much superior to giving unilateral authority to a secretary of a major department, where decisions are

made, and where people who oppose the administration' position are not consulted, because they do not want any public opposition until they are faced with an accomplished fact.

So, the controversial features of this question should be spelled into law and not be left to the discretion of the Secretary of the Interior.

I think there is an additional safety factor involved in having the States play an equal role with the Secretary of the Interior if he is representative of their Federal Government. But I hate to see so much power put in the hands of one man, no matter how enlightened he may be at this particular time, because in future years, circumstances will change and we may or may not be faced with the same prospect that we see at this point.

Senator BIDEN. Governor, I raised the same question with the Department of Interior, and they said, "Don't worry about that, because it calls for the Secretary to consult with the Governor of the State to see about land use programs."

Governor CARTER. I would say consultation is superior to some things we have observed in recent months.

Senator BIDEN. One thing I would like to point out, and you already have said it in your testimony in a part I missed: Public hearings will be held when the Secretary determines that there is significant cause to have them held.

Governor CARTER. I would comment on that. The standard procedures to hold public hearings that require adequate notice, there should be a carefully publicized agenda and an openness to all who want to testify, rather than a circumscribed hearing that would be held at the discretion of the Secretary.

Senator GRAVEL. Senator Stevens?

Senator STEVENS. Are you speaking on behalf of the Governors Conference, or just for your State?

Governor CARTER. My prepared remarks were in conformity with the Governors' conference, and my own remarks I put in here were my personal remarks.

Senator STEVENS. I understand that you expressed some regret that the Senate had gone along with the amendment that my colleague and I had offered to the Right-of-Way bill, because you have some fear concerning this as being a trend with regard to environmental standards.

Governor CARTER. Yes, sir, that is correct.

Senator STEVENS. Is that a position of the Governors' conference?

Governor CARTER. No, sir, that is my own personal opinion. I do not have enough knowledge to know whether or not this deviation from past policies is warranted, and in my own opinion, it is not, but I think that it is—this comment was made in answer to a question by the Senator from Delaware, concerning whether or not the building of superports, the energy crisis would lead to a reduction in the enforcement of present standards in air and water pollution, and pointed out this amendment as authorized by Mr. Gravel, and perhaps by you, and one instance of a precursor that I see taking place about which I am concerned.

Senator STEVENS. Are you under the impression that we reduced the environmental standards in any way by that amendment?

**Governor CARTER.** I think this amendment that prevents any group of citizens from taking court action to delay or to have their legitimate or nonlegitimate questions about establishment of a pipeline does weaken the past policies, yes, sir, in protecting the environment.

**Senator STEVENS.** You are entitled to your opinion. I want to point out to you that the amendment makes a congressional finding that the environmental standards have been complied with, notwithstanding the challenges based on the alternative route concept of the pipeline going through Canada.

But it seems to me you have injected into this hearing a concept that I do not understand. You seem to imply that this bill would somehow or other go around the National Environmental Policy Act with regard to public hearings.

Do you, as Governor, want to have a National Environmental Policy Act hearing and then have another superport hearing, an environmental hearing under that application, too?

You understand that the Secretary of Interior would have to have hearings on the National Environmental Policy Act.

**Governor CARTER.** I did not understand that.

**Senator STEVENS.** He would. There is nothing in this bill that goes around that. That says that it is discretionary that he can have another hearing in addition to that. Do you want to make that mandatory?

**Governor CARTER.** I think there ought to be one hearing at least at which all environmental considerations can be presented, that the hearing ought to be well-publicized ahead of time, and anyone who wants to testify, the agenda ought to be carefully prescribed, and it ought to be a standard procedure.

My understanding in reading the bill is that this is not the case under S. 1751.

**Senator STEVENS.** There is nothing in S. 1751 that says the National Environmental Policy Act is not applicable to superports. We are trying to set up a one-stop procedure, I hope, so that we will have one well-publicized environmental investigation, including hearings, so that everybody can testify, but we do not have to have redundancy in these environmental hearings.

Now, if you wanted to have a superport, Governor, would you like to have more than one environmental process?

**Governor CARTER.** Senator, I will repeat myself, I think one hearing of the standard form would encompass that.

**Senator STEVENS.** I spent about 4½ years down in Interior, and I am starting to take a little bit of umbrage at the continued reference to people who seem to think that there are clandestine operations down there under the Environmental Policy Act. I would hope that the Alaska pipeline would demonstrate to you and your colleagues in the Governors' conference that there is nothing done precipitously in the environmental field as far as actions of the Department of Interior. We have been waiting now since 1968 for that permit. We spent \$12½ million of taxpayers' money and over \$50 million that we will have to repay in order to get, or pay the industry for what they have done in terms of their environmental study.

I would certainly hope, Governor, that you would take that into account when you criticize what we have done to try and protect our project.

I remember some attempts of people in your area, geographical area of the country, to try to go around NEPA, not just say that it had been complied with when it has, but to absolutely suspend the requirements of NEPA or several projects, including the Corps projects in the South.

Governor CARTER. I am not familiar with those, but I certainly would not dispute the Senator's word. I think it would be inaccurate to say that under any circumstances I disapprove of the action of the Senate in passing legislation that permits the construction of the Alaskan pipeline.

The National Governors Conference went on record as favoring the rapid construction of it, and if the Senate and the Congress are convinced after analyzing all the issues that all environmental considerations are met ahead of time by the legislation permitting construction of the Alaskan pipeline, then I can understand your position on the matter, if that is the case.

I personally do not see how the Congress in advance could foresee and be assured that all environmental questions can be answered or have already been answered concerning construction of the pipeline.

Senator STEVENS. Governor, I am not sure you are familiar with the fact that the three judges of the court of appeals that reached that question did find that the environmental considerations were met. The problem was that the old Mineral Leasing Act of 1920 was not sufficient to permit the right-of-way of the width that was necessary for the pipeline, but if you go beyond that, the question that was before the court of appeals was the question of whether the Interior Department had failed to comply with NEPA by failing to adequately require investigation of the right-of-way of the Canadian right-of-way, and all our amendment did was say that the Environmental Impact Statement complies with the NEPA law with regard to the Alaska right-of-way.

Now, to my knowledge, no court ever held to the contrary, and we made that binding as a congressional matter, not taking out of it the alternative of the right-of-way question.

Governor CARTER. I thank the Senator for explaining that to me.

Senator GRAVEL. I can only add, Governor, that it is a question of making a judgment. The judgment could have been made by the courts or by the Congress.

Interestingly enough, the environmentalists all along have asked that the judgment be made by the Congress, since they felt that body was more representative of the people of this Nation than the court and judicial system.

Governor CARTER. I was not disputing that fact.

Senator GRAVEL. Thank you very much, Governor.

I see we have been joined by a bevy of other Senators, I want to recognize first Senator Hollings of South Carolina.

Senator HOLLINGS. One advantage that a Governor has over a Senator is that when you walk around you are a quorum, and we have been trying to fill in.

I understand you are appearing not only for the great State of Georgia, but for the Council of State Governors which gave the leadership to the Coastal Zone Management Act which you say here in this statement, and the work that you have done and Georgia has done and the Council has done, is very, very much appreciated by the formative committees here, Public Works, Interior, and Commerce.

I want to forego my questions. I hope to see you a little later. We do appreciate the emphasis that you have given to the crisis in the coastal areas in America. Georgia has been in the forefront in developing it environmentally, esthetically, with tremendous recreation areas, and also with great industry down there, and I know of no one who has given greater or finer leadership than you yourself. We appreciate it.

SENATOR GRAVEL. Senator Long, would you care to ask any questions?

SENATOR LONG. Governor Carter, I am happy to see you here today. I have enjoyed working with you down through the years on problems of mutual interest, and I hope we will work together on this.

I see you have other witnesses, so I am not going to ask you any questions, but I look forward to working with you on this matter. As a matter of fact, Senator Johnston has a bill with respect to submerged lands, and to give the State some consideration in connection with that. I hope you two will get together before you get out of town, because we would like to do more business with you.

GOVERNOR CARTER. Fine.

Mr. Chairman, it has been a pleasure being here this morning.

SENATOR GRAVEL. Our next witness is Mr. E. Sherman Webb, executive assistant to the Governor, State of Delaware.

Why don't you go ahead and have a seat, and we will let you be introduced by the distinguished Senator from Delaware.

SENATOR BIXEN. Mr. Chairman, I would like to personally welcome Sherman Webb from the State of Delaware. He is here today representing our Governor, Sherman Tribbitt, who is unable to be here, and he has a prepared statement dealing with deepwater ports. Lest you all in Delaware think we are parochial about our concern about the construction of a deepwater facility, I am sure Mr. Webb is going to give you a different perspective from that which I have been hammering away at in the past couple of days.

Welcome, Skip. I am glad to see you here, and send my regards to the Governor.

**STATEMENT OF E. SHERMAN WEBB, EXECUTIVE ASSISTANT TO THE GOVERNOR, STATE OF DELAWARE; ACCOMPANIED BY DR. WILLIAM S. GAITHER, DEAN, COLLEGE OF MARINE STUDIES, UNIVERSITY OF DELAWARE**

Mr. Webb. Thank you for your welcome. I have an additional statement which was not sent down with the remainder of our statement yesterday, because we did not finish an evaluation of S. 1751 to the satisfaction of the Governor until late last night, so

I would like to start out by reading the Governor's statement on S. 1751 and S. 1558 which is being released to the press this morning.

S. 1751 is another example of Federal emasculation and indifference to any State's attempt to protect its environment. This proposed legislation is a bureaucratic expediency generated by result-oriented administration at the behest of the big oil companies.

The tenor, approach, and direction of this bill is immediately apparent once it is compared with S. 1558, sponsored by Senator Roth. The latter takes into account and recognizes the States' involvement and interest in their contiguous shores. S. 1558 philosophically accepts that the States have a right of directly participating in Federal legislation adversely affecting their beaches, coastal zones, and wetlands. Delaware and all other coastal States have a paramount right to determine if there are to be offshore petroleum and hazardous substances docking in facilities adjacent to their boundaries.

In Delaware, we have consciously and studiously made a policy decision to protect and preserve our environment for the benefit and enjoyment of today's citizens and tomorrow's children. As Delaware approaches the zenith of environmental protection, S. 1751 is proposed to quickly and certainly take Delaware to her environmental nadir under a false guise.

S. 1558 consisting essentially of one page provides that no Federal agency shall construct or license or approve the construction or operation of an offshore docking facility unless the involved State has affirmatively approved the facility by act or resolution of its legislature or have taken no action whatever within a specified period of time.

S. 1751 takes as its first premise the thought that "onshore port facilities . . . are becoming increasingly congested and are unable to accommodate the large vessels which are being used increasingly in ocean shipping and therefore the national interest, environmental protection and security in international relations is best served by the use of larger vessels and development and operation of . . . deepwater port facilities that can accommodate them" (page 2, lines 9-19).

The following paragraph is ludicrous in its attempt to be clever. It represents a complete turnaround. All of a sudden the protection of the environment and the coastal zones from pollution and the dangers inherent in the existing port facilities demand the construction of offshore deepwater port facilities (page 2-3, lines 20-24, 1-2).

What could be clearer than the "purpose paragraph" (Section 1015(b)): "The purpose of this act is to authorize and regulate the construction and operation of deepwater port facilities. . . ."

A "deepwater facility" is defined as a facility, constructed beyond the 3-mile limit, to transship commodities between vessels and the United States. This is presumably presently beyond the jurisdiction of the States and in the international high seas. However, there is pending a lawsuit captioned *United States v. Maine*, the outcome of which may appreciably enlarge the offshore limits of the States to 15, 30, or even 50 nautical miles.

That same definition specifically excludes from its operation pipelines. But one must then carefully read section 112. It provides that with respect to facilities such as pipelines and cables constructed on land or water within a State's jurisdiction, State law is paramount, unless that law is inconsistent with Federal law or regulation.

Who has the authority to promulgate regulations superceding this paramount State law? The Secretary of the Interior (section 103(a)), who has the duty to license the construction and operation of deep water port facilities. Section 104 provides that the Secretary is "authorized to issue reasonable rules and regulations governing \* \* \* the construction and operation of deepwater port facilities \* \* \*." What chance do the States have against that kind of stacked deck.

That same section (section 112) is further misleading. It says that nothing in the act shall be "construed as precluding a State from imposing within its jurisdiction more stringent environmental or safety regulations." That section means that Delaware cannot say no to a deepwater port off its shore; but in denying the exercise of the present state sovereignty, the Federal Government will give Delaware some say in the safety regulations.

This Act is replete in such discretionary phases as these:

1. If the Secretary "first determines" (p. 5, 1-5) (conditional.)
2. The Secretary "shall consider all significant aspects of the (proposed) facility." (5-18) (to consider and discard complies).
3. The Secretary "shall consult with the governor of any State off whose coast the facility is proposed to be located to insure that the operation of the facility and directly related land-based activities would be consistent with the State land-use program" (section 103(c). (See also section 105(a)). (Talk to and do what you damn well please.)
4. The Secretary "is authorized to issue reasonable rules and regulations (section 104(a)). (Discretion.)
5. The Secretary "shall consult with all interested or affected Federal agencies" (section 104(b)). (See 3 above.)
6. "when in the judgment of the Secretary" (section 105(c). absolute discretion).
7. "where the Secretary concludes" (section 105(d)) \* \* \* "he may direct" (judgmental, subjective criteria.)
8. The Secretary may modify his findings as to the facts, or make new findings (section 106(d)). (permissive)
9. "Secretary is authorized to include in any license granted \* \* \* any condition he deems necessary \* \* \*." (power)

The act also provides that to the extent that they are "applicable and not inconsistent" with the act, or other Federal law and regulations, the State civil and criminal laws nearest the facility shall be applied. Then this sentence: "State taxation laws shall not apply to such facility." That tells the States that they are going to have a facility off their shores whether they like it or not, and the Federal Government will permit them to regulate those areas it approves but do not even think of ever taxing this great benefit to all America.

The act also provides that certain sections of the Federal Water

Pollution Control Act and the Clean Air Act shall apply to the deep-water port, except insofar as any of those acts require or presuppose State action. In that case, such required or presupposed State action may be waived by or taken by the Administrator of EPA.

A single detailed environmental impact statement shall be prepared by the Secretary and satisfy the requirement of the Environmental Policy Act of 1969. Thus, the Secretary will make his judgment, having made it will then prepare the required environmental impact statement. Conflict between the two will never occur.

All judicial review from the action or ruling of any Federal agency is sought in a U.S. district court. This act proposes that kind of judicial review in sections 108 (civil penalties), 110 (revocation and suspension of license). However, section 105 interestingly provides that judicial review of the Secretary's decision to grant or deny a license may be sought by any person adversely affected thereby, but not in a district court, but only in the court of appeals in the circuit nearest the proposed location of the facility. Why?

S. 1751, unlike S. 1558, purposely discards and ignores the policy and well-being of the States. Of course, it has a couple of platitudes in the whereas clauses that speak in terms of environmental protection. That language is surplus verbiage to hide the goal of the Federal establishment of constructing offshore facilities where it damn well pleases. All other considerations are secondary and incidental to that goal.

Speaking in terms of the nebulous national well-being does not camouflage the prostitution of Delaware's concern for its internal environmental quality of life to the feigned energy crisis and the cartel of oil companies' search for the attainment of the almighty profit dollar.

I might close by saying that the Governor opposes S. 1751, and supports S. 1558, and he has not seen Senator Biden's bill, unfortunately.

Senator GRAVEL. Senator Biden, you could perhaps begin the questioning.

Senator BIDEN. I told you, Mr. Chairman, it would be a different perspective. You see you fellows have been saying I am a little too hard. You have not heard my Governor yet.

I just have one question, and I will let these gentlemen get to you, Skip.

You heard me raise the question with Governor Carter about requiring the State to take some affirmative action to show that it was really concerned about its environment prior to the veto becoming permanently effective.

Now I realize, as you do, that—Delaware has already done all those things, with possibly one exception, and is in the process of further shoring up under the Governor's leadership, the environmental protection laws which we now have.

But fortunately, or unfortunately, all the States don't have that same position along the east coast, and there are a lot more beach and wetlands areas to be protected in every other State concerned than there is in our whole State.

I guess what I am asking you is, although you have not had an opportunity, as you stated, to scrutinize the bill, conceptually, do you think the Governor has any objection to those caveats in effect being added to the right of the Governor to exercise a veto?

Mr. WEBB. I think he considers them to be reasonable. I am sure he would like to talk to you about it in detail.

Senator BIDEN. Lest all of you think that due to the excessive praise of Senator Roth's bill here, that Governor Tribbitt is a Republican, he is not, he is a Democrat.

I have no further questions.

Senator GRAVEL. Senator Long?

Senator LONG. Let me just say as far as I am concerned it has been suggested to me that we ought to use Federal power to overwhelm the States and build a superport and put pipelines through the State lands without their consent, and while I think that we are going to be compelled to build some superports, I am vehemently opposed, irrevocably opposed, to trying to build a superport off a State's shoreline without the consent of that State.

Delaware doesn't want one built, and as far as I am concerned, I will support you until hell freezes over and then fight them on the ice again.

Senator BIDEN. If the Senator would yield for a moment, I think you should convey that on the floor, I promised our superport to Senator Long.

Mr. WEBB. Thank you for that, but there is a problem in S. 1751, and it says in here somewhere that they shall consult with the Governor whose coast such a port would be constructed on.

That could be a tricky thing. For example, in the State of Delaware and in New Jersey, you could get into a tight argument as to who you were going to consult with. I think certainly the bill ought to be broad enough to consult with adjacent Governors, of continuous States.

It doesn't mean they are not opposed to the bill, but it could present a real tricky problem of who you are going to consult with.

Senator LONG. The consultation does not mean anything.

Mr. WEBB. No, it doesn't mean a thing, Senator, that is correct.

Senator LONG. They run over you anyway.

Mr. WEBB. But you might end up running over the wrong Governor.

Senator LONG. Every State has a proper right to be concerned about the environmental hazards, and various other aspects of it. To me, it is an outrage to think in terms of imposing a hazard on the people of any State that they do not favor.

We in Louisiana have been many years accustomed to problems of producing oil in the sea. We know of the pollution problems; we know what you have to try to struggle with, you know there is going to be accidents, and there are going to be spills from time to time.

We have had all that happen to us, and superports carry those hazards. Every State has a right to be concerned about it, and while we may differ on some of the aspects of the problem as to what the

answer to it would be, I don't think that we would find any disagreement with our people in that you should not be able to do anything along the area that the people in the State are not willing to have done, because the injury occurs to the environment, and it is their environment that is going to be injured.

You have beautiful beaches in Delaware, as in Georgia, and I have been swimming off some of those beaches. I wish the water were half that clear in Louisiana, but you have a very proper concern, and your people are in a little bit better position to be choosy about what kind of industry you will have and won't have.

If we don't have the petroleum industry, we wouldn't have jobs in Louisiana.

Even we have a concern about the environment, and we don't want the Federal Government to do or to deny us to do anything about our environment that we think would be desirable.

Mr. WEBB. Senator, I don't think it should be forgotten that we do have considerable involvement with the oil and petrochemical industry in Delaware. We are not saying that, you know, we have nothing, and we don't want anything. We have one 140,000 barrel a day refinery in the State.

There are approximately 300 million barrels of crude oil going up the Delaware or through the Delaware Bay and Delaware River each year to the approximately eight major refineries in the Greater Delaware Valley, and there is a new one to be put on the Jersey shore of the Delaware River opposite the Delaware coast by the Shell people.

I understand that was approved recently in New Jersey. So we do have a petroleum interest. I think our concern is to control what we have, and I think we do make a major contribution to the Nation in terms of energy at this time.

Senator LONG. I am aware of the fact that some of the major oil companies, and perhaps all of them, would like to use the power of the Federal Government to run roughshod over the States, over your State in particular, and I am against that.

I am not in favor of the Federal Government doing anything off Louisiana that Louisiana finds objectionable, just as I am not in favor of their doing anything in this 3 miles beyond the shoreline of Delaware, or even further out that Delaware finds objectionable.

You are entitled to be consulted in that matter. I have fought to make it that way, and I commend you for standing up for your State in its efforts to control its environment.

Senator GRAVEL. Senator Johnston?

Senator JOHNSTON. Mr. Webb, we had testimony yesterday from people connected with the LOOP project who are preparing to build a superport off Louisiana, and another group preparing to build one off Texas, and they told us of the tremendous economic benefits that would accompany a superport.

They have one cost-benefit ratio figured at 1.09 to 1—in other words, every dollar that is invested, you are going to get back that dollar plus 9 cents. They say it is a great advantage, and they point out that they are going to take steps to minimize the pollution and it is going to be very helpful.

Now, are you familiar with, or have you heard that kind of testimony, that kind of argument?

Mr. WEBB. Yes, sir.

Senator JOHNSTON. Do you think that is correct, that there will be economic benefits, aside from the pollution, that there will be some benefits?

Mr. WEBB. I think when you take into consideration the nature of the area to be developed, what it may or may not have in terms of existing—

Senator JOHNSTON. I am not talking about whether it is desirable, but do you think it is true what they say about economic benefits?

Mr. WEBB. In isolation, perhaps, yes.

Senator JOHNSTON. Nevertheless, Delaware would reject those benefits, as a matter of fact not only refuse to take them, but vigorously oppose them.

Now, you obviously feel that there are disadvantages to a superport that outweigh those economic advantages.

Mr. WEBB. Senator, you are taking the concept that I agreed to in theory and applying it either to our Sussex County area, or perhaps Kent or Lower Newcastle. It would have to be one of those areas. Sussex County is a farming area, it is a resort area. We like to think of Rehoboth and its related small beach communities as the Nation's summer capital. We are very pleased at the thousands of people who flock there each summer, and I am sure the residents of Cape May County, which is just a ferry ride away from us across the bay, feel that, too.

We do have major lightering activities involving those 300 million barrels going up the river now, which we are attempting through legislation which has been introduced, to regulate in line with the existing main legislation.

Senator JOHNSTON. I understand that, but my point is this, that you accept at face value their testimony about the creation of jobs and economic impact, you consider that in light of your situation in Delaware, and you reject it, because you think the disadvantages are more than the advantages.

Now, couldn't that as well be said for many States? My State, for example, has a tremendous amount of wetlands, very fragile, that produce over a million pounds of seafood, a renewable resource, whereas the importation of oil is a shortterm thing. Soon, that will run out, and soon all the benefits that come from that oil are going to be gone.

In light of that, my question to you is, shouldn't that State off whose shores the superport is going to be put receive some kind of compensation over and above the 1.09 to 1 economic advantage, or whatever else the economic advantages are? Shouldn't they receive some kind of benefit so that they can better take care of their environmental problems, so that they will have some money not for just cleaning up the pollution after it occurs, but so that they can in my State build dams and waterways and be able to protect the ecology and be able to stem the threat of losing 16.2 square miles of marsh per year?

Shouldn't we be entitled to some kind of benefit from the operation of that superport?

Mr. WEBB. Senator, I see the thrust of your argument, but Delaware is an extremely small State. It probably could be hidden in one of your back counties as far as square miles are concerned.

Senator JOHNSTON. It would be the best back county, though.

Mr. WEBB. Yes, but it could be hidden there. There just isn't that much space in Delaware.

Senator JOHNSTON. I am not talking about Delaware, but about Louisiana. If we put it in Louisiana, shouldn't we get benefits?

Mr. WEBB. Yes, and I am sure my Governor would be happy to have you have that down there if you want it and it is agreeable to you, because he has a paramount interest in the States, and thinks they should approve such activity.

Senator JOHNSTON. If we are allowed to get some tax on it, on the throughput—

Mr. WEBB. Yes, sir.

Senator JOHNSTON (continuing). That tax is going to have to be paid, a very small fraction, to be sure, by people throughout the country.

Mr. WEBB. Yes, sir, and our people would probably have to pay their share.

Senator JOHNSTON. But you would be willing to do that, if we are willing to have the superport?

Mr. WEBB. There are oil refineries in Delaware that provide us with about 2,000 jobs, and anyone using Getty fuel is contributing to the Delaware economy.

Senator JOHNSTON. Thank you, Mr. Webb. I think Senator Biden has a question.

Senator BIDEN. If a State chooses to have a superport, you do agree that in addition to getting the superport, they should also get some of the economic advantages of that superport?

Mr. WEBB. I see no reason why they shouldn't, and I am sure the Governor wouldn't, either.

Senator GRAVEL. It is not the economic advantages, because those go with the superport, but the point Senator Johnston is making is that there would be an extra tax that would accrue to the State in question that suffers the greatest risk, and this extra money that would be carried by all the consumers who would buy that oil coming through the superport, and that economic benefit would inure back to the State in question.

I think that states it a little more fairly.

Mr. WEBB. Senator, I don't think there is any way we could oppose that, because one of the items that was submitted here was a piece of legislation which was sponsored by Governor Tribbett, and it is in here. It is entitled "A Bill Related to the Protection of the Marine and Coastal Resources of the State for the Regulation of Transfer of Oil," and has as its substance "in or on State waters in creation of the Delaware marine and coastal resources protection

fund requiring arbitration of claims, providing penalties for violation thereof, and providing an appropriate appropriation thereto."

In that bill, if that should pass, we should assess all oil companies on a barrel charge who convey or lighter oil within Delaware coastal waters at the rate of somewhere between 3 and 5 mills per barrel, and this would go into a fund to defer third-party damages in the event of an oil spill.

Senator GRAVEL. I think Senator Johnston was talking about more than just the repairing of the cost of damage. This is damage that is ongoing.

What Senator Johnston is talking about is one increment more than that. That is that there would be a fund that would be continually built up, and that fund would go to the State of origin. They could use whatever benefits they want to with respect to their environment.

Mr. WEBB. That is essentially what this does, also, Senator. There is a tick-off level in here. I want to get beyond damage. Any funds that accrue in the fund beyond that are used for purchasing land for recreational purposes, research, development, hiring people, whatever you wish to do with it.

I can see no reason why that, while it is slightly different, is not inconsistent with Senator Johnston's point.

Senator JOHNSTON. Mr. Chairman, if you would yield, one of the problems about the oil industry and about superports, and Lord knows Louisiana is a supporter of the oil industry, but one of the problems is that there is a finite amount of oil, both in the ground in Louisiana, in the Outer Continental Shelf, and even in the Persian Gulf. When that plays out, it leaves you with economic dislocations.

My hometown of Shreveport used to be the pipeline capital of the world. I used to have a tremendous amount of oil in my parish, my county there. That has played out. We have a big, vacant building and we are trying to look for a tenant. It is the United Gas Building. We have a series of shocks that took place in the economy when these oil companies moved out one by one. That is going to happen with the superport down the way, and I am saying that we need some recompense, and I think in the basic equity we ought to have some recompense for that kind of future shock that we are going to have.

Senator GRAVEL. I quite agree with you, and obviously would support you very strongly on that.

Mr. Webb, do you have any further comment on the questions, or do you have any questions?

Mr. WEBB. No.

Senator GRAVEL. We thank you for coming forward, and we appreciate your statement.

Mr. WEBB. Thank you. It is a pleasure to be here on behalf of my Governor.

[The statement follows:]

**STATEMENT OF HON. SHEPHERD W. TRIBBITT, GOVERNOR OF DELAWARE**  
**LANDSIDE IMPACTS OF A SUPERPORT ON DELAWARE**

At two of the recent hearings held by the Army Corps of Engineers on the subject of deepwater port on the north Atlantic Coast, the State of Delaware went on record informing the Corps of Engineers that a deepwater port in Delaware Bay would be prohibited by the Delaware Coastal Zone Act and that, possibly, a port off Cape Henlopen in the Atlantic Ocean would also be prohibited by the Delaware Coastal Zone Act; however, in the notice for that hearing, there is a recommendation that if the design standard for the port allows vessels of 325,000 tons, then a facility should be constructed in Delaware Bay, off Big Stone Beach. While the Corps of Engineers acknowledged that such a facility would be prohibited by the Coastal Zone Act, it did not conclude that, therefore, the facility is not feasible in Delaware.

While effectively acknowledging the Coastal Zone Act for the docking facility off Big Stone Beach, the Corps of Engineers assumed that the Coastal Zone Act would prohibit onshore development in Delaware. This apparently was the Corps' assumption since nowhere in their summary of environmental considerations did they assess the landside impact of a Big Stone Beach facility nor a Cape Henlopen facility. It seems to us that such an assessment of landside impacts should have been prepared. In order to fill this void in the Corps of Engineers' environmental summary, we attempted to apply the Corps' estimate of landside impact for southern New Jersey to Delaware.

The Delaware State Planning Office forecast four types of landside effects for the year 2000. These are: population, employment, residential and industrial land use, and sewage disposal. There would be other serious landside impacts of a deepwater port, such as groundwater withdrawal, increased air pollution, and increased traffic congestion, but these four impacts are illustrative of the major magnitude of the consequences to expect from a deepwater port in or near Delaware.

If a deepwater port is located in the Delaware Bay, its landside effects on Kent and Sussex Counties by the year 2000 would likely be as follows:

In Kent and Sussex Counties, a deepwater port could result in almost five times more population and total employment than is expected without such a port. The year 2000 employment figure is based on the multiplier effect of 4x referred to on page 20 of the Corps' "Summary of Environmental Considerations." Population with a deepwater port for the year 2000 is based on a ratio of actual employment to population in 1970 applied to the year 2000.

*Land use acreage*

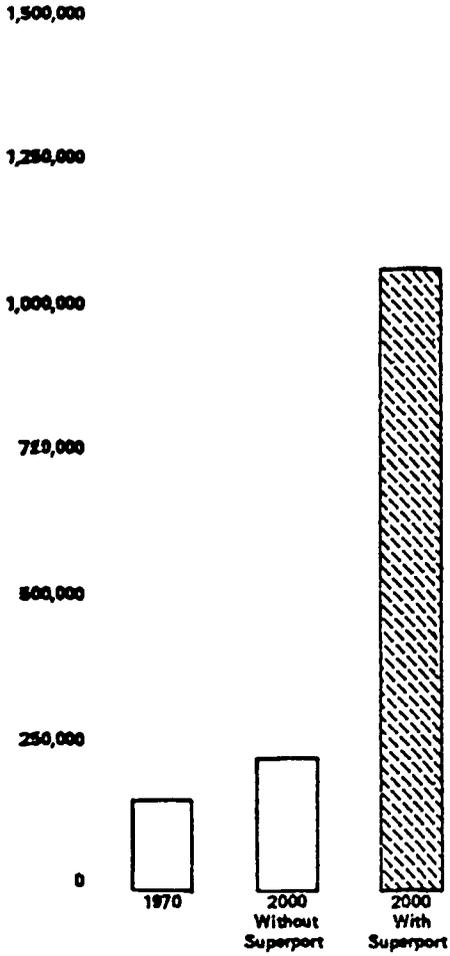
What would these year 2000 employment and population figures mean to Kent and Sussex Counties in terms of land use acreage?

The year 2000 figure with a deepwater port is based on assuming each employee will require one-third of an acre for housing, which means that Kent and Sussex Counties will have over four times more land used for housing in the year 2000 as a result of a deepwater port than they would have without the port.

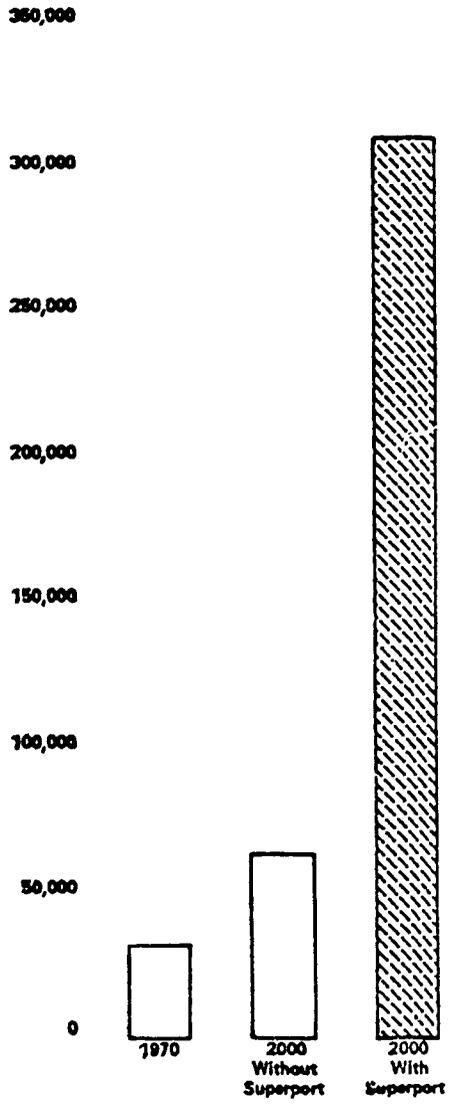
Based on the Corps of Engineers' report, approximately 45,000 acres would be directly required for terminal, refinery, and petrochemical operations, of which 20,000 acres or 44% would be needed in the immediately adjacent areas— which, in this case, would be Kent and Sussex Counties.

The Corps also stated, however, that a multiplier effect of 4 appears valid in determining total employment that would be generated by an installation of this type. Therefore, an increase of approximately 552,000 ( $4 \times 138,000$ ) in total employment would result requiring over 182,000 acres for industrial use. Again, assuming roughly 44% of this acreage would be needed in the immediate area, the total additional industrial land requirement in Kent and Sussex Counties would be 80,150 acres. This does not include the additional land that would be required for increased transportation needs. Increases in total employment for Kent and Sussex Counties would be approximately 242,800 ( $552,000 \times .44$ ) resulting in a total population increase of 882,700.

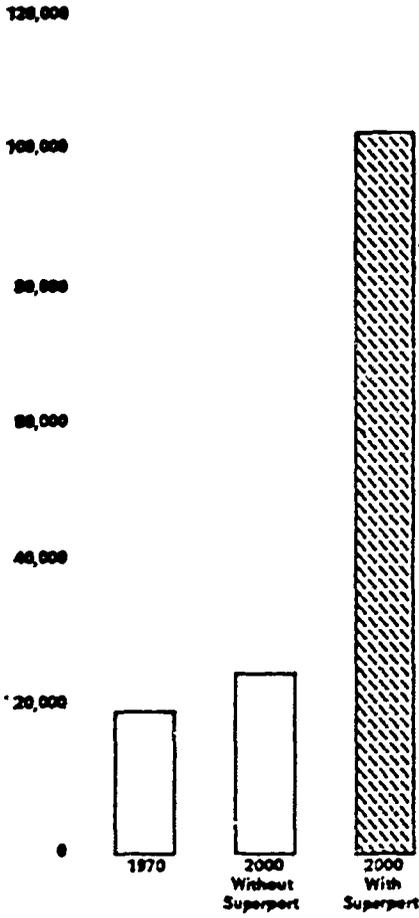
**Figure 1**  
**POPULATION INCREASE**  
Kent and Sussex Counties



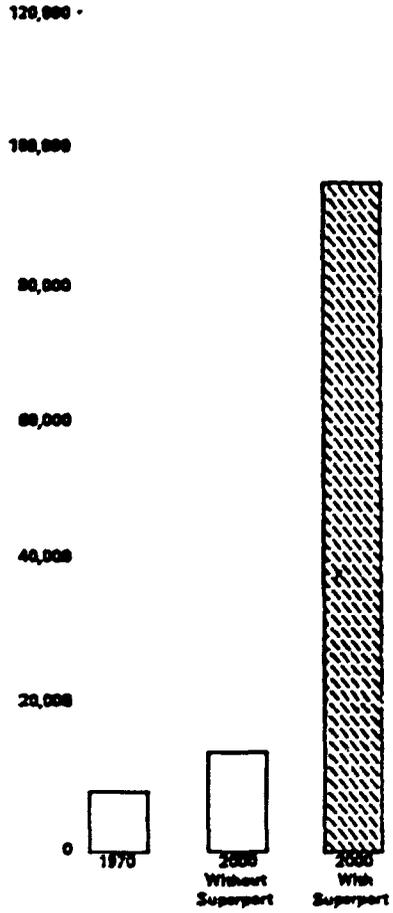
**Figure 2**  
**EMPLOYMENT INCREASE**  
Kent and Sussex Counties



**Figure 3**  
**RESIDENTIAL LAND AREA IN ACRES**  
 Kent and Summit Counties



**Figure 4**  
**ADDITIONAL EMPLOYMENT LAND AREA IN ACRES**  
 Kent and Summit Counties



In terms of the sewerage impact, according to the Army Corps of Engineers, at secondary treatment levels the effluent from new refineries and petrochemical plants resulting from a Delaware Bay deepwater port would have a biological oxygen demand (BOD) content equivalent to the *raw, untreated* sewage of 845,000 people in the mid-Atlantic region. This would be worse than having no sewage treatment at all for the entire population of the State and the raw sewage were dumped in the Bay.

With regard to the increases in water pollution levels, it should be noted that the State of Delaware is engaged in an ambitious program to clean its rivers and streams in cooperation with local and State governments. To date, the State has appropriated \$18 million and has programmed an additional \$30 million over the next six years. The goal of this program is to provide 90% of Delaware's population. The effect of the estimated development generated by the proposed port would be to place Delaware in a significantly worse situation relative to water pollution than it has ever been. In other words, this expenditure of funds would be for nothing.

In addition to the effluent resulting directly from refinery and petrochemical industry operations there would be the effluent disposal arising from the *population* attributable to this industry in Lower Delaware.

This brief presentation gives some idea of the serious magnitude of landside impacts to be expected in Delaware from a deepwater port in Delaware Bay or offshore in the Atlantic, near Delaware.

The Corps' own words taken from its "Summary of Environmental Considerations" neatly summarizes what Delaware can expect as a consequence of the deepwater port. The Corps says, "Just as important (as port environmental impacts), perhaps more important, is the impact upon the general character of a given area as it changes from undeveloped to industrialized . . ." (page 16). Speaking of the impact on Cumberland and Cape May Counties, the Corps states that they will take on the character of industrialized Middlesex County (N.J.) today. Applying the same reasoning to Delaware, substitute Kent and Sussex Counties and industrialized New Castle County in this statement, and you get a picture of what the two southern Delaware counties can expect to become within a generation. Lower Delaware could become a highly industrialized, polluted urban complex similar to Marcus Hook, Pennsylvania, or the Bayonne-Cartaret area of northeastern New Jersey.

I thank the members of the Senate Committees for this opportunity to present Delaware's views on legislation authorizing the development of deepwater ports.

Senator GRAVEL. Our next witness will be Mr. Ken Woodburn, executive session to the Governor, State of Florida. First though I see that Senator Roth of Delaware has arrived.

Senator, would you care to make a statement?

Senator ROTH. Yes, if I could

#### STATEMENT OF HON. WILLIAM ROTH, U.S. SENATOR FROM DELAWARE

Senator ROTH. Mr. Chairman, and members of the committee, I am pleased to have the opportunity to appear before you on this very important piece of legislation. I will have a prepared statement for the record at a later time.

Senator GRAVEL. It will be made part of the record.

Senator ROTH. Much of the material I will cover has already been presented before this committee, but I am anxious to join my colleague who is a member of your panel, and the representative of the Governor of Delaware in discussing some of the problems I see inherent in the legislation being considered.

There are three points that I would particularly like to review with you. One that gives me great concern is the so-called findings of

fact. The second point concerns the broad grants of authority to the Secretary of the Interior. And third, of course, is the very important right of a State to determine its own future development.

Mr. Chairman, I have some very strong objections to section 101, the so-called findings of the Congress. I am not at all convinced, and I am sure that many of my fellow members of Congress would agree, that it would be wise or prudent to set forth in this bill that Congress finds, and I quote, "National interest and economic uses of resources and environmental protection, transportation safety, competitive advantage in world trade, and security in international relations" will be "best served by the use of larger vessels and development and operations of the United States deepwater port facilities."

It may very well be that each of these goals can be best served by the use of supertankers and deepwater ports, but it seems to me that such conclusion is dependent on a great many variables. Frankly, it seems to me that these should not be set forth—at least at this stage—as findings of Congress, as it is precisely the purpose of this committee and these hearings to determine whether or not the national interest would be best served by the development of deepwater terminals or ports.

If I read these findings correctly, if the Secretary of the Interior decided that there should be a superport 3 miles off Rehoboth Beach, there would be little or nothing that the State of Delaware could do. I have grave reservations about this broad grant of authority.

As I said, I think your first order of business is to determine whether or not superports are desirable. If so, how many, where, and under what conditions.

The second point I want to direct my remarks to is what I consider the very broad authority granted to the Secretary of the Interior. If Congress determines that developing superports is in the national interest, some determination should be made as to the number and locations of such facilities.

Under the proposed legislation, the only overriding veto of a proposed port approved by the Secretary is when the President determines that such a proposal would be contrary to the national security of the United States.

I believe that Congress should retain some authority to override or review the Secretary's decision.

Furthermore, Congress should set forth with particularity under what circumstances such proposals can be approved by the Secretary of Interior.

This brings me to my third and principal objective; that is to give an effective voice to the State.

I have sat in on part of the hearings, and have heard Mr. Webb testify on behalf of the Governor. I wholeheartedly agree with what he had to say. Frankly, in a small State like Delaware, there is no development that could have more impact on the direction of our State than a superport off its coast.

It has been estimated by our State administration that if we had a superport, our population in the lower part of the State, Sussex County would be over a million people by the end of the decade, instead of growing to a quarter of a million without the port. That

would mean a very substantial change to the environment, the kind of industry, and the way of life in that area. This is a decision that should be made by the State.

I personally oppose the development of a superport right off our coastline, but what we are really saying is that every State should be assured an effective voice in its development.

I was pleased to hear Senator Long, as well as some of the others, concur in this approach, and I would most strongly urge that such language be incorporated in the final legislation.

As you know, my predecessor, Senator Boggs, first developed such legislation last year, and his successor, Senator Biden, has been a strong voice for the same approach. I joined Senator Boggs last year, and have introduced my own bill this year with a slight change that I would like to call to your attention.

I would give the power of consent or the power of veto to both the governor and the State legislature or general assembly, because this is a decision that affects the lives of so many individuals. It seems to me that it would be important, and desirable, to insure the legislature, as well as the governor, a voice in this decision.

Mr. Chairman, there are a number of other points, less significant, that I could raise, but the hour is growing late, and I know you want to recess for lunch. I close with the hope that we will provide an effective voice at the State level.

I hope you will take a second look at the findings of fact and the broad discretion. I think it is entirely too broad. We are talking so much about redressing the balance of power between the executive branch and Congress, it seems to me that here is one good area to start and insure that the Congress establishes a basis for approval by a more significant guideline by retaining some authority.

I thank you for the opportunity.

Senator GRAVEL. Thank you very much. Are there questions?

Senator BIDEN. I have one question for my colleague.

Senator, as I understand your testimony, you just would flat out oppose S. 1751, the administration bill.

Senator ROTII. I would not support it in the present form.

Senator BIDEN. I just wanted to make that clear.

Second, in your bill, does it require the concurrent veto of both the governor and the State legislature, or can either of those by determining they don't want the facility end the matter there? How does that work?

Senator ROTII. It could be done by concurrent resolution of the general assembly, or it could be done through a resolution approved by the governor. I think both should have a voice in it. But in the final analysis I would require the approval of both the general assembly and the governor before it could be built.

Senator BIDEN. What I could picture was the general assembly saying "We do, or we don't," and the executive taking the opposite position and keeping in that mind that although your interest and mine—well, I will speak for myself—mine is in a parochial sense with regard to this legislation, and it is with regard to how it would affect my home State, and although that is the case, we are legislating for the entire Nation, and a number of other States obviously

have not taken the same attitude as we have toward their coastline and environment for a number of reasons.

As was pointed out by my colleague from Louisiana, it is that Delaware can afford to take this position, because we have the lowest unemployment rate in the Nation, or one of the lowest. Maybe we would think differently if we had 12 or 15 percent unemployment rates.

But in drafting your legislation, I know your staff was very concerned about the effect that would have nationally, not just in Delaware, and I wonder whether or not you see any concern about the potential for a capricious exercise of the veto by a governor of our State or of any other State.

Senator ROY. I can't imagine any reasonable public servant taking a capricious approach to it, because it does have great impact. I can see where a particular State might for any number of reasons favor a superport, but I can't see where this would be cavalierly either accepted or resisted.

It seems to me from the standpoint of employment there will be many people interested in this development. I think there will be a great debate, as there should be, in the States.

One thing that I didn't mention earlier that concerns me about the legislation, in deciding whether or not there should be a superport, there is no way for evaluating whether there are better alternative uses of the land. It seems to me we ought to write into the legislation that these other factors can be considered. It seems to me that Delaware is unique with its beachline, and it may very well be—in fact I happen to believe it is—in the national interest to preserve and conserve the coastal areas for recreation. It is a recreational area not only for the people of Delaware, but it provides a much needed recreation center in one of the principal urban areas. This should be evaluated when we decide what should be done, even from the national point of view.

So I would say we are not asking for something that is not only parochial, although I admit I am parochial, as you are, in this. But we should try to retain natural resources for the national interest.

Senator BIDEN. I tend in my limited experience here—to compliment those with whom you agree.

I would like to compliment you on one point you have raised this morning, and that is concerning the basic assumptions upon which S. 1751 is based. We are starting off assuming that it is in the national interest to have the superports. We are starting off by this legislation assuming that we are going to have to rely on oil, crude oil from the Middle East at least beyond our own geographic contiguous States, Alaska, and Hawaii.

This legislation also assumes that this reliance will escalate according to a pattern, about which I am not at all convinced although it may be absolutely correct, that there will be the need for superports. We start off with that premise.

What concerns me is and I think you are concerned about this and agree with me, but if we go along with this legislation and make these basic assumptions on the relatively few facts we have we are further opening the door to the erosion "in the national interest"

of the very hard fought for, by my predecessor in this seat and many of you in this room, and many of the members who are still in the Congress, environmental legislation, which took so long to get, was late in coming, and I think needs to be expanded rather than retracted.

We hear, for example, and I was raising the question with representatives of oil companies here yesterday, that a majority of that oil that is going to be imported will be what they refer to as sour crude. Everyone admits that sour crude is more difficult, from a pollution standpoint, to refine than sweet crude is, and that the existing refineries do not have the capacity or the technology to refine sour crude.

A sweet crude plant cannot refine sour crude, so we have to revamp the refinery or build a new one. So we are talking about considerably new construction. We are talking about a possible, I fear, onslaught on our existing Clean Air Act which is unjustified.

I would like to read for the record at this point in time an article from the Oil and Gas Journal dated May 21, 1973. The title of the article is, U.S. Fuel Crunch Threatens Nationwide Economic Crisis.

**The potential energy shortage was translated last week into ominous predictions of nationwide economic slowdown and growing unemployment by Stanford Field of Stanford Research Institute. He says that environmental laws are not only discouraging new energy supplies but absorbing much energy in nonproductive cleanup.**

He says that the dire prospect can be moderated if Government takes a number of steps promptly. Otherwise, the energy crunch will expand into a nationwide economic crisis. If the Clean Air Act of 1970 continues in force without amendment and if environmental and other Government deterrents to energy supply are not reversed, Field sees the U.S. falling 50 percent short of new energy need by 1980.

That is the end of my comment.

Senator ROHR. To go back to your earlier question, Senator Biden, I find the findings of fact very disturbing. As I stated in my opening statement, it seems to me that the first function of this committee should be to make a finding as to what role superports and supertankers should have in the overall energy picture.

I think there is an energy crisis and I think we have to find an answer to it. But the superport concept is only part of the answer. If you take the language that has been included in the bill that the national interest in environmental protection is best served by larger vessels and development and operation of U.S. deepwater port facilities that can accommodate them, I don't know how you could ever deny that a superport 3 miles off Rehoboth isn't in the environmental interest. I find that a staggering conclusion. I just can't believe it. I think that is your first function. I agree with you.

Senator BIDEN. Thank you, Senator. I have no further comments.

Senator GRAVEL. Senator Johnston?

Senator JOHNSTON. Mr. Chairman, I was going to say as a member of the special study by Interior Committee on the national fuels policy and the energy crisis, I think it is rather clear that we do have an energy crisis, if you accept the fact that being dependent on Middle East oil today, and that dependency is growing, if those

figures are correct and if that in itself is a crisis, we surely are in one, because we are dependent on Middle Eastern oil.

Even with Senator Gravel's oil coming down as quickly as we can get it, we still will be dependent on Middle East oil.

I am persuaded that we need to bring oil in deepdraft tankers. I think the economics are there and I believe the ecology be less threatened. I also concur with you, Senator Roth, that you have to examine the situation with respect to each area. Unfortunately, most areas have some special quality, as I say. With Louisiana, we have over a billion pounds of commercial seafood produced off our shores, a renewable resource that is going to be there for 100 years if we are careful of it, and thousands of years, hopefully. Every State has that special situation.

Now, you have, I understand, listened to the other testimony, particularly my questioning of Mr. Weebb, with respect to what kind of cooperation the adjacent State ought to get. Once you locate that superport, either willingly or crammed down your throat, should the adjacent State get some kind of recompense for the very real possibility that they will have not only environmental degradation, but some effects that can be recompensed with money. Should they get some kind of share in the revenues?

Senator ROTH. First, it would seem to me that not only the State where the superport is located should have a voice in it, but it may well be that there are contiguous States that would be significantly impacted by it, and they should have a veto as well. So I would give them the veto. A port located near Cape May, for example would have significant impact on both New Jersey and ourselves.

In those cases, I think they both should have the power of consent.

It is also true, according to the scientists, that a superport built off our shores could conceivably affect North Carolina or South Carolina in the event of a major spill. The potential is there. As to the size of that risk, I am not able to evaluate that at this time.

That is a factor that should be considered, however, and of course one of the things that I think is important before permitting these superports. I hope you will develop a very strict requirement, or requirements, with respect to safety from spills.

Also, it seems to me that there is great merit, and I am not at all convinced that we have gone far enough in legislation, in holding the oil companies and others strictly liable for oil spills. I think this is a—

Senator JOHNSTON. If you will yield on that point, I think we have to go beyond traditional ideas of strict liability.

Senator ROTH. You are talking about actually compensating, if I understand you.

Senator JOHNSTON. Compensating for those things, those damages, that are not legally provable, that are not legally compensable. For instance, a shrimp fisherman doesn't go to the same area all the time, and he can't prove that the oil has hurt his shrimp business.

Senator ROTH. I haven't given this too much thought, but if that is the cost of the superport, it seems to me that careful consideration should be given to those who lose their livelihood or if there are other effects.

Senator JOHNSON. Do you think the State ought to be able to have some shares of the revenues from the superport?

Senator ROTH. I am a member of the Finance Committee. I would assume that your senior colleague, being chairman, would give consideration to this concept. It may well be. I haven't given that much evaluation to it that I could give an answer.

I think this is worth examining, and should be examined, because there is a cost to this. If superports are in the national interest, those who are harmed by it are certainly entitled to consideration and compensation for potential losses.

Senator JOHNSON. Thank you, sir.

Senator GRAVEL. Thank you, Senator. We appreciate your coming here.

[The statement follows:]

STATEMENT OF HON. WILLIAM V. ROTH, JR., U.S. SENATOR FROM DELAWARE

Mr. Chairman and Members of the Subcommittee, I welcome the opportunity to testify before you on S. 1751, the Deepwater Port Facilities Act of 1973.

My home State of Delaware was at one time a prime candidate for an east coast deepwater oil terminal. By enacting the Delaware Coastal Zone Act of 1971, which specifically prohibited the construction of such a facility, the people of the State of Delaware expressed their concern over the potential adverse effects such a development might generate. My State is using the time we have obtained by passage of this law to thoroughly assess the potential advantages and disadvantages of a deepwater terminal off the Delaware Coast.

Early in this session of Congress I introduced legislation, S. 1558, which provided for environmental safeguards and a significant role for the States in arriving at decisions regarding the construction of deepwater terminal facilities. I do not intend to focus on that bill today, but rather, I would like to explore what I believe to be the shortcomings of S. 1751.

While I have some strong objections to the provisioning of S. 1751, some of my most serious reservations arise in connection with Section 101, the findings of Congress.

While I have some strong objections to the provisions of S. 1751, some of my most serious reservations arise in connection with Section 101, the findings of Congress.

I am not at all convinced, and I am sure that many of my fellow Members of Congress would agree, that it would be wise or prudent to set forth in this bill language to the effect that "Congress finds" that the "national interest in economic uses of resources, environmental protection, transportation safety, competitive advantage in world trade, and security in international relations" will be "best served by the use of larger vessels and development and operation of United States deepwater port facilities."

It may be that each of these goals can be served by the use of supertankers and deepwater ports, but such a conclusion is dependent on a great many variables.

For example, we have been told, and I believe that Mr. Johnson, Energy Adviser to the Deputy Secretary of the Treasury, testified to this effect before the Subcommittee earlier this week, that the United States will need to increase its crude oil imports significantly in the near future and that the source of most new oil imports will be the Persian Gulf fields. Because the "supertanker" is the most efficient means of transporting the large tonnage of crude oil that will be required over such a long distance, from the Persian Gulf to the Gulf or Atlantic Coasts, we are warned that we will need to construct deepwater ports to accommodate these vessels. Further, we are told that there is an urgent need for legislation to authorize deepwater terminal construction so that industry may have these terminals operational by 1976 or 1977.

There are many assumptions underlying the rationale for development of deepwater port facilities which may or may not be proven valid. For one, it is

not certain that by 1976, U.S. crude oil imports will have increased drastically from the present level. Barring a sudden upswing in U.S. refinery construction, domestic refining capacity will continue to be inadequate and imports of petroleum products, and not crude, will have to be initially relied upon.

Frankly, I question some of these assumptions. It seems to me that these should not be put forth as "findings of Congress" but rather that it is precisely the purpose of these hearings to determine when, where, and how the national interest would best be served by the development of deepwater terminals or ports.

The Administration's new oil import policy will hopefully stimulate domestic refining capacity, but the Petroleum Industry Research Foundation has indicated that the full effects of the new import fees on products will not be felt until 1976 or later. In the case of residual fuel oil, they indicate that, because U.S. refiners will not be able to make sufficient residual fuel oil through at least 1980 to permit a reduction in importation of this product, imports of residual fuel oil into the Gulf Coast and the Midwest are likely to increase substantially between now and 1980. Although many reports of plans for expanding refining capacity followed the Administration's April 18 announcement of the new oil import policy, an industry survey subsequently revealed that all projects were expansions of existing refineries and none were for construction of grassroots refineries. Therefore, we are not talking about any rapid, substantial increase in domestic refining capacity. Furthermore, the Office of Oil and Gas, Department of the Interior, estimated in December 1972 that an average refinery project at best requires 2½ years to complete, and concluded that no significantly new additions to U.S. refining capacity could be realized prior to 1976. Until domestic refining capacity is significantly increased, the United States will continue to meet its demand for petroleum products by import refined petroleum products to the East and Gulf Coasts from the Caribbean. For distances of this magnitude, supertankers are simply not economically competitive.

What about after 1976 or 1980 then? Will the U.S. demand for crude oil imports from the Persian Gulf justify construction of superports as the best way of serving the national interest? Quite frankly, Mr. Chairman, there does not seem to be adequate grounds for answering the question in the affirmative. Already, Canada has enacted interim crude oil and refined product export controls over shipments to the United States, and there are reports that accommodation to unacceptable foreign policies may be the price of a continued supply of crude oil from the Middle East.

It is not at all clear that we will be able to meet domestic energy demands in 1980 or year 2000 with increased imports of crude oil from the Persian Gulf even if legislation authorizing construction of superports is passed in this session of Congress. In fact, given the uncertainties about world and domestic refining capacity and the availability and costs of future supplies of crude oil, one wonders if the substantial public and private funds which would be invested in a superport would not be better spent in researching and developing alternative energy sources and thereby attaining domestic self-sufficiency in energy resource production. This is a huge amount of money that we are talking about. A study of the economic impact of a proposed Louisiana Offshore Oil Port found that total costs, including infrastructure, operating expenses and capital costs, of the terminal would be almost \$2 billion and State and local governments would be required to expend almost \$440 million as a result of the project over its lifetime. Add to this any environmental costs which could result—and they might well be substantial—and the costs, estimated to be \$50 million per 150,000 barrels per day refinery, required to convert existing refineries to handle Middle Eastern "sour" crude, and the national investment required to import, refine and consume this crude oil becomes staggering. It is extremely important, therefore, that the Congress act with great care in making any decision regarding the feasibility, construction, or operation of deepwater terminals.

I raise these issues because I believe this subcommittee has the right and the responsibility to question not only the specifics of this bill but the underlying assumptions as well. It is not yet the "findings of Congress" that economics, environmental concerns, and transportation safety and the national interest in general would be best served by importing Persian Gulf crude oil by supertanker to U.S. deepwater ports, and, until Congress makes such a determination, none of these conclusions should be taken for granted.

There are other Sections of S. 1751 which I find unsatisfactory, especially the substantial powers granted to the Secretary of the Interior with respect to approval of deepwater terminals proposals. If Congress does determine that such developments would be in the national interest, some determination as to the optimal number and locations for such facilities ought to be made. If left to the discretion of the Secretary of the Interior, as I read the bill, there are only a few grounds for rejection of a proposal. The only overriding veto of a proposal approved by the Secretary would exist when the President determined that such a proposal would be contrary to the national security of the United States. I believe that Congress should retain some authority to override or review the Secretary's decisions particularly since the bill provides few grounds for not approving projects meeting the minimal criteria, and substantial grounds for granting such approval to any number of proposals promulgated by the industry.

As I stated earlier, I introduced legislation, S. 1558, that would grant a significant role in the superport decision-making process to the states. One of the omissions of S. 1751 that disturbs me most is that the states are virtually excluded from any decision regarding the siting, construction; or operation of a superport.

Construction of a deepwater port facility would generate secondary land-side development to an unprecedented degree. Let me give you an example in the case of Delaware. According to our State Planning Office, the construction of a port would result in quadrupling the population of Delaware's two lower counties, Kent and Sussex. Without the port, it is expected that the two-county population will be roughly 237,000 by the year 2000. But, with the port, the population is expected to exceed one million persons. In short, the population increase alone would compel a dramatic shift in the economy and lifestyle of Kent and Sussex Counties.

To house and employ Delaware's vastly increased population would require that roughly 125,000 acres, most of which are now dedicated to farming and conservation, be used for residential or industrial development. This figure, I might add, does not reflect additional land which might be required to satisfy transportation needs. To triple the population and consume 50 percent of the land available in the coastal zone would reflect an unprecedented, abrupt, and total change in our state.

But, the demands created by the facility would not stop with the burdens of population and increased development. On the contrary, the Army Corp of Engineers has estimated that at secondary treatment levels, the effluent from new refineries and petrochemical plants resulting from a deepwater oil terminal would be approximately equivalent to the untreated sewage of 845,000 people, in terms of oxygen demand placed upon the marine environment.

Because any superport would have dramatic effects on nearby states, I have proposed that Governors and Legislatures be given the power of consent and veto over any offshore terminal.

Through this proposal, I would expect a Governor to submit his scientifically based recommendations to the Legislature. The Legislature and the people, then, would have the benefit of the expertise which resides with the executive branch. By bringing these recommendations to the Legislature, I would anticipate a full test of them through hearings and debate. In this manner, the ultimate decision should incorporate the will of the people and the expertise of scientists while insuring, I believe, the widest possible participation in the decision-making process.

I consider the delegation of authority and responsibility to both the legislative and executive branches of government the most important aspect of my proposal. Certainly, if we were today discussing a proposal which would affect the United States to the same degree that a superport would affect an individual state, few, if any, members of the Congress would contend that the legislative branch should be omitted from deliberations. Time has shown that complex and difficult issues, such as this, are best resolved through exposure to the multiplicity of views, the intensity of public opinion, and rigorous debate found only in the legislative branch.

States must be given the power to decide whether they want, a superport and its accompanying development.

Three final comments about S. 1751 must be made. First, there are no provisions for a land-use impact statement included in this proposal. Since secondary development will be most dramatic, this is an absolute necessity.

Second, the requirements for public hearings are not sufficient. The Secretary of the Interior retains the right to determine if such hearings are required based only on the phrase "if substantial objections" exist. Hearings should be held to improve communications and inform the public of the nature of the project.

Finally, I am particularly disturbed by Section 108 (8). If, as alleged, deepwater terminals represent an environmental "enhancement" over conventional oil transshipment methods, then we ought not accept the statement that the facility "will be located, constructed, or operated in a manner which will minimize or prevent . . . any adverse significant environmental effects." We should be confident beforehand that for each proposed terminal, the "significant adverse environmental effects" will be prevented, not merely minimized, which, after all, is a word much open to individual interpretation. We should be certain before we license.

That concludes my comments on S. 1751, Mr. Chairman. I trust that the Subcommittee will take time to examine the underlying factors and assumptions behind this bill, as well as its substantive requirements and ramifications.

Senator JOHNSTON. We will recess until 2 o'clock, and at that time start up with Mr. Woodburn.

#### AFTERNOON SESSION

Senator GRAVEL. Our first witness is Mr. Ken Woodburn. Mr. Woodburn, I see you are ready and that you have the rest of the Florida contingent with you.

#### **STATEMENT OF KEN WOODBURN, ASSISTANT TO THE GOVERNOR, STATE OF FLORIDA; ACCOMPANIED BY EARL STARNES; AND DOCTOR BLOODWORTH OF THE DIVISION OF STATE PLANNING; JACK PIERCE, FLORIDA DEPARTMENT OF NATURAL RESOURCES; BRUCE JOHNSON; AND DR. JAMES JONES, COASTAL COORDINATING COUNCIL**

Mr. WOODBURN. Thank you. I have been asked by Governor Askew to thank you for the opportunity to testify on this timely subject. I would like to introduce the rest of the Florida people with me.

On my far left, Jack Pierce, the attorney for the Florida Department of Pollution Control, the State agency with jurisdiction over marine fisheries, petroleum, and Florida's oil spill law.

Immediately on my left is Mr. Early Starnes, director of the Division of State Planning. Dr. Jones of the Florida Coastal Coordinating Council, and Mr. Bruce Johnson, director of the Florida Coastal Coordinating Council are to my right.

With that, I will proceed to read Governor Askew's statement. I would like to preface it, however, by saying that we have not had the opportunity to review any of the alternative legislation discussed here this morning.

Our comments are directed to the Deepwater Port Facilities Act of 1973. The Deepwater Port Facilities Act of 1973 is a farsighted response to the economic, environmental, and energy realities facing America. As Governor of a maritime State, I welcome this opportunity to present a statement to this special joint subcommittee representing the highest congressional interest in public lands, natural resources, business and industry, and public works.

There is a broad range of issues involved in these special hearings as your respective committee chairmen indicated in their joint invitation for testimony.

Florida's economy, based on tourism, agriculture, forestry, fisheries, light and service industries, depends largely on imported energy in various forms. The vast majority of our millions of tourists and new residents come to Florida by private automobile.

So our nation's present energy problems, crisis, or otherwise, are of great concern.

Last March representatives from the petroleum industry, universities, conservation groups, business and industry, government, and the general public participated in an energy conference which I called. Later, the State legislature responded to the conference with legislation creating a Florida Energy Committee to thoroughly study the production, transmission, use, and conservation of energy with the goal of developing specific recommendations for a state energy policy to the 1974 legislature.

I am sure that the energy committee will include deepwater ports in its considerations.

All projections that I know of indicate that the United States will need and import more and more foreign petroleum, probably from the volatile Middle East. The economics of bulk transportation and competition from other industrialized nations in Europe and Asia dictate that crude oil from foreign sources be transported and imported in larger and larger supertankers drawing as much as 100 feet of water and weighing as much as 500,000 dead weight tons.

Even the smallest of the new supertankers draws more water than the deepest Florida ports which average around 40 feet of water at mean low tide.

To preclude dredging and spoiling on a scale never known before in our estuaries, the construction of deepwater port facilities seems to offer a viable alternative to massive inshore navigational projects for supretankers.

Florida has the traditional offshore territorial limit of three miles on the Atlantic Coast. Water depths there drop off quickly from the shoreline with the exception of the Cape Kennedy area.

However, on the Florida Gulf Coast, the offshore State territorial limit is three leagues rather than 3 miles, and there are locations in the northeastern gulf where 100-foot depths are not reached until about 100 miles from shore. These diverse conditions of Florida's east and west coasts need to be considered in policies and legislation involving deepwater ports.

Water currents, winds, and sport and commercial fisheries are other important considerations. Because of the complex and sometimes poorly defined loop currents in the Gulf of Mexico generated by the Yucatan current, the gulf must be carefully evaluated for suitable locations of deepwater ports.

Florida is anxious to do its share in solving our nation's energy problems. But Floridians zealously guard their white sandy beaches. Our coastal tidelands and wetlands are recognized as nursery and feeding grounds supporting highly valuable offshore sport and commercial fishing industries.

Massive crude oil could be catastrophic to both our environment and our economy.

Most Floridians, like most Americans, now live in or near coastal zones, and the lure and benefits of salt water and its living and mineral resources are great. Construction of deepwater ports, transmission lines, or access channels, and onshore storage depots and refineries would cause even greater pressures for growth and development along our coasts.

For these important reasons I strongly support funding and implementation of the National Coastal Zone Management Act of 1972.

Through our Coastal Coordinating Council and Department of Administration, both of which are represented here today, Florida is ready to work with the Federal Government to preserve, conserve, or properly develop these precious and fragile coastal and estuarine areas which so often in the past have been indiscriminately polluted, dredged, and filled.

I believe all the coastal States need the Coastal Zone Management Act just as they need the National Land Use Policy Act which the Senate has so wisely passed and sent to the House of Representatives.

On my recommendation, the Florida Legislature passed the Environmental Land and Water Management Act of 1972. This landmark act, which many consider a model for other States, provides for greater State direction and leadership in helping cities, counties, and regional authorities to better manage land and water resources; it makes use of guidelines and standards for developments of regional impact and designation of areas of critical State concern for environmental reasons.

I mention these mainly to show that our State is attempting to protect the rights of our citizens to a quality of life that has made Florida the second fastest growing State during the past two decades.

There should be some provision in the act under consideration for statements from the Governors of affected States as to the acceptability of deepwater ports and related facilities, not only as to the State land use program but also as to the State coastal zone management program.

If an offshore facility malfunctions, does not prove successful, or is abandoned, there should be provisions for restoration of the marine environment.

With the various environmental effects to be considered, a statement of benefits to a State or region would be helpful for inclusion in the application information to assure a balanced evaluation of a deepwater project. Perhaps a cost-effectiveness analysis could be required or included in applications and evaluations to the Secretary of the Interior.

The act seems to assure adequate public notice, hearing and appeal before the Secretary of the Interior may approve and license construction and operation of deepwater port facilities. I am particularly pleased that licensing of deepwater port facilities would come under the Secretary of the Interior because the Interior Department has a wide range of interests and is not primarily a construc-

tion agency that might promote offshore projects despite any economic or environmental deficiencies.

I would expect that the Secretary of the Interior would solicit the views of the Secretary of Commerce, the chief executive officer of the National Oceanic and Atmospheric Agency, as to proposed superport locations.

Finally, Florida's very tough Oilspill Law and its possible ramifications for deepwater ports, transmission lines, or channels, and onshore facilities should be considered in any Federal deliberations and decisions affecting waters offshore Florida.

This law recently withstood serious challenges in the U.S. Supreme Court. The attorney for the Florida Department of Natural Resources, the State agency charged with administration and enforcement of this stringent law, is here today to respond to any questions you may have.

The Department of Natural Resources is also responsible for the supervision and regulation of petroleum exploration and production in Florida and has the paramount responsibility for management of Florida's fresh water resources and its marine fisheries.

Thank you again for this opportunity to comment on the specific bill and the spectrum of issues associated with it.

Senator GRAVEL. I am trying to figure out if in your statement, in what you have said, you are for or against port development and whether the State of Louisiana is pursuing the possibility of a port, and the State of Texas is also any one port in the gulf area might be sufficient to satisfy the needs of Florida.

So it is a two-pronged question. One is would your State entertain for a port off the coast of Florida, and, two, if adjoining States secured such a superport off their coasts would that negate the need for Florida to have one?

Mr. WOODBURN. Dr. Jones of the Coastal Coordinating Council has made a rather exhaustive study of the current system of the Gulf of Mexico as to the areas that apparently would be either acceptable or unacceptable as to the location of a port in the event of any kind of malfunctions or oil spills.

I think that each application that might affect waters offshore of Florida would have to be evaluated as to its own merit.

Senator GRAVEL. Where would be the best location for a superport in the gulf area?

Dr. JONES. On the basis of the evaluation of the State of the knowledge of the hydrography of current systems in the Gulf of Mexico and off the Florida coast in general, there are a number of reasons why the region in northern Florida, which we term the Panhandle, and the Big Bend area, which is the area at the curve of Florida, on the Gulf of Mexico, would be highly inappropriate.

The current structure, water current structure in that region is such that a major catastrophic spill offshore, whether it be from a platform or port facility in deepwater would probably allow the spill product to come ashore in those regions.

Those are regions that are very sensitive environmentally.

Senator GRAVEL. Are the currents inland there?

Dr. JONES. There is a driving mechanism called the Eastern Gulf of Mexico loop current that makes a swing, clockwise swing up in

that direction. This would drive the products in towards the beaches in that region.

Senator GRAVEL. That would be the case even if you had a superport offshore from Louisiana, would it not?

Dr. JONES. No, sir.

Senator GRAVEL. Wouldn't that pick it up inside the gulf and carry it to the Florida shore?

Dr. JONES. No, the eastern gulf loop current is one that is restricted to the area on the offshore Florida and to a degree off Alabama. It has little effect off Mississippi or Louisiana.

Further south along the Florida coast, as one gets down into the area that may be termed the western gulf coast of Florida, from Cedar Key on perhaps to Cape Sabal, the current structure is such that the driving mechanism is one that would force the products of a spill to move parallel to the coast, and/or perhaps in some instances, offshore.

This would be just a general consideration of the wind structure at any given time which might, of course, prevent this.

The eastern coast of Florida is one that has deep water nearby it, very closely. It is rather inappropriate to locate a superport facility anywhere on the eastern coast because of the dominance of urban, suburban development in those regions and the lack of a spot for it.

In answer to your question, the one spot in Florida, if for overwhelming reasons, the superport is necessary in Florida, would be in the region offshore Tampa.

Senator GRAVEL. Off of Tampa?

Dr. JONES. Yes, sir; the Tampa area has the most potential for assimilating the economic and social impact of such a development and would have a fair capacity to assimilate the environmental impact.

The reason, primarily environmentally, for this recommendation is that the prevailing current structure in that region is one that would not tend, over periods of time, to push the products of an oil spill ashore.

Senator GRAVEL. What about a superport, say, in Puerto Rico or in the Virgin Islands to supply the needs of Florida and that part of the country? Does that make sense environmentally?

Dr. JONES. I think if one is to look to these regions, for an alternate site, I believe that probably logistically and possibly economically, the most logical site to be someplace else in the Gulf of Mexico.

Senator GRAVEL. In the gulf itself?

Dr. JONES. Yes, because the major import area for the State of Florida is the Tampa region already. It would be a matter of movement to Tampa.

Senator GRAVEL. Large markets like Miami are supplied through pipelines from Tampa?

Dr. JONES. No, sir. There is overland transportation by truck. The Tampa area and Jacksonville area have significant amounts of oil products coming in. The Tampa region has a larger amount.

There is a requirement that there be a number of terminal points into Florida. In a preview of this very question, it became apparent that the economics of a single superport for Florida were not particularly good from the standpoint of the cost-benefit ratio because there is a diffuse market.

As a result, a single port—of course you realize we have no refining capability into Florida that is significant. So in general, there is little likelihood that a superport could be developed anywhere in the State of Florida.

Senator GRAVEL. What is the oil consumption of the State of Florida? Maybe just the east coast of Florida, in terms of barrels per day?

Dr. JONES. Will you give me a moment?

Senator GRAVEL. Sure.

Dr. JONES. The question is in the deepwater port questionnaire sent to us for answering. It addresses this as to the petroleum supply. Oil supply is 72 percent of Florida's energy demand compared with 44 percent on a nationwide basis.

Senator GRAVEL. You don't have it broken down in barrels per day?

Dr. JONES. No, sir.

Senator GRAVEL. That is all the questions I have.

Dr. JONES. Would you make it available to the committee?

Mr. WOODBURN. Yes.

Senator GRAVEL. Those are all the questions I have. I understand you have a plane to catch. I appreciate your coming here. My regards to the Governor.

Mr. WOODBURN. Thank you, Senator.

Senator GRAVEL. Our next witness will be the distinguished Governor from the State of Mississippi, William L. Waller.

Governor Waller, let me say it is a pleasure having you here. I know Senator Eastland joins me in welcoming you. Senator Stennis called me on the phone this morning and wanted me to say that he was behind your statement that you have delivered to the committee here and that the people of Mississippi stand behind the positions you have taken.

On behalf of both of these very distinguished Senators, (and very important Senators I might add,) Senator Eastland and Senator Stennis, I want to welcome you to the committee. The forum is yours.

Please introduce your colleagues here, for the record, and proceed at your will.

**STATEMENT OF HON. WILLIAM L. WALLER, GOVERNOR, STATE OF MISSISSIPPI; ACCOMPANIED BY HON. WILLIAM C. "SON" RHODES, MISSISSIPPI STATE SENATOR; HON. TRENT LOTT, STATE REPRESENTATIVE; DONALD H. INSKIP, PORT DIRECTOR, JACKSON COUNTY PORT AUTHORITY; JOHN M. SIKES, ASSISTANT CHIEF ENGINEER; MICHAEL BAKER, JR., INC.; DR. ROBERT L. ROBINSON, EXECUTIVE DIRECTOR, A. & L. BOARD; DR. P. T. BANKSTON, DIRECTOR, OFFICE OF SCIENCE AND TECHNOLOGY; HERMAN GLAZIER, EXECUTIVE ASSISTANT TO THE GOVERNOR; AND KENNETH B. ROBERTSON, CHANCEBY JUDGE**

Governor WALLER. Thank you, Senator. We are indebted to the committee for extending us this privilege of a brief appearance here today.

One of the things that I would like to demonstrate is the unity of purpose in my State and the positive attitude that we have towards the cooperation with Federal Government and with sister States in helping solve the energy crisis, including the location of, we hope, an offshore port facility in the Gulf of Mexico near the State of Mississippi.

Our congressional delegation has already been spoken of by you and our Senators are behind us.

We have Congressman Trent Lott here at the table who is our congressman representing our fifth district.

Senator GRAVEL. Congressman, it is a personal pleasure to welcome you here.

Senator LOTT. Thank you very much, sir.

Governor WALLER. We did have Congressman Thad Cochran here. He is on the floor and will be here shortly as will Congressman have expressed support.

Traveling with me today from the State of Mississippi is Senator William C. Rhodes of Pascagoula. Senator Rhodes is on my right.

I asked a member of the legislature to come because Mississippi is probably one of the few States that has passed, by its legislature, a tax appropriation to support the State's efforts to acquire the deepwater port.

This bill came through our legislature with very little opposition.

Mississippi is heavily involved in port operation and our State government supports the local port authority, as well as the fact that the State of Mississippi owns two ports, one on the Gulf of Mexico and an inland port.

We have with us on my left Mr. Donald Inskip, port director of the Jackson County Port Authority at Pascagoula. The Jackson County Port Authority will have tankers loading and unloading in the Port of Pascagoula in January. We have substantial refinery developments on land owned and controlled by the port. The port sent its engineer, Mr. John Sikes, who is right here.

Mississippi Port Authority in its superport effort is represented here today by Herman Glazier on my immediate right and by Dr. P. T. Bankston, who is a full-time science and technology specialist with the Governor's office developing his talents in this field.

We have a judicial representative, Judge Kenneth B. Robertson of Pascagoula who is here because he was recently a State senator before his election to the bench. He has given us a lot of support and will continue to do so in the coastal area for whatever development we may have forthcoming in the offshore port.

Mississippi State government is represented again by its industrial development department, Dr. Robert L. Robinson. Dr. Robinson has testified in other hearings and is here today to show that our industrial development of State government is heavily involved in this effort.

I would like to file with the committee, if I may, my written statement consisting of 19 pages and maps and having on it, on the cover, July 25, 1973 date.

To avoid a duplication between my spoken word and that written word, I would like to depart from that to say this: One of the

worries of this committee, as I understand it, is what attitude will be demonstrated by the States after the enactment of appropriate legislation.

Well, we support S. 1751 and we are opposed to the other bills which have been filed. We do this because we think S. 1751 allows a State, through the governor's office, to participate in the licensing procedures. We think this is essential.

After the passage of a deepwater port authority, we want to extend our thinking to how the bill might be operative with the States, whether or not the States would have veto authority or whether or not, as some Eastern States have already done, passed legislative acts or resolutions that would preclude the Interior Department from granting a license or that would cause some interruption of a licensing authority as anticipated by the act.

We would like to suggest that the States be given a reasonable time to apply; and if not, that the statute be operative to take care of an energy crisis regardless of the attitude of some State.

However, we believe that the State of Alabama, that we have been working with on our Ameraport effort, and the State of Mississippi, have always demonstrated that we would not interfere with the licensing of a port.

I am convinced in my own mind that the law needs a couple of additional factors, if I may be bold enough to suggest those.

I do so with deference to the fact that the committee has developed this bill probably carefully and maybe without any need for a suggestion from a person like myself.

I would like to make this suggestion in the form of a situation that exists in our State.

We think that the delay time in getting off the ground with the deepwater port is real significant.

We had a \$300 million refinery located in our State to process foreign crude into synthetic natural gas which we think is the ideal fuel.

Due to the 52 agencies which this company had to deal with—and this is a major company—they decided that they couldn't wait for the delays to pass by and build a refinery. They had to go with a conventional refinery. I think one of the things this bill fails to speak to, specifically, are some deadlines, dates, specific limitations on the projections; maybe the bill might go further than that and have a power of court bill under some supernumerary authority or some special provisions.

From what I know about the discourse I have with other governors, and from what I think the committee has already heard in the course of these hearings, we are talking about 75 to 100 separate approvals, that S. 1751 anticipates, before a license will become operative or permit to build will become operative.

I hope that the 26 percent that we imported last year, and the increases in foreign crude that we all know are going to come about, we would probably be way up close to 50 percent of our crude consumption, that would be imported before S. 1751 caused the opening of a deepwater port unless there are certain mandatory pro-

visions written into the statute which would cut across some of the leadtime, delays anticipated by these various provisions.

There are many other details that I would like to go into today.

I hope that the committee would accept from us a strong request that this bill be passed immediately.

We are deeply involved in exploration and production; and our refineries are not what we would like for them to be.

For example, right off the coast of Mississippi, in the area of Jackson County, which is that county near east Alabama, and bordering the Gulf of Mexico, there are three new refineries that are anticipating or contemplating locations in that area.

If we had this bill, and we knew the workings of the licensing authority, I think it would expedite the development of our State.

Another thing that we would like to see is some deadlines, either in the form of regulations or in the form of laws, that some consideration be given to that State which needs the economic impact of a deepwater port.

My State, unfortunately, needs that worse than most any other State in the Gulf region.

Besides that, we think that this State could not only demonstrate the need for per capita income increase in our State, but also that we could show, not like Louisiana, or not like some other States, we have offered to cooperate. We have an ongoing compact with Alabama which says Mississippi and Alabama are in association for the development of a deepwater port, near the imaginary line separating the two States.

We think that up in the Midwest, in the Chicago area, and all around mid-America, that Mississippi is the logical State through which the transportation network, the refinery network, and all of the other total energy systems could be built; and it would be an ideal place to locate.

I believe that we have enough people here today, Senator, that we could answer any questions that you might want to ask.

Let me conclude by saying that I think the nation deserves to have a total energy system at a very early date.

I know that all of the facets of the energy crisis have been discussed in this room.

I would like to leave you one thought: Time is fleeting, it is passing. I don't know as governor of anything that has happened in the last 6 months, that would lead me to believe as a representative of over 2 million people, that the solution is imminent. I hope such hearings as these, from this learned committee, will arise a law to allow the quick construction of a superport, if not offshore to Mississippi, in some State that is appropriate.

Senator GRAVEL. Thank you very much, Governor. I could not agree with you more about the time limit built into this issue. I do not think there is sufficient appreciation of that facet of the problem.

I have two of my distinguished colleagues with me here. I would like to see if Senator Biden, who has followed your testimony, would have any questions at this time.

I feel your testimony is very adequate. I do not think I could expand upon it to an appreciable degree.

Senator Biden?

Senator BIDEN. I have a few very brief questions, Governor. I apologize for coming in in the middle of your testimony. I was presiding in the Senate, a chore not everyone runs after these days.

You obviously want the superport off Mississippi, and you would like it as expeditiously as possible.

Governor WALLER. Yes, sir.

Senator BIDEN. I assume that one of the reasons you want it is just for the construction of the superport, but the landside development that will take place; when that pipe comes ashore, I assume you would plan on refineries and petrochemical industries surrounding that.

Your State, has a different attitude about it than the representative for the Governor of my State testified to this morning. Delaware has a significantly different attitude about the port. As a matter of fact, they are very emphatic about not wanting a port.

Mississippi, as I understand it, has a higher unemployment rate than we do in Delaware.

Senator GRAVEL. Almost as high as Alaska's.

Senator BIDEN. It is a luxury which you know we can have, I guess, saying we do not want it, because you know we do not need the employment.

Governor WALLER. Your welfare rates are higher there than they are in Mississippi.

Senator BIDEN. Well, that may be very germane. Is that why everybody is leaving Mississippi?

At any rate, Mississippi, as I understand you, Governor, is pretty staunchly in support of States rights, right?

Governor WALLER. Yes, sir.

Senator BIDEN. Now, would you agree to a provision in this bill, or any bill that deals with superports, which would provide that the Governor of the State, or the State legislature, or both, would have the power to veto the construction of such a facility off their coastline?

Governor WALLER. Well, I draw on some background as a lawyer. I think that there should—that would not be appropriate.

Governor WALLER. No, sir. I think the State government should be given a reasonable time to have some input into the final licensing procedure, but should not have the right to veto. If they fail to comply within a reasonable time limitation, then the Federal agency should be given authority to proceed.

We are dealing here with an interstate problem. You cannot build a fence around Rhode Island or Mississippi, either. I think that just like our navigable streams, our navigable channels coming in and out of a port, whether San Francisco, Gulfport Miss., or Pascaquola, they are transportation routes; they ought to be open.

Consequently, the United States of America controls all that area outside of the 3-mile limit. When you cut across the 3-mile limit, you are coming in—shall we say, into a superhighway with water on it. That highway should carry ships, lighter vessels, pipelines, whatever.

The State has a certain authority, but I do not think it should be veto. I think it should be more regulatory, complying with the Federal statute.

Senator BIDEN. Very responsive.

The next question I have is with regard to the State's relationship to such a facility, do you think that the State should be able, for example, to tax the throughput of the oil, the pipe coming from the facility to your shoreline and from your shoreline to wherever it goes to be refined or—whether it be in your state or another State—do you think the State should have the ability to, in some way, tax that throughput?

Governor WALLER. Again, I see a conflict of laws here. It would be a tax restraint of trade, would it not?

Senator BIDEN. Well, that is a question. I think it is a very valid question. I assume that it has been raised by some that we would have the ability to pass legislation to accommodate that. I am not suggesting we should or should not.

Governor WALLER. Wouldn't it be more of a privileged license fee?

Senator GRAVEL. No, it would not necessarily be in restraint of trade. It would be something that universally would be put on all superports. It would be a universal tax of some small amount on all the oil going through superports and would be channeled to the local government, or the host government. I do not think it would be a restraint of trade.

Governor WALLER. I certainly concede the need for revenue.

Senator BIDEN. Governor, what do you think you are going to get from this port? In the State? I do not mean you personally.

Governor WALLER. I get a vacation to Rhode Island. Maybe I can get you down.

Senator GRAVEL. You can inspect Pascagoula Bay.

Governor WALLER. The petroleum industry is big in my State. We rank eighth, seventh or eighth, in production now. We have oil well with creaking pumps in many sections of the State. My people are aware of the economic impact of petroleum on the economy.

We have one of the world's largest fertilizer operations. It depends upon natural gas. They recently bought a natural gas pipeline and laid their own lines for 70 to 100 miles to get a source of fuel. We look at it as an industrial development.

General Motors recently located in our State. We believe our energy sources, our energy resources, have something to do with them coming in.

It is just vital that we have—if we have a refinery, and we do have refineries, it stands to reason that we are more likely to have industry develop around those refineries than not.

Senator BIDEN. Governor, you are aware of the legislation which has been passed federally that whether or not you have 90 percent of the energy in your State, that you would get no more, no greater percentage of that energy for use in your State than an adequate allocation of the remaining States?

Governor WALLER. Yes.

Senator BIDEN. One of the things you see as a benefit is that industry would be attracted because of the availability of energy.

Governor WALLER. Well, maybe I did not explain myself. Where there is a refinery, there are also seven or eight other industries using the direct, or byproduct of the refinery.

For example, in the manufacture of fertilizer, or in the manufacture of chemicals, things that maybe even you have on today, some of the synthetic materials are made from petroleum products. It just goes as a complete cycle of industry that vertically builds itself around refinery complexes. You can fly over Houston, Tex., or Baton Rouge, La., or some of the other petro-chemically-oriented communities, to see the high-paying industries that develop around onshore refineries.

Of course, we realize that the offshore port will not do an awful lot economically. A closer site to that offshore port, onshore development will be fantastic.

Senator BIDEN. By the way, I am being very serious in saying that I am not being argumentative about asking you what benefits you see. The Governors that have testified before us, and witnesses, I think it is fair to say, have seen varying benefits. I just wondered what you saw; and you have answered the question.

I have one last comment and I referred this to the Governor from the State of Georgia this morning, who also is sympathetic to superports. I think they are looking for the possibility of a superport.

He takes a slightly different attitude as to the details and the rest. Unlike Delaware, they are saying, "We welcome the possibility."

There is a report done for the State of Louisiana, which I keep harping on here—and the people out in the audience have heard this for about the 10th time today, I guess—but it sets out the revenue costs—or cost-benefit ratios that would come as a consequence of location of a deepwater facility off their coast.

They come out with admittedly a conservative figure. It may be a greater benefit ratio. The figures reported are 1.09 to 1. The State gets a .09 percentage benefit. I assume that is in economic terms.

I am sure you are going to do the same sort of cost-benefit analysis and see what your—how your environment stacks up and what you need to protect and what you do not. We just disagree, you and I, on the State's veto right.

It is really strange to hear a—I would guess you would classify yourself, conservative Southern Governor—

Governor WALLER. Don't judge Mississippi today by what you have read in the past. We are the most progressive State in the Union.

Senator BIDEN. No. No. I really do not mean any offense at all. The comparison I was going to make is that it is an unusual circumstance to hear somebody who is up here, labeled as a young liberal Northern Democrat, me, taking what appears to be a stronger States' rights position, to the chagrin of some people; and you, who would be considered more conservative than I, if anyone was going to stereotype you, taking a position that was not based on a States' rights position that has been offered in many other areas.

Governor WALLER. Maybe you studied biology in college when you should have studied economics.

Senator BIDEN. That could be. The only biology I remember studying was some case in Mississippi—

Governor WALLER. Wait a minute now. I was speaking of that person who was speaking, not you, Senator. You are too sensitive today. You are not up for reelection next year, are you? [Laughter.]

Senator BIDEN. No. No. Not next year.

Governor WELLER. Let me say this: You have to bear in mind when you compare States that we have an awful lot of land; a refinery, for example, takes possibly a thousand acres of land. This land has to be usable, all of it, roads, tank farms, all of this.

I can see where some States may not have the land. We do. We think that one of the things that would be the best utilization of that land would be the petrochemical industry, the broad base of it.

I think it benefited Senator Johnston's State tremendously. And I think he would agree with that.

Senator BIDEN. It has even made the oysters grow better and made the Louisianians more lovable. Is that right?

Senator JOHNSTON. Better lovers.

Senator BIDEN. Thank you very much.

Senator GRAVEL. With that opening, let's switch to Louisiana.

Senator JOHNSTON. I want to issue a special welcome as our good neighbor in the neighboring State of Mississippi, with whom we share so many hopes and aspirations as well as problems. I am very glad to hear from you today.

One of the things I tried to do up here is to tell people about the progress we are making in the deep South, in Mississippi, Louisiana. There is a change in attitudes, in a constructive sort of way. I think we are making some progress in that respect.

As we know very well, you and I, as we go around the country, we try to talk about the affirmative things in our States, and about the good points. We have got a great many good points to talk about, both of us do.

On the other hand, we have still got some great problems. The last time I looked at the figures of per capita income growth rate, both of our States were in the lowest five in the Nation.

At least that was true last year. For that reason, I think that accounts more than anything else for the fact that both of us, both my State and your State, are very anxious to get the superport.

We recognize that there is going to be a lot of onshore development, petrochemical industries, refineries, all of the secondary industries.

We have a good many of those in our State. I think it has helped us. I know it has polluted our atmosphere. Most of these industries are capital intensive. They are more and more automated.

They employ fewer and fewer people. I don't mean to say we are not glad to have them. We are.

The point I am trying to make, Governor, is one with which I am sure you would agree, and that is that while both of our States are very anxious to get this, because we have unemployed people, we have underemployed people, we need more capital, we need more.

economic activity to get off the bottom of the rung economically, nevertheless, it is going to be somewhat of a mixed blessing.

There is going to be increased pollution in the atmosphere. There is going to be, in my State, degradation of the wetlands, hopefully not a great deal of degradation, but there is going to be some.

The point I have been trying to make throughout these hearings is that those States, like your and like mine, who are willing to have a superport, at least under the proper circumstances, ought to have in all equity some share of revenues from that to create a long range fund for environmental purposes, to build those dams to get the freshwater to the parts of the marsh that need it: to build a protection levee where they are required: to offset the effects, for example, of putting a tank farm in the marsh, where you are going to have to take marsh away from one area and pile it in another. That is going to affect the ecology.

I don't know what the ambient air quality register is in my State, but I do know that I flew a couple of hundred thousand miles in Louisiana, over a couple of years period, and about as often as not, we would have to fly high and far in south Louisiana because of the pollution in the atmosphere.

A pretty clear day elsewhere, but you get down there and you would have to fly on instruments because you couldn't see.

That's a price to pay. Your economic activity may be going up, but you are paying the price. Now I think we are entitled, in your State, my State, any State that is willing to bear the mixed blessing of a superport, I think it is entitled to some recompense for that. It is a long question, but don't you agree with that?

Governor WALLER. Well, it is a—obviously that, we have to have some type of compensation. The bill, as I read it, anticipates that this license would be rather restrictive, maybe 25, 35 different importers would be using one port.

It is easy enough for me to put a tariff on a commodity coming in and then reimburse the States where the damage is being done.

It certainly follows—

Senator JOHNSTON. If you excuse my interruption, I think it has to be more than just for damage. Under the State and Federal law, if you damage somebody's property directly, you are going to have to compensate him anyway.

What do you do when because of the needed activity of the superport, you create a higher degree of air pollution?

You damage in effect the State as a whole, all its citizens. I think that whole State ought to be entitled to something for that.

I think the State ought to be entitled to some compensation for what they need to do environmentally, over the long term. Not to clean up any oil spill or to clean up any ruts in the road or whatever the direct damage is, but on the long run.

Governor WALLER. Well, how do you account, though, for the fact that the importer through the port may not be the polluter? The polluter may be X refinery that has nothing to do with the superport.

Senator JOHNSTON. Oh, I think there is no doubt about that. Actually the question is—we had the Loop and Seadock people here yesterday. I asked them how they felt about it. They said we feel

like the American people ought to get the product as cheaply as they can, the point being that the American people as a whole would pay the cost of whatever impact, Texas, Louisiana, or Mississippi get from it.

It is not going to be borne by the oil companies. We recognize that. They are going to pass it along.

Governor WALLER. Well, let me ask you this. If our energy crisis continues to increase in severity and degree, and we continue to kick this around like all of the 52 agencies that have something to do with energy, and then we go into a theory such as yours that we have to have money to build recreation sites and replace the marsh and go through a lot of over compensation for pollution type of industrial development, all the while we are running out of energy.

Senator JOHNSTON. I am not talking about keeping your super-ports out. As I pointed out, I am anxious to get one for our State, properly policed, properly safeguarded.

Governor WALLER. This is true in your State. Let me give you something I started to go into earlier and didn't.

We have a \$400 million atomic energy plant that is trying to get a license. Since they have been trying to get all of the Federal red-tape complied with, their construction costs keep going up. We have no electrical sources from this plant all the while our reserves for electricity are diminishing.

I just mention this \$400 million solid gas conversion to natural gas, or solid gas conversion to natural gas. They had to shelve it because of delay.

The Federal Government is going to eventually strangle industry in this Nation if we don't find some quick ways to get a deepwater port, to build a refinery, to build atomic energy generating plants.

What I worry about when we go off into theories such as you brought up here, how many years will it take to work those formulas out before we build the deepwater ports?

Senator JOHNSTON. Just as quick as this committee can get together and put it in the legislation.

Governor WALLER. I would like to see what you are doing on the basis of revenue to the State. Where can we go through the game and fish commissions, go through the park commissions, go through your tourist bureau, go through your highways, if it is highways, and maybe put it on an import duty type thing that the Federal Government could easily write into the face of the law.

All the State would do would be to be the administering agency for the fund. I would rather not see it hopefully on the basis of a deterrent to onshore development.

Senator JOHNSTON. Well, it is not going to deter onshore development.

Governor WALLER. You take my State. We have an Air and Water Pollution Control Division that is top drawer, we feel. They are out there with the refineries or whatever the pollutant source is to find new ways to cut down.

That could be again on a local State agency saying don't dig up the marsh here, dig it up there.

Or don't dig 15 feet, dig 5 feet and backfill. I think maybe your Federal statute ought to go just on importation and these other things are going over to what Senator Biden said, a problem of States rights.

Senator JOHNSTON. That is right. That is the point I was trying to make clear initially. We are not talking about keeping the superports out. We are not talking about—at least I am not talking about discouraging onshore development or discouraging the shipment of the oil.

The question I was making, and posed to you, was should the States be entitled to some recompense under terms of the import duty, one set by Federal statute and transmitted to the States.

Governor WALLER. I think your point was well taken and I would support that. I think it is great. It would be a step forward maybe keeping out lawsuits. If this fund was building all the while to give us a better ecology around these petrochemical developments, it would probably discourage courts and litigants from tying the progress up for years.

Senator JOHNSTON. Governor, I want to again thank you for coming to the committee and letting us hear you.

Governor WALLER. I hope you will have time to read the two reports we filed, Senator Johnston. You may want to abandon the LOOP group and come over with us.

Senator JOHNSTON. I will read it very carefully with that in mind. Thank you, Governor.

Governor WALLER. Thank you, sir.

[The statement follows:]

**STATEMENT OF HON. WILLIAM L. WALLER, GOVERNOR, STATE OF MISSISSIPPI**

Mr. Chairman, and members of the Special Senate Joint Subcommittee on the "Deepwater Port Facilities" legislation.

I appreciate this opportunity to appear before you today to express my views on S. 1751 that is urgently needed to enable the early construction and operation of new deepwater port facilities in the United States.

**AMERAPORT COUNCIL**

The State of Mississippi, in collaboration with Alabama and Tennessee, is aggressively seeking a new deepwater port to be located offshore from the Alabama-Mississippi Gulf Coast. Consequently, "The Deepwater Port Facilities Act of 1973" is of extreme importance to us. To coordinate the efforts of Mississippi and Alabama, we have formed the Ameraport Council, which is referenced in the Draft Environmental Impact Statement prepared by the Department of Interior to accompany legislation on deepwater ports. We expect some interior States to support the efforts of the Ameraport Council. It is our opinion that the non-coastal States also have a great deal at stake in the matter we are discussing today.

**S. 1741 IS PREFERABLE LEGISLATION**

After reviewing the various bills before the Congress dealing with Federal licensing for the location, construction and operation of a deepwater port, it is our considered opinion that S. 1751 would be the best legislation to accomplish this purpose. We recommend, therefore, that all the other bills intended to serve this purpose be rejected, and that favorable consideration be given to S. 1571, with suggested amendments, for enactment as soon as possible.

On June 28, 1973, my representative appeared before the House Committee on Merchant Marine and Fisheries, and, speaking in my behalf, expressed

our opposition to the enactment of HR 5091 and HR 5898. First agreeing with the objectives of both of the bills in the sense that (1) the approval of the Federal Government shall be required for the construction, operation and maintenance of offshore facilities, and (2) such facilities shall not result in an unacceptably adverse effect on the environment, we offered into the record three reasons for our opposition.

We are opposed to S. 80 for the same reasons as those stated for HR 5091 and HR 5898. We support the enactment of S. 1751 because it satisfies our objections to the other bills, and it will otherwise provide a sound basis for the licensing and regulation by the Federal Government of new deepwater ports.

The provisions and general thrust of S. 1751 appear to be thought out carefully, and we believe it is the best deepwater port bill before the Congress. However, it can stand improvements and clarifications which would make it work better in practice.

#### ENERGY SHORTAGE IS INTOLERABLE

Charges and counter charges have been made regarding the cause of the current energy deficiency in our Nation, coupled with admirable recommendations to reduce our consumption of energy. In Mississippi, we are not so much concerned about why the shortage has occurred, as we are about what is going to be done about it—and when. And, although we recognize the good sense of using our energy supplies efficiently—whether or not a shortage exists—we are more concerned about increasing those supplies to satisfy our growing needs than we are to accommodating ourselves to an unnecessary shortage.

The prospect of a continuing, and perhaps worsening, energy shortage is unacceptable to most Americans, but it is particularly unacceptable to us in Mississippi where we are striving to expand our economy and to upgrade the per capita income and the standard of living of our citizens. Without an adequate supply of energy, we cannot grow, and if we cannot grow, we shall inevitably be locked in with a per capita income that is the lowest in the Nation. Since we are convinced that our Nation has an abundance of natural energy resources and the technology to supply that energy in sufficient quantities, we urge the Congress to act with dispatch on the necessary legislation.

#### INADEQUATE ENERGY POLICIES AND PLANNING

Undoubtedly many factors have contributed to the energy shortages that we are experiencing today. However, when we pull back from looking at each of these factors separately—and look at all of them collectively—we must conclude that our present energy problems are the result of inadequate Federal energy policies and planning. The problems stem not from inadequate natural resources, or financing, or technology—but from poor planning. Reactions to the problems are important to the legislation that you are considering, because the actions taken by the Federal Government with regard to deepwater ports must be an essential and integral part of the overall planning of the Federal Government to assure our Nation of an adequate supply of energy in the future.

#### CENTRALIZED FEDERAL ENERGY RESPONSIBILITY IS ESSENTIAL

It is essential that a single focal point of responsibility be established in the executive branch of the Federal Government for the overall planning and implementation of Federal energy policies and programs. We concur in the assignment of the responsibility for Federal licensing and regulation of deepwater ports to the Secretary of the Interior as provided in S. 1751. If and when a new Department of Energy and Natural Resources is created, we recommend that this responsibility be vested in the Secretary of that new agency. The Secretary should, of course, be required—as is done in S. 1751—to consult with other Federal agencies and with appropriate State governments and officials to assure that his decisions and actions are consistent with the responsibilities of those other agencies and the laws which they administer. In recommending an "umbrella" type agency for energy responsibilities in the Secretary of the Interior, it is not our wish to avoid the

participation of other responsible agencies. To the contrary, we will insist insofar as we can that the views and the laws of Mississippi be considered in matters affecting Mississippi.

S. 1751 does to some extent create the umbrella type agency in the Secretary of the Interior. However, the Coast Guard and the Environmental Protection Agency have their own regulatory requirements from the enforcement of the Federal Merchant Ship Safety Laws to the Details of Environmental Protection for Water and Air. The Department of Transportation is involved in certain aspects of pipeline safety. International conventions covering Maritime Safety and Pollution Abatement are developed under the auspices of the Intergovernmental Maritime Consultative Organization, one of the specialized agencies of the United Nations. The Maritime Administration has its specifications requiring appropriate pollution control measures to be taken in the design and operation of all merchant ships under the subsidy program in order to protect and enhance the quality of the Maritime Environment from all ship-generated pollutants, including but not limited to oil, sewerage, garbage, stack gas emissions, noise and nuclear radiation. The Council on Environmental Quality, the National Oceanic and Atmospheric Administration also have interests and responsibilities related to the location and operation of deepwater ports.

We understand the difficulty in centralizing the responsibility in government for a commodity like energy, because a commodity responsibility invariably cuts across many other vital government responsibilities—national defense, health and safety, commerce, foreign relations, agriculture. We have some of these same problems in State government. But, what is the alternative? We cannot continue to attack the problem with the same disjointed and largely uncoordinated governmental efforts that have brought us to the situation we have today. If we are going to have enough energy for national defense, agriculture, commerce and all of our other needs, we must break away from these old tactics which have failed, and develop a new strategy which will take us where we determine that we want to go. The legislation that you are considering can make an important contribution to the necessary centralized and coordinated Federal planning by placing the responsibility for deepwater ports in the Secretary of the Interior as provided in S. 1751.

#### ENVIRONMENTAL ISSUES MUST BE VIEWED IN PERSPECTIVE

S. 1751 properly recognizes environmental protection and safety factors. Mississippi has a deep concern for the quality of our environment, and we are determined to provide the best possible—and certainly, a healthful—environment for our citizens. The natural beauty of our rivers, lakes, beaches and countryside generally is a part of our heritage, and we are determined to protect it.

Generally speaking, our environment is not yet despoiled, and we shall not allow this to happen. We have an effective, aggressive Air and Water Pollution Control Commission, and its programs have been approved by the Environmental Protection Agency. I believe that Mississippi is the only state bordering on the Gulf of Mexico which has a wetlands protection law. We have implemented a coastal zone management program—and are the first state to apply for coastal zone funds. While Federal funds have not been provided to support this important work, Mississippi has demonstrated her desire, ability and determination to move ahead in important resource and land management responsibilities.

The declared public policy of Mississippi is to preserve the natural state of the coastal wetlands and their ecosystems except where their alteration would serve a higher public interest. Our Marine Resources Council is responsible for the preparation of a Coastal Zone Management Plan and to identify and include in that plan specific coastal and private wetlands which the Council recommends should be set aside as estuarine sanctuaries.

Extensive and intensive land use planning is essential in the Coastal Zone. In the deepwater port facility study by the Corps of Engineers (III-Page 142), the onshore impacts were given a relative weighting of 50% greater than offshore impacts in the final analysis and ranking of mono-buoy alternatives. Careful planning to minimize the impact of secondary onshore development is essential. Therefore, I urge immediate funding of the Coastal Zone Management Act as one thing that can be done now to accelerate planning for resolution of our energy problems.

Despite our positive attitude toward the protection of our environment, we are concerned about the philosophy that has pervaded in some areas that environmental issues are paramount to all other issues in the public interests—superior even to food, clothing and shelter and all other non-environmental related requirements of our citizens. In fact, of course, all of these basic human needs are co-equal, and they must all be considered in perspective. Energy is one of those basic needs.

I must point out to the Committee that if the intended results of this legislation are to be achieved expeditiously, as you intend them to be, it will take the best efforts of everyone concerned. Technology will have to be available and cost-effective. The environmental safeguards must be met. Consumer interests must be respected. Industry economics must be taken into account. The execution of these deepwater port projects will pose difficult tests of intergovernmental coordination at the national, state and local levels. So be it.

With all this, I would respectfully ask the Committee to consider with great care the need to limit the barriers and uncertainties that could arise to impede the implementation of this legislation. Among these uncertainties are the regulatory constraints applied under existing environmental laws. For example, four alternative air quality regulations are now being considered by the Environmental Protection Agency to prevent degradation of clean air, in response to decisions in the Federal Courts. One cannot object to the purposes of the regulations, but without a clear-cut definition of "significant deterioration", a serious question remains as to the degree of confidence with which investors can now approach the siting and construction of refineries and appurtenances.

The Congress is the source of the legislation, both for environmental protection and for relief from our energy deficiencies, and I hope very much that these potential conflicts can be minimized through incorporating the clear intent of the Congress in the bill that finally comes out of your Committee. If they are not, I foresee formidable barriers to expeditions construction and operation of deep water ports.

S. 1751 directs the Secretary to consult with the Governor of a coastal State to insure consistency with the State land-use program. This is obviously a sound provision, for it means that the State which needs and seeks a deep water port facility must also develop a sound land-use program. This is a challenge that Mississippi accepts.

S. 1751 would appear to provide the needed opportunity for the Secretary to act in the public interest after considering all of the relevant factors, including the environmental impact, of a proposed deepwater port. I can assure you that environmental protection will be one of the top concerns when the Secretary consults with the Governor of Mississippi concerning the deepwater port that we hope to obtain offshore from our Gulf Coast.

#### DRAFT ENVIRONMENTAL IMPACT STATEMENT

On February 20, 1973, I received the Draft Environmental Impact Statement prepared by the Department of the Interior, Office of the Assistant Secretary—Program Development and Budget—Office of Economic Analysis, to accompany legislation to authorize the Secretary of the Interior to regulate the construction and operation of Deep Water Port Facilities.

The Environmental Impact Statement will examine the potential environmental impacts of construction, operation and maintenance of deep water ports, and likely ancillary functions directly involved with any port, which may be licensed under the proposed legislation regardless of type of location.

Although the possible sites, various types of equipment and associated operations identified or referenced in the Draft Environmental Impact Statement are intended to provide by example a better understanding of general configurations and responses, the site examples appear to be limited only to those initiated by industry. It should be pointed out that our studies have been State government initiated, and should be given equal impetus with those initiated by the industry. I take exception to the implication therein that only industry initiated efforts should be given such important considerations.

Mississippi and other States in PAD III have already felt the strong arm of discrimination relative to the petroleum allocation program because of

various historical bases, and I hope that further discrimination in regard to the energy crisis will be avoided. For example, Table I-2, Page I-21, contains a list of the various ports alphabetically from Alaska through Washington with the significant omissions of Mississippi and Alabama. On Page I-24, costs of four potential deep water port sites are indicated, continuing to ignore the Ameraport area.

On Page I-73, the following statement appears: "The Oil Industry is giving strong consideration to one North Atlantic location and possibly three Gulf Coast locations in the United States as potential sites for deep water terminal operations—Ameraport (Alabama-Mississippi)." It continues further on Page I-82, by making reference to Federal studies, "and to a lesser degree other sites in Alabama and Mississippi."

"Such studies have not been discussed herein inasmuch as they have not been initiated by the user industry." Here, again, is a reference to the industry initiated studies, and somehow the Department of Interior and the hearings on the proposed legislation have got to be directed in some way beyond just those things that industry is trying to do. This matter is of such serious nature that we have got to get all the cards out on top of the table, and find out specifically whether State and local governments, and combinations thereof, will be on an equal footing with industry.

On Page VII-2 of the Statement appears the following: "Later (1980-85) the development of the U.S. economy may well indicate the desirability of establishing one or more entirely new refining centers including deep water ports, closer to new centers of large demand—for example—the rapidly expanding industrial middle South." If the industrial middle South is expanding so rapidly, and believe me it can with sufficient energy, why should our area be put off until 1980-85?

#### AMERAPORT WILL PROVIDE A NEW ENERGY SYSTEM

The concept of overall, rather than piecemeal, energy planning is basic to an appreciation of the importance of the proposed facility offshore from the Alabama-Mississippi Gulf Coast. Here we have an opportunity to build a brand-new, grass-roots energy system extending outward from our Gulf Coast throughout a large segment of the United States to serve the needs of our Nation better. It will be all new—the best technology, the best land-use concepts, the best environmental protection and all of the other best planning concepts and techniques available to us at this point in time. I am speaking not only about the port itself, but also about the onshore terminals, refineries, pipelines and other facilities required to transform the foreign oil received at the port into the various forms of energy required by our citizens and to transport this energy to the points where it is needed.

Mississippi—not idly waiting for legislation and licensing procedures for a deep water port—has in progress a \$72 million expansion of a refinery, and has announced the location of a new \$300 million refinery to help alleviate the energy shortage.

In asserting the need for this new energy system, I do not wish to derogate the need for some expansion of the existing systems beginning and extending outward from Louisiana and Texas. There are, however, some physical and environmental limitations on the expansion of these existing systems, which are non-existent with regard to a new system extending from the Alabama-Mississippi Gulf Coast. The existing systems were located where they could best accommodate the availability of domestic oil. This is not a factor in locating facilities required to process foreign oil. New facilities for this purpose may be located where they will best serve the consumers and the Nation.

The Alabama-Mississippi Gulf Coast offers several advantages in this regard. It will better serve the expanding economy of the Middle South and the Southeast, and it will be nearer the population centers in the Northeast and Midwest. Supertankers will not have to travel as far to deliver their oil, resulting in economies to be passed on to consumers and quick reaction to seasonal and other variations in consumer demands. Our national security will be enhanced, because the Ameraport system could be operated independently of the other systems if need be, and yet it could also be operated to supplement those systems under different circumstances. Many of the major oil products pipelines extending from Texas and Louisiana to the East cross Mississippi, and the systems can be interconnected to complement

one another. The Alabama-Mississippi location is accessible to the Inter-coastal Waterway and through it to the Mississippi River and to points on the East Coast. It is near the Gulf outlet of the Tennessee-Tombigee Waterway which will provide access to the inland reaches of those two rivers.

These advantages are confirmed by the study recently released on Gulf Coast Deepwater Port Facilities—Texas, Louisiana, Mississippi, Alabama and Florida—by the Department of the Army, Lower Mississippi Valley Division, Corps of Engineers, Vicksburg, Mississippi. This study recognizes in the final discussion and conclusion that dispersion of import facilities tends to maximize favorable social and economic impact. Thus expansion of refining industry in the eastern Gulf spreads debits while maximizing other benefits to the region and to the Nation.

In the previously referenced study by the Corps of Engineers, the transportation cost analysis considered several combinations of ports and through-put levels. For the case showing the maximum net transportation savings, a through-put of 245,000 barrels per day was assumed for Mobile-Pascagoula. I have confidential information from several existing and prospective refineries that result in a 1980 through-put of at least twice this amount from these refineries alone.

The industry complex now existing in the Mobile-Pascagoula and surrounding area can more than adequately support the initial growth to be expected as a result of a deepwater port facilities installation. This region is in approximately the same stage of development in the petroleum industry as Houston was 25 years ago. With today's technology and our more advanced understanding of the complex interactions resulting from man's impact on the ecology, this region can develop to become a national petroleum and a national refining center on the Gulf, with maximum benefit to the entire Nation with the least assault on the total environment.

The portions of Mississippi and other States through which the proposed "energy corridor" will pass are mostly rural. The proposed standards that only one million KW generating plant or one refinery can be located every 75 to 100 miles, to meet air quality standards, again emphasizes the uniqueness of this concept.

#### CONCLUSION

Our Nation needs a new energy system—the "Deepwater Port Facilities Act of 1973" (S.1751) can be the impetus therefor. Whatever else we do, we shall be dependent upon foreign oil as a major source of energy for some years to come. We are confident that both the onshore and offshore operations of this new system can be accomplished without despoiling either the land, air or marine environment. We believe that the responsibility for this final determination should be centralized at one point in the Federal Government—the "umbrella" type agency—, and that early enactment by the Congress of S.1751 is essential.

Without adequate berthing facilities in the U.S., supertankers will be used on other trade routes in the world, and imports of oil and gas into this country will be continued to be transported in ships of less than 80,000 dwt capacity.

Such circumstances will mean additional transportation costs, chaotic congestion of vessel traffic in our harbors, intolerable levels of risk of major water pollution, probably relocation of domestic refineries to locations abroad with a consequent loss of domestic jobs.

On the other hand, construction of a superport in the Mississippi-Alabama Gulf of Mexico, and other location along the three major coastlines of the United States will reduce potential oil spills, make the United States again competitive in marine transportation, help alleviate the energy crises and help establish a more favorable balance of payments.

S.1751 provides that a State will be eligible to apply for a license to construct and operate a deepwater port facility, provided, however, that it meets the requirements for a license. Mississippi is fully determined to seek and obtain the first deepwater port facility.

The Ameraport Council continues with its studies on hydrology, aerology, ecology, topography, markets, industrial development, public attitudes, national security and other factors. The Mississippi Legislature has enacted legislation to support our efforts and funded them.

Consequently, please be assured of our support for S.1751. There are some points therein that might need clarification. The definition of "Deepwater Port Facility", Sec. 102(b) (page 3, line 24), "does not include pipelines" (page 4, line 7). Sec. 103(b)(3) (page 5, line 19), provides that before issuing a license, "the Secretary shall consider all significant aspects of the facility be incongruous.

Sec. 103(b)(3), page 5, line 15, includes "or prevent" any adverse environmental effects. I suggest the word "prevent" is too definitive. The environmental/energy rational should differentiate between environmental degradation that threatens the health and welfare of our citizens, and other forms of degradation which, although undesirable, can be tolerated if needed to assure our citizens of a supply of energy necessary to our personal and national health, welfare and security.

Mr. Chairman and members of the Committee, please accept my thanks for this opportunity afforded me today. I hope that what I have said may contribute in some respect to your consideration on this essential legislation.

Answers to the several questions submitted by your staff have been provided for the Committee.

Mississippi is ready—acting in concert with other "citizens", Mississippi will apply for a license—the resources of Mississippi will be pledged to see this project through.

Thank you.

[Recess.]

Senator GRAVEL. The hearing will be back in order. Our next witness will be Dr. John Moeller representing Hon. Red Noonan, State Senator, State of Alabama.

**STATEMENT OF JOHN E. MOELLER, EXECUTIVE DIRECTOR, AMERAPORT CORP., REPRESENTING HON. RED NOONAN, STATE SENATOR FROM ALABAMA; ACCOMPANIED BY WILLIAM MOORE; AND CHARLES LEINER**

Mr. MOELLER. My colleague on my left is Mr. Bill Moore, deputy director to the Ameraport. On my right is Mr. Chuck Leiner, a staff member of Senator Sparkman's office who is here to show the interests of the Senior Senator from Alabama in this project.

I must apologize to the committee: Senator Noonan planned to be here, but the appropriations bill for the State was on the agenda at the noon calendar. So his vote was very important and he could not be here today.

I would like to take this opportunity on behalf of the State of Alabama and Governor Wallace, in particular, to thank the committee for this opportunity to express the position of the State on the subject of deepwater ports facilities and the general purposes of S. 1751.

As executive director of the Ameraport Corp., which is a State corporation, I would like to describe its origin and its functions. Its task is to express and support the view that a deepwater port in the eastern Gulf is a viable concept with regional and national impact. To support this view, Ameraport has undertaken various research studies, the results of which are relevant to the bill now before this committee.

I would like to summarize in general the activities which Alabama has undertaken in regard to deepwater terminals. In introduction to our testimony, I would like to define what we see as a

vitaly important project, not only to Alabama and its region, but to the Nation as well. I am referring to the Alabama concept of Ameraport—not a local port, but a port to serve the needs of the Nation.

Ameraport is a progressively staged program that will be an oil terminal in its initial configuration and later as technology gives us the capability will be expanded to handle other commodities as well.

The State of Alabama has watched with interest the repudiation by several States of plans to build deepwater terminals off their shores, primarily because of inadequate environmental and economic planning by proponents. Also all Alabamians have been acutely aware of the minimal reserves in the Nation's energy resources and their declining balances.

In view of the critical U.S. energy situation and the apparent reluctance of some States to take the initiative to reduce its impact, Governor Wallace directed the establishment of the Ameraport research team in early 1972.

This team was to determine the considerations required for locating a deepwater terminal in the eastern Gulf, and further to catalogue the activities necessary to insure that such a terminal and the resulting on-shore development would be environmentally and economically compatible with established State goals.

The Ameraport interim study, dated May 1972, is the research team product and I would like to quote briefly from its forward:

The study was prepared in full cognizance of the importance of the environmental factors involved. The study's perspective is that a compatibility of interest can be developed which is beneficial to both the environment and overall economic development.

It is incumbent upon all involved with development to work toward a high quality environment as a part of our continual striving for improved human well being. The Governor and state agencies strongly support this approach and feel Alabama can meet the challenge to move progressively in meeting the demands of the future.

To this end, Mr. Chairman, I would like to offer for the record the interim study we have furnished for the staff of your committee.

Senator GRAVEL. It will be accepted for the record.

Mr. MOELLER. This statement points out, I believe, that environmental factors have received paramount consideration from the very beginning of Alabama's studies of deepwater terminal considerations.

The Ameraport interim study anticipated several provisions of the bill now before this subcommittee. Specifically, the study chapter entitled background, pages 1 through 4, supports sections 101(a)(2), and the environmental consideration sections of the continuing effort chapter at page 19 anticipates section 101(a)(3).

In addition the interim study appendix at pages 23 through 39 discusses possible problems in international law and impacts section 101(a)(4).

The continuing effort chapter at pages 17 through 22 provided the direction of subsequent studies which will be referred to later in our testimony.

In the course of the research team studies, it became apparent that a more permanent organization would be required to successfully complete the comprehensive studies necessary to fully assess the impact of a deep water terminal location in the eastern Gulf.

The recognition of this need resulted in the establishment of the Ameraport Corp., a nonprofit, State chartered entity, supported monetarily by a broad cross section of Alabama municipalities, counties, businessmen and interested citizens, which includes representatives from education and labor.

This group has pledged \$351,000 in support of the Ameraport effort, 80 percent of which has already been paid and which are the moneys that we have utilized to support the studies we have submitted to this committee.

From the Ameraport Corp., came the Ameraport Council, originally a bistate pact between Alabama and Mississippi, which has now been joined by the State of Tennessee. Other States have expressed a keen interest in the council and are expected to join soon.

The council supports the Ameraport concept that an eastern gulf coast deepwater terminal off the Alabama-Mississippi coast is a viable concept with regional and national implications.

The Ameraport Council and Ameraport Corp., have directed their efforts to specifically identify environmental and economic factors involved in deepwater terminal location and specific reference is made to that part of the Ameraport Council preliminary study dated December 15, 1972, beginning on page 1 of the supplement chapter entitled "The Ecological Impact of a Deepwater Port in the Northeastern Gulf of Mexico."

The next area of concern and study was the hydrography of the East Louisiana-Mississippi-Alabama Continental shelf and its effect on any possible spill.

The summary regarding actual site location is contained on page 19 of the supplement. The chapter entitled "Regional Economic Impact of a superport" which begins on page 14 treats the economic factors. References and data sources together with tables and maps to support the material previously referenced are found beginning on supplement page 20 and continue through the supplement and appendices to the preliminary study.

I would like to offer that document for the record.

Senator GRAVEL. That will be included.

Mr. MOELLER. Another document that we have presented for the record, is the Ameraport Progress Report, dated June 1, 1972. This report provides an excellent description of the Ameraport Corp. and a chronology of its activities, as well as an economic analysis based on locating one 225,000-barrel-a-day refinery in Alabama.

In addition to the interstate coordination already referred to, we would like to impress upon this subcommittee the degree of intrastate coordination which has been accomplished. Ameraport Corp. has its offices with the Alabama Development Office which is directly under Governor Wallace.

The Ameraport Corp. officers include the chairman of the Senate Seaports Committee, the director of the Alabama Development Of-

office and the director of the Alabama State Docks. The studies it has undertaken were conducted, in part, by the University of Alabama, University of South Alabama, the Geological Survey of Alabama, the Marine Environmental Sciences Consortium, the Alabama Law Institute, the Alabama Department of Conservation, and Natural Resources, and the South Alabama Regional Planning and Development Commission.

In addition, several independent consultants have contributed in their respective areas of expertise as well as the Battelle Columbus Laboratories of Columbus, Ohio, which will soon complete a comprehensive three-part study which I will refer to later.

And, as mentioned previously, the corporation is financed solely by contributions from people in all walks of life throughout the State. We bring these facts out to demonstrate that the Ameraport Corp. has not operated in a vacuum, but rather has sought reputable and independent advice to guide its activities; that the Ameraport concept has broad based support within Alabama; and that the objectives of the studies are to determine the project is economically feasible, environmentally sound, and attractive to industry.

Referring now to specific sections of the bill, we would like to make the following comments:

#### PREAMBLE AND SECTION 101(a)(5)

It is our considered opinion that the Department of Interior, because of its already existing involvement in the management of drilling on the Outer Continental Shelf, would be the most appropriate agency to serve as the license and regulatory authority.

This is not to demean the role of other agencies who specifically have an interest in, and concern with, areas that normally fall under their respective jurisdictions and these agencies should have a voice in the license granting and regulatory processes.

The bill does make provision at sections 104(b) and 104(c) for consultation with other interested agencies and we strongly support these provisions. In addition, we support the single agency license application concept. However, it is our belief, that the authority relationship and coordination procedures between the Secretary and "other agencies" should be more clearly defined.

We would recommend specific provision in the bill to require precise and expeditious handling of applications by all agencies and believe the Secretary of Interior should be empowered to insist upon expeditious handling of each application by other agencies involved in the licensing process. With federal authority concentrated in a single agency we believe the interests of all will be better served.

#### SECTION 103(e)

We believe that any Federal legislation which would authorize or impact on the issuance of licenses for construction and operation of deepwater terminal facilities should reserve to the State, off whose coast the facility is to be built, the opportunity to decide on such construction and operation before a license is issued.

Also, such legislation should reserve to the State the decisions of where it is to be built, whether it is to be publicly or privately owned and whether the State itself should construct and/or operate the facility.

In suggesting these provisions, we take cognizance of the national implications in the matters of commerce, international trade, and energy resources, inter alia; however, we feel these provisions are necessary to enable the State to adequately protect the interests of all of its citizens in view of the potentially enormous environmental and economic impacts of a deepwater terminal.

Alabamians have spent, and are willing to continue to spend, funds to promote the development of a deepwater terminal off the Alabama-Mississippi coast because we can envision a sizable economic benefit to our State, our region, and our Nation. As we move to promote this project we can also see that substantial economic impact will occur in our State because of the development of secondary industries.

This is borne out by the economic studies which Battelle Columbus Laboratories has been conducting. In addition, we envision the development of the facility and secondary industries within the framework of the most modern environmental protections available and feel that economic benefits can be gained without unnecessarily jeopardizing our coastal environment.

By giving the coastal States the authority over the development of deepwater facilities, Congress will provide the opportunity for these States to assist and participate in meeting the challenges which will naturally result from such offshore development.

It would, in effect, be giving the coastal States an opportunity to negotiate with private firms to construct and operate such facilities for the mutual benefit of both parties and the public at large. Terminals such as are needed to bring in foreign oil have been built all over the world by both oil companies and firms which specialize in building and operating such terminals.

The operations of those facilities, coupled with the development of industry which normally follows, has a potential incidence of environmental impact which will affect most the States offshore from which they are located.

Those operations also have a level of profitability from which some form of payment could and should be made to the affected coastal States either directly or through the Federal agency regulating such operations in order to give the coastal States which choose to permit such operations off their shores some immediate financial means to defray costs which might be incurred as a result of those operations.

In our testimony up to this point we have referred several times to the comprehensive study being developed by Battelle Columbus Laboratory. I would now like to present an outline of that study.

**PART I.**—Preliminary assessment of the Ameraport feasibility. Determination of those commodities to be handled by Ameraport.

**PART II.**—Socioeconomic assessment of the Ameraport development.

**PART III.**—Environmental assessment of the Ameraport development.

The study will be submitted to this committee when it is completed, probably in mid-August.

At that time, we would like to offer it for the record.<sup>1</sup>

Senator GRAVEL. It will be received for the record at that time.

Mr. MOELLER. In the study, a detailed cost analysis was made for importing, refining, and distributing crude oil and petroleum products through the proposed Ameraport. The cost comparison indicated that consumers would benefit on each barrel of crude oil processed through the gulf coast in 1985 by locating new refineries in Alabama and a deepwater terminal off the Alabama-Mississippi coast. The saving could amount to over \$600 million annually, based on 1985 projections for imported crude oil.

The recently released Report on Gulf Coast Deepwater Port Facilities—Texas, Louisiana, Mississippi, Alabama, and Florida by the Department of the Army, Lower Mississippi Valley Division, Corps of Engineers, Vicksburg, Miss., June 1973, supports the Battelle study conclusions by stating at page 111:

That transportation savings would support at least two monobuoy ports in the Gulf located in the vicinity of Freeport, Texas and off the Louisiana coast, and if major refinery growth (on the order of 1.5 million barrels per calendar day) developed along the Mississippi-Alabama coast or further east a third port at the Mobile-Pascagoula site would be supported by transportation savings.

In addition, table 56, Summary of Alternatives—

Throughput, Costs, and Savings, on page 110 of the report, lists the greatest per barrel annual net savings for the alternatives which include facility locations in the Mobile-Pascagoula area.

In summary to our testimony, I would like to emphasize those areas we believe to be important in the location of a deepwater terminal off the Alabama-Mississippi coast as they relate to S. 1751.

Ameraport fully supports the need to provide an affirmative course of action to determine the environmental effects of a deepwater terminal both on the offshore portion of the facility as well as the anticipated industrial development activities onshore which would naturally result from the location of a deepwater terminal.

We believe that section 103(a)(3) and other provisions of S. 1751 provide for this course of action and wholeheartedly approve of it. As evidence of our support, I cite the documentation we have introduced for the record and the Battelle study we will furnish upon its completion.

One point I would like to make clear here about our studies is that we have sought out independence and reputable research organizations to conduct an objective study; and they are not the result of provincial in-house work.

Another area which we feel needs to be stressed is the license application process. In addition to what we have said concerning the authority coordination relationship between the Secretary of the Interior and the other agencies, we would like to see the bill provide a realistic timeframe for the overall application process.

A long leadtime before a license can be granted is, in our opinion, likely to work severe hardships. The lack of data should not hinder

<sup>1</sup> See appendix.

the licensing process. There is currently available throughout the world, technical, construction, and operational data concerning deep-water terminals, and it is our understanding that there are approximately 150 such terminals in operation at this particular time.

To impose a long application leadtime will place an unreasonable burden and delay on those who are attempting to solve the energy crisis via the use of very large crude carriers and deepwater terminals.

In effect, what a long lead will amount to is that we will be forced to use conventional-sized tankers in ever-increasing numbers, thus increasing the opportunities for collision and spills far beyond that which might be anticipated by use of a deepwater terminal.

In addition, the ultimate cost to the consumer in terms of added transportation costs by use of conventional-sized tankers could cause the consumer to pay more for gasoline, heating oil, etcetera, than he normally would if the economy of large scale transportation were used.

Finally, I would like to say that the eastern-gulf location for a deepwater terminal off the Alabama-Mississippi coast has proven to be a viable concept, both environmentally and economically.

Both the Ameraport Corp. and Ameraport council have undertaken comprehensive and intensive research which bears this out. Our research also provides us the basis for supporting the bill before this committee and we do support its purpose and intent with exceptions as stated in our testimony.

Alabama stands ready to play its role in deepwater terminal development and looks forward to the Federal-State partnership which we feel is the spirit of S. 1751.

Thank you, Mr. Chairman, and members of the committee.

That concludes the prepared statement from the State of Alabama and Ameraport.

Mr. HAYDEN. All of your information will be placed in the record, Mr. Moeller. I regret that a vote did call the chairman away, but he did ask that in the interests of you being able to complete your testimony and meet your own schedule that you go ahead and finish in his absence.

I do think, however, that until the chairman returns, we will at least temporarily suspend until we find out how soon he is going to return.

Mr. MOELLER. One other item I would like to introduce for the record is one in response to a questionnaire that we received from the staff of this committee. We have responded to that under date of July 25, 1973, to some of the questions. We have furnished this in the usual accepted response and I would like to introduce the answers to those specific questions for the record.

Mr. HAYDEN. I have a copy of it right here and it will be submitted for the record.

[Recess.]

Senator GRAVEL. The hearings are back in order.

We will have a change in order here. We will suspend hearing from Mr. Greenberg, Barbara Heller, and Mr. Futtrell, since they have agreed to come back when we have more time to hear them.

In order to accommodate Mr. Schimke, who came down from Boston, we would be happy to hear him now.

If I have to pull away on another vote, we will end it at that time. In your own interests, give us your text for the record.

**STATEMENT OF GERALD SCHIMKE, OCEANOGRAPHER AND ENVIRONMENTAL ENGINEER, CAMBRIDGE, MASS.; ACCOMPANIED BY MARTIN BAKER, ATTORNEY**

Mr. SCHIMKE. Thank you very much, Senator.

I have identified myself in the written text. I am accompanied here by Martin Baker, an attorney familiar with environmental matters with whom I have worked previously and am currently working.

In summarizing, my basic feeling is that there is going to be more than one type of facility development going on offshore within the next decade. I think this is an inevitable trend, and I think that the energy policy questions, although they are prime right now, are not the critical issues in the long run.

I am an oceanographer and an environmental engineer. So, my concern is that a proper accounting be taken of factors relating to the marine environment and the coastal zone.

The coastal zone is a valuable commodity which has traditionally served many different kinds of purposes. It is very valuable because of its natural biological productivity, because of its potential for industrial development.

In my mind, the legislation which develops as a result of these hearings should provide a broad framework which recognizes this valuable entity, treats offshore oil terminals as a subset or a special case, and retains the capacity for expanded coverage as other types of facilities present themselves in the near future.

I would like to say just a couple of things from my experience in working in the marine environment for the last 14 years for a variety of clients both in the public sector and in the private sector. I have come to realize that we do not know all the answers to the questions about potential environmental impacts of the offshore developments. I am sure that other people have given testimony concerning the exact amount of information that we have on this topic, but I would like to summarize my view of the situation.

First of all, any kind of facility that projects above the surface of the water offshore is going to provide an increased navigational hazard. However, past experience in the Gulf of Mexico and other places where we have offshore facilities has indicated that properly regulated light systems on such facilities and prudent navigational procedures can pretty well eliminate the hazard, so I am not very concerned about that.

I do not believe that the physical existence of a facility in the far offshore region, has very large effect on the marine environment.

It is conceivable that a poorly planned or poorly placed facility can cause erosion or adverse effects on the biology at remote locations, but I think it is important to remember that there are natural variations in both the beach stability and in biological communities,

alone the shoreline. It is also important to remember that the existence of an offshore facility or a structure can provide beneficial effects. For one thing, it will provide a substrate to which shallow water organisms can attach, and it provides a protective habitat for these and other organisms. People who know much more about the specific details of this than I do have been involved in building artificial reefs using automobile tires, old automobiles and recently, obsolete ships. I think it is an accurate statement to say that we really do not know enough about what the adverse and beneficial environmental effects of offshore structures are.

So far, I have just mentioned some of the effects of having a physical structure out in the ocean. The construction phase of putting a facility out there in the first place is somewhat different.

I recognize that when we talk about offshore oil terminal facilities, one of the things we are trying to accomplish is to minimize the necessary dredging. This is because dredging is thought to be a very bad thing to do to the environment. I would say that we really do not know an awful lot about the effects of dredging either. We do know that if we dig up the bottom, we are likely to kill many of the organisms in the location right where we are dredging, and we are likely to smother or kill organisms where we dispose of the dredged material. We do not know very much about how long it takes to recolonize these areas and what the long-term effects are. The Corps has recognized our lack of knowledge in this area and has established a large program to develop some answers to these questions.

I do not have any doubts in my mind that we have the engineering know-how to construct offshore platforms and islands and single point mooring devices. I think there is adequate history of that to allow us to state that we can design and construct a safe facility. I am not nearly as confident in saying that we know what the environmental effects will be, either the direct effects or the more widespread effects.

There will be adverse environmental effects during the construction processes, but we do not know how to quantify them very well. We do not know very much about the effects of the physical existence of the facility.

I would like to talk a little bit about the offshore oil terminals since that is the primary area of interest here.

In operations of an offshore oil terminal, we have environmental effects due to both normal operating conditions and abnormal operating conditions. Now in the normal operations it is fairly straightforward, the ships come in, offload their cargo, and depart. There is not much information known about the effects of swinging a large propeller next to the bottom. MIT is doing work in this area; and I think that they will find out more about that, but currently we really do not know much about how much sediment is suspended in the wake of a ship or what the effects of those sediments are on various organisms.

The abnormal condition we talk about is accidents. Spills come in a large range of sizes and frequencies. The large spills tend to account for the largest volume of oil, and I think again, that proper

technology can control the probability of a large oil spill to an appreciable extent. We do not have precise answers as to what the impacts are of the spills which do occur. We do not have sufficient information on the weather and on the currents anywhere off the shore of the United States, nor do we have good enough models to allow more than a probabilistic statement as to where a particular oil spill will wind up and what its effects will be.

To finish up, I think that before a permit is issued, the structural integrity of the project should be reviewed carefully. The Corps of Engineers is capable of such review, and has shown itself to be very good in carrying out the mandates of Congress. Therefore, I feel that the Corps of Engineers is the logical agency to oversee the Federal permit aspects of offshore facility development.

I would like to thank you for the opportunity to present my views.

Senator GRAVEL. Thank you very much for your presence. Have a good trip.

[The statements follow:]

STATEMENT OF GERALD R. SCHIMKE

Thank you, Mr. Chairman.

My name is Gerald R. Schimke and I am employed by Arthur D. Little, Inc., a research, engineering, and management consulting firm in Cambridge, Massachusetts. I am an oceanographer and an environmental engineer who has been studying various aspects of the sea, the marine environment, and the coastal zone for about 14 years. Among my past clients are found both state and federal government agencies as well as private industrial firms. The opinions I express here today are my own and reflect knowledge and experience of marine affairs gained from my academic training and through service to my clients.

First of all let me say that I believe more than one type of facility will be built off the shores of the United States within a decade. The sea offers an attractive location for several kinds of facilities which for one reason or another seem incompatible with currently accepted uses of land in the coastal zone. I feel that the development of these offshore facilities is inevitable and the question then becomes what are the issues associated with these developments, and how should Congress act on these issues.

In my mind the critical issue is not what to do about meeting the energy crisis, nor what kind of sanctions should be placed on deepwater port development per se. Rather, the issue is how can we deal with one more pressure on the coastal zone in such a way that the needs of the nation are met and at the same time the rights of the citizens and the states to determine their own quality of life are preserved. However we handle this pressure, it should be done in a way which does not destroy our future options.

The coastal zone is the interface between the land and the sea, and is the place where man's activities on land interact with his activities at sea. Congress has recognized the importance of this zone by their enactment of the Coastal Zone Management Act of 1972. I cannot characterize this zone more accurately and concisely than has been done in Sec. 302 (b) and (c) of this act.

I quote:

"(b) The coastal zone is rich in a variety of natural, commercial, recreational, industrial, and esthetic resources of immediate and potential value to the present and future well-being of the Nation;

(c) The increasing and competing demands upon the lands and waters of our coastal zone occasioned by population growth and economic development, including requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossil fuels, transportation and navigation, waste disposal, and harvesting of fish, shellfish, and other living marine resources, have resulted in the loss of living marine resources, wildlife, nutrient-rich areas, permanent and adverse changes to ecological systems, decreasing open space for public use, and shoreline erosion."

These statements clearly picture the coastal zone as an area under many diverse pressures. The coastal zone is becoming better recognized as one of the most productive and precious as well as most sensitive areas to feel the pressures of development. Because of the nature of the coastal zone, as an interface, we can see now, and should expect to see in the future, a high level and wide diversity of activities there. With proper regulation and planning I believe that the adverse effects of conflicting uses can be minimized, a healthy competition for resource utilization can be fostered, and a reasonable degree of use compatibility can be achieved. What I am advocating here is the multiple use concept of the coastal zone, and I suggest that the bills under consideration by this committee should be structured to provide a strong framework in which such a concept will be furthered. It might be appropriate to point out that elements of previous testimony before the Public Works Committee on February 28 has indicated that multiple use is actually taking place now in New Jersey and other places. Senator Williams described the coexistence of some of the finest beaches on the East Coast and a major segment of America's chemical and petrochemical industries in New Jersey.

Because of an apparently real need to increase drastically the amount of oil we import to the United States, deepwater oil terminals are receiving emphasis in these hearings. However, I maintain that offshore oil terminals are only the first of a number of different kinds of offshore facilities which will ultimately be built on or over the continental shelf. The effects of each different type of facility will be different, but many will have far-reaching effects on the ocean bottom, the ocean water, and the nature of the activities which take place on shore adjacent to the facilities.

Senator Chase has recognized this in his bill S. 836. Now I would like to address some of the effects of these offshore facilities, and how much we really know about them.

A common effect of all offshore facilities which come close to or project above the surface of the sea is to increase the hazards to navigation. Experience in the Gulf of Mexico and other locations where offshore drilling platforms have been used extensively indicates that proper lighting and regulation of shipping lanes can effectively control the hazard, so I am not particularly concerned over that.

The mere physical existence of an offshore facility really affects the environment in a very limited area. If it is not placed carefully, it is conceivable that a far offshore facility may change current and wave patterns to the extent that effects on the shoreline can be noted. Such effects could consist of beach erosion, or shoaling; or there could be subtle changes in the biological makeup of nearby estuaries. It is important to remember, though, that there are natural variations in both beach form and biological communities along the shore which can be as large or larger than the effects due to an offshore facility. In any event, if the facility is far from shore, the shoreline effects are likely to be small indeed.

The existence of a structure far from shore where there was nothing previously can have beneficial effects as well as adverse ones. The structure provides a substrate upon which shallow water organisms can settle and grow. In addition, it provides a protective habitat for all manner of creatures which Specialists who know much more about the specific details of how this occurs than I do have actually been working on programs to establish artificial reefs. A number of different approaches have been taken ranging from binding used auto tires together and piling them on the ocean bottom, to dumping of old cars, and the placement of obsolete ships on the bottom. I believe it is fair to say that much more needs to be learned about how these kinds of actions change the local ecology, and to what extent the effects are favorable or unfavorable. It is known for example that fishing near the oil rigs in the Gulf of Mexico is generally better than fishing away from the rigs. Whether this is due to an overall increase of productivity associated with the presence of the rig, or whether it is simply because the fish "like the shade," so to speak, is a matter of current debate. At any rate, once an offshore structure is in place, its effect on the environment will probably be quite localized.

The construction phase of a facility may be somewhat different in its impact on the environment. Depending on the type of facility, large quantities of dredging and filling may be required. I realize that part of the reason for

considering *offshore* facilities is due to the desire to minimize the dredging necessary. However, an inhabited structure is likely to require connections of one kind or another to land. In the case of oil terminals, trenches for one or more large diameter pipelines will have to be dredged and subsequently back filled. Power and communication cables will have to be installed regardless of the type of facility, and dredging in one form or another is likely to be used to accomplish this task. I mention this only to bring up the point that nobody has a very good notion of how dredging itself affects the environment. We can say that aquifers *may* be opened up and subjected to salt water intrusion. We can also say with certainty that some of the life in that portion of the bottom which is actually either dug up by the dredge, or covered by spoils, is destroyed. However, we cannot say with certainty how long it will take before the bottom in these areas is recolonized. We can say that the turbidity of the water will be increased locally by dredging and spoiling, and we can calculate roughly how the water quality will be affected locally, and for how long. We cannot give precise answers to questions relating to how severely this locally increased turbidity affects biological productivity of the region. The Corps of Engineers has recognized that the state of our knowledge is limited in this regard, and has a large program designed to answer some of these questions.

The engineering know-how for construction of offshore platforms, islands, and other structures including single point mooring devices exists. It is only a matter of deciding where you want to put something, what you want to put there, when you want to put it there, and then setting out to do it. We know how to measure soil properties, waves, wind, and other environmental parameters so that a properly designed and engineered structure can be built. While there are always some areas where engineering judgments are necessary, I feel confident that the question of how to build an offshore facility to withstand the rigors of the environment is a much simpler question than what its overall effect on the environment will be. Here we start to address the question of how much of what happens after an offshore facility is constructed can be attributed to the facility.

I have just said that there will be adverse environmental effects during the construction process, but that we do not know how to quantify them very well. I also said that the effects related to the facility's existence as a passive structure may be positive, or negative, but will probably be very local in nature for a well designed facility. There are also environmental impacts associated with the operation of an offshore facility. For the moment now, I am going to focus on the effects due to operation of an oil terminal. We can break this down further into effects of normal operating conditions and effects of abnormal operating conditions.

Normal operations include routine visits of ships to offload their cargo. In a fully loaded condition the bottom of the ship is close to the ocean bottom and the ship propeller wake may stir up significant amounts of sediments. Here again I use the word "may" because nobody knows the details of how the propeller wash from a supertanker affects the bottom sediments. We have very little knowledge of the water velocity distribution more than five propeller diameters aft of a ship, and consequently cannot offer an informed opinion as to the exact amount of sediments which may be resuspended. Saying what the effects of any such sediments might be on the biota is largely speculation. Investigators at MIT are doing model experiments to gain more knowledge about ship wakes and such work should be extended.

Oil spills are accidents and thus are classified as abnormal operating conditions. Historically speaking, they come in a variety of sizes and occur at a variety of frequencies. Spill size has an inverse relationship to the frequency of occurrence. In other words, on the basis of past experience, we should expect more small spills than large ones. But, in all fairness, I have to say that the less frequent, large spills account for most of the volume of the oil spilled. In assessing the environmental impact of a large offshore oil spill, it is very important to know where the oil is going and how fast it is going to get there. In principle this is not a particularly difficult problem. All you have to know is the details of the tidal and nontidal ocean currents, and the wind direction and speed. In practice, however, the story is different. I am familiar with no place offshore from the United States coast line where this detailed data exists over a period of time sufficient to predict reliably the

ultimate disposition of an oil spill. There are also other problems related to our knowledge of how oil spreads on the water, and how it changes (evaporates into the air and dissolves into the water) as it proceeds from the spill site to wherever it finally winds up. The main point here is that definite answers to questions about the environmental impact of oil spills can be had only in probabilistic terms, and that even these answers are based on data that is at times sketchy. I think it is clear that if we use the larger tankers that offshore oil terminals can service, there is a potential for larger oil spills than there would be with small tankers. If the tankers are properly regulated, and the newest navigational technology is used, the probability of a very large spill may be held to a very low level.

It is clear that the effects I have already mentioned are directly attributable to the existence of an offshore facility. Elements of previous testimony given on February 26, 1973, considering S. 180 and S. 836 have pointed out the magnitude of the effects to be expected on land if we concentrate the development in only one offshore oil terminal to handle the entire amount of oil which it is projected that we will need to import. It is my opinion that these effects are really going to be as high as projected, we must disperse the area into one of such a scale as to be intolerable, and hence that if the import levels which the oil enters the United States. Such dispersion implies several offshore oil terminals.

I have said before I believe that the offshore environment is an attractive one for the location of several different kinds of facilities, and I believe that within a decade we will see examples of these facilities become a reality.

I believe there is an opportunity at this time for Congress to establish a legal framework adequate to allow the wise and careful granting of permits without specific congressional action on a case-by-case basis. Speaking as a concerned citizen whose marine oriented work has brought him into contact with these issues of public policy, I would like to say that I do not believe that it will be necessary or desirable for Congress to act on each permit. I believe that the structural and operational suitability of any proposed facility should be primary considerations in the decision as to whether a permit should be granted. The legislation should therefore require a careful examination of facility design and operational characteristics. I fully agree with that portion of the previous testimony which has advocated a strong voice in the decision for the affected states. Evaluation of the social and economic effects of the facilities should be carefully done under the auspices of a federal agency. The environmental effects should be evaluated from many different points of view with inputs from all appropriate sources. Coordination with and inputs from all appropriate knowledgeable agencies should be required. It seems to me that the Corps of Engineers is the agency best suited to carry on these tasks and so is a logical one in which the permit-granting authority should reside. Further, I would state that the Corps has shown a remarkable ability to carry out congressional mandates in a wide variety of public works, and is rapidly becoming a power in the administration of environmental law, particularly as it relates to the coastal zone.

In summing up, I will simply say that each of the various potential kinds of facility which may be built offshore has its own characteristic set of impacts on the marine and adjacent land environment. In some cases the linkage between causes and effects are clear, but in no case is quantitative description of the impact simple. There are several areas where enough knowledge for reliable projection of the impacts is lacking and further research is needed.

These include the following:

Effects of turbidity (caused by dredging and deepdraft ship wakes) on the biology of an area. Along with this goes detailed knowledge of the way a ship's wake interacts with the shallow ocean bottom.

We do not know the long-term implications of oil spoils (either low level, or large scale) on the food chain in the sea, and have limited knowledge of the seriousness of the short-term effects.

I think Congress is addressing itself to the issue of offshore facilities in a timely way, and that the various bills which have been introduced contain the substance of good legislation.

It is my recommendation that legislation should specify a framework broad enough to include all offshore facilities, and treat offshore oil terminals as a special case, with room for other special cases as they may develop.

Mr. Chairman, I thank you for the opportunity to present my views.

## STATEMENT OF HON. JOHN TOWER, U.S. SENATOR FROM TEXAS

Mr. Chairman and members of the committees, In January of this year, I introduced legislation (S. 568), which I also sponsored in the 92nd Congress, to authorize the Secretary of Interior to issue permits for the construction of deepwater offshore tanker terminals, better known as superports.

At that time, I described in some detail the regrettable increase in United States reliance upon imported crude oil and petroleum products which we will face over the next ten or fifteen years, plus the fact that our country does not currently have port facilities sufficient to accommodate the new generation of supertankers that will be transporting most of the crude oil from the Middle East and Persian Gulf to the petrochemical and refining centers located on our Gulf Coast.

On April 18, President Nixon, in a wide-ranging Energy Message to the mitted a draft bill to implement his recommendations. In most respects, the Congress, underscored the necessity of deepwater ports legislation and sub-Administration proposal corresponds to the legislation I introduced in January.

During succeeding months, various Congressional Committees conducted extensive hearings on nearly a dozen bills relating to deepwater ports and are preparing to draft a compromise measure for floor consideration as soon as possible after Labor Day.

In the course of these hearings, spokesmen for the Interior and Treasury Departments, backed up by the Chairman of the Council on Environmental Quality and many others, have presented a convincing and persuasive case in support of the enactment of such legislation. They have placed special emphasis on the need for enabling legislation *this year* in order that principal superport projects presently on the drawing boards can go forward on schedule and be ready for operations by mid-1976. Such proposals include projects known as SEADOCK and LOOP. These plans call for privately financed construction of two deepwater ports 20 to 35 miles offshore of the Texas and Louisiana coasts. It is important to note that these deepwater would complement rather than take traffic away from existing port facilities; and, thus, stimulate onshore economic and commercial growth.

Unlike most of the energy-hungry States on the Eastern Seaboard, the Southwest would welcome and is working diligently to concur with all environmental and navigational safeguards in order to comply with numerous Federal and State statutes. While there is evidence that these deepwater terminals have less environmental impact than similar onshore facilities, let me stress that exacting study must be made of the environmental impact and every precaution should be taken to assure the lowest incident of oil spillage.

Mr. Chairman, there will be significant time lapse before research and technology will be able to provide alternative or additional sources of energy for the United States. Until then it will be necessary to import much of our crude oil and petroleum products. I, therefore, urge the respective Committees to act favorably and expeditiously in reporting legislation which will authorize the Secretary of Interior to issue permits for the construction of offshore deepwater terminals.

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STATEMENT OF HON. JACK EDWARDS, U.S. REPRESENTATIVE, FIRST DISTRICT,  
ALABAMA

Mr. Chairman, members of the committee, I am appearing today to present my thoughts on the need for deep water ports in America and on the corresponding need for the Congress and this committee to continue to exercise leadership in this important area. I commend the chairman and the members of this committee for the interest you have already shown in the subject of deepwater port facilities.

Our acute energy shortage has been brought to the attention of every American in recent months. We have learned just how much we rely on petroleum products to keep the country and the economy moving. We have seen how our fuel needs, our balance of payments, the strength and stability of the dollar, the health of our domestic economy, and national defense posture are so tightly interwoven that if one strand frays, all the others are affected.

We rely heavily on oil imports to satisfy our energy needs. This reliance will not diminish in the foreseeable future, and many experts believe it will

increase significantly. It is an urgent priority, then, that the United States have the best, most economical port system to handle oil imports.

Deepwater ports will be needed because the fuel will reach the United States in supertankers of unprecedented size. Since our natural ports cannot handle these huge vessels, we must construct offshore terminals which can cope with supertankers. The Maritime Administration reports that if we do not build our own deepwater port facilities, we will have to rely on trans-shipment through neighboring foreign terminals, such as in Canada, the Bahamas or elsewhere. This would heighten our already dangerous reliance on outside sources and our unfavorable outflow of dollars.

Mr. Chairman, I believe the need for deepwater ports is both evident and immediate. I urge this committee to move expeditiously toward legislation which will accelerate the construction of superports. We need legislation which insures the environmental soundness of ports, setting up stringent but reasonable environmental criteria to protect our beaches and marine life. Just as the secondary economic benefits of deepwater ports (refineries, general industrialization, petrochemical plants) must be considered, so must the corresponding secondary environmental impact be evaluated.

While it may not be the specific task of this committee to consider the sites for deepwater port facilities, I will touch briefly on the advantages of the Ameraport, off the coast of Alabama and Mississippi. A July report of the U.S. Army Corps of Engineers found after extensive study that the development of deepwater ports along the Gulf Coast is economically and environmentally feasible, that in fact two or three ports in the Gulf Coast area are economically desirable.

The Ameraport off Alabama and Mississippi is uniquely qualified within the will be reduced. Completion of the Tennessee-Tombigbee Waterway and a deep-Gulf Coast area. Transportation costs to the Southeastern and Eastern states water port in the Gulf of Mexico shall fall into approximately the same construction-completion time frame. The Tennessee-Tombigbee Waterway, joining forces with the waterways, highways, and railroads of the area, will connect the Gulf of Mexico with mid-America by a strong, reliable, balanced transportation system.

Ameraport embodies sound national security since its location off Alabama and Mississippi would disperse refineries rather than crowding them into better nautical safety and reduced possibility of oil spills by minimizing the areas already heavily populated with these facilities. Ameraport provides traffic of supertankers in areas with numerous oil and gas production platforms.

Many other arguments could be offered in favor of deepwater ports generally and Ameraport specifically. But perhaps the important entreaty to make to this committee is that a bill be reported in the near future which will provide the legislative fuel to drive the deepwater port issue to the point that the United States leads the world in super-port capability and efficiency.

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STATEMENT OF HON. JACK BROOKS, U.S. REPRESENTATIVE FROM TEXAS

Mr. Chairman and members of the Subcommittee—the topic before you this morning is one of the most challenging and important issues facing the U.S. today. It is challenging in technological respects and important in economic and social respects.

This nation must have adequate energy supplies, and we must provide the means of obtaining such resources as we need to supplement our domestic reserves. It is obvious that some means must be provided for accommodating the large super-tankers now in use in the maritime trade.

I have had a longstanding interest in this problem. In 1970, I requested Congressional action on a resolution directing the Corps of Engineers to begin studies for port facilities in the Gulf Coast area that would accommodate very large vessels. The Corps of Engineers has held a number of hearings on this issue throughout the Gulf Coast area, the most recent of which was in Galveston, Texas, in my District, on May 25. Frankly, I have deep concern about the direction the Corps of Engineers' studies are taking, and I would hope that the Congress would not follow the same path.

While I fully recognize the need to have facilities that can accommodate super-tankers for carrying petroleum products, I would caution that we must

look at the entire picture and not be shortsighted in adopting recommendations that will compromise the realization of our nation's full potential. Consideration should not be limited to offshore facilities alone but should include the development of multipurpose super ports that will enhance our exporting as well as our importing capability.

If we do not provide the means of shipping products produced in the U.S., I fear that we will continue to face deficit balances of trade for an indefinite period of time.

The same inequities in transportation cost that exist now in comparison with ports that can handle super-tankers will exist shortly in comparison with ports that can handle bulk cargo carriers. Most of the deep water ports in the world, particularly the Europort in Rotterdam, have the capacity, because of their onshore location, to handle both dry bulk and liquid cargo. If we are to compete, we must compete across the board—not just halfway.

Qualified consultants have advised me that it is economically and environmentally feasible to develop a multipurpose port particularly along the Gulf Coast.

The data which have been developed by me and other interested in a deep harbor on the Texas Gulf Coast reveal the following:

1. Modern hopper dredges can operate in sea conditions ranging up to 20 feet in height, and can, of course, deposit dredged material wherever desired.

2. One of these dredges can remove 25,000,000 cubic yards of materials annually in the Gulf in water depth ranging from 92 to 40 feet, and deposit it in regular paralleling banks 8,000 feet down-current from a channel having a bottom width of 1,000 feet and 5 to 1 side slopes.

3. Foreign hopper dredges are currently available for contracts to perform work as described above at prices ranging from 30 to 35 cents per cubic yard based on today's dollars, including mobilization of equipment into the area, overhead and profit. The following calculation demonstrates the economic feasibility of a deep harbor. A 92-foot channel, 1,000 feet wide from the 16 fathom curve approximately due south of the Galveston Jetty entrance would be 45 statute miles long and require removal of 340 million cubic yards. At a cost of 35 cents per cubic yard, this indicates an expenditure of \$119 million. An additional \$25 million would extend the deep channel 2 miles in any direction in lower Galveston Bay, on a separate alignment from existing channels where possible. I am reliably advised that \$25 million would be required for the acquisition of land, construction of a deep slip 1,200 by 600 feet, bulk-heading etc. The entire system, therefore, would be available for approximately \$169 million, and would accommodate vessels of deadweight tonnage up to 800,000 tons, dry and liquid.

A. This same equipment can dredge an engineeringly more desirable channel of 80' x 1,000' with side slopes of 1 in 10, about 40 nautical miles out into the gulf, removing approximately 300 million cubic yards net with a gross to be removed of 350 million; dumping all soil seaward of the 8 fathom line and not raising the bottom above that level; and dumping at least two nautical miles to the side of the channel. This would cost roughly 35¢ additional, or approximately 65¢ per cubic yard to do this type of dredging, giving a net cost of dredging the channel and the slip an approximate cost of \$240 million, with an additional estimated \$25 million for acquisition of land.

These figures certainly compare favorably with the estimates I have seen which are in the neighborhood of \$400 to \$500 million for a single-purpose offshore monobuoy facility. Why pay twice the price for half a loaf?

The time estimated for completion of such channel dredging varies considerably with the number and size of units employed on the project. Dredges with a capacity of up to 13,000 cubic yards are in existence today, though none of them are used in this country. It is estimated that using four dredges with an average 7,000 cubic yard capacity, the above work would be completed in about three-and-one-half to four years. Obviously, the use of larger capacity or a greater number of dredges would cut this time appreciably.

Shoreside facilities have a number of advantages over offshore installations. Onshore facilities would not only provide a means of fulfilling our petroleum dry cargo products from the mid-continent and Gulf Coast areas at savings requirements, but would also provide a means for exporting grain and other of approximately \$3 per ton. This could substantially improve our competitiveness in world markets. The steel and aluminum industries likewise could become more competitive by realizing similar savings in raw material costs.

Support services for the hugh ships would be concentrated at the terminus of the deep channel and new industries and increased job opportunities would be the end product.

I know that this Subcommittee's primary interest is in the environmental aspects of super port technology. The position you take will be highly instrumental in determining what type of facilities are ultimately selected because, obviously, consideration must be given to environmental as well as economic factors.

Let me deal briefly with relative risks of environmental damage which might be caused by both offshore and onshore facilities. First, consider the damages associated with dredging itself. Any deep channel would have to be located so as to avoid known live reefs where marine life are present and dredged material deposited so as to afford adequate depths for commercial fishing and shrimping vessels. The resultant mounds of material can be expected, from past experience, to improve the concentration of fish. It must be borne in mind that dredging is a requirement for submarine pipe lining and some disturbance of sea bottom can be expected in any event.

When it comes to comparing the dangers of an oil spill resulting from the use of the monobuoy method verus bringing ships into a bulk-handling terminal on shore, it is doubtful that either system can claim an advantage over the othe. It has been reported to me that transfer of oil cannot safely take place from a monobuoy in seas higher than 8 feet. This indicates a critical condition in waves just under this height. Any spill will almost assuredly end on the beaches. It is significant that there would be no harbor or refuge for these big ships closer than Freeport, Bahamas, in case of difficulty unless one is provided.

Authorities agree that spillage, leaks and illegal discharges have accounted over the last few years for many times the volume of oil introduced into the oceans caused by groundings or collisions. Except for the last three or four miles, the deep channel could and should be separate and apart from the channel used by ordinary traffic. This is the method used at Rotterdam-Europort.

Traffic control systems are becoming more and more common, and required in congested harbors everywhere. One advantage of the protected, open at only one end, berth is that booms can be istalled at the entrance after a vessel enters, and any spills contained and removed by equipment always at hand.

The unfortunate reliance upon imported petroleum for a substantial share of our energy needs in the future has far-reaching implications for our military security. The destruction of our tankers off the beaches by enemy submarines during World War II lives in the memory of many of us. The monobuoy system is very vulnerable to destruction by explosive charges which might be set by unfriendly forces from a small fishing boat. In an age where terrorists operate thousands of miles from their home base, the factor of security must be considered.

While I realize that this Subcommittee will not be making a decision authorizing a particular type of facility to be constructed, I wanted to bring to the attention of the Subcommittee these additional factors to consider. I note that S. 1751 is referred to as the "Deep Water Port Facilities Act of 1973." It defines a "deep water port facility" as a "facility constructed off the coast of the United States and beyond three nautical miles from such coast . . . .". I would hope that the Subcommittee would not take the position that this is the only type of deep water port facility available. We mus continue to fully consider all aspects of this tremendously important project so that the facilities constructed best serve the interests of all of the people of this nation.

Senator GRAVEL. We will be in recess, subject to the call of the Chair.

[Whereupon, at 5:15 p.m., the hearing was adjourned, subject to the call of the Chair.]

# DEEPWATER PORT ACT OF 1973

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WEDNESDAY, AUGUST 1, 1973

U.S. SENATE,  
COMMITTEES ON COMMERCE, PUBLIC WORKS, AND  
INTERIOR AND INSULAR AFFAIRS, SPECIAL JOINT  
SUBCOMMITTEE ON DEEPWATER PORTS LEGISLATION,  
Washington, D.C.

The subcommittee met at 9:55 a.m. in room 155, Old Senate Office Building, Hon. Joseph R. Biden, Jr. presiding.

## OPENING STATEMENT BY SENATOR BIDEN

Senator BIDEN. The hearing will come to order. This is a continuation of the third day of hearings on the need for deepwater facilities.

General, we appreciate you having waited last time, and with all of the confusion on the Senate floor, we never got to you. We appreciate you coming back.

The issue we have been discussing in these hearings represents only one facet of our Nation's multi-faceted concern with energy and energy-related problems. But it is obvious that the many decisions that need to be made on deepwater ports will strongly affect the direction of our efforts to meet the Nation's energy requirements.

The opposite is also true. Our decisions on how to meet our energy needs will have a strong bearing on our need for such ports. While I understand that these hearings are limited to the subject of deepwater ports, and realistically cannot be enlarged to try to explore all our energy needs and alternate solutions, I hope that our decisions on ports will be made in at least the broad framework of how we are to meet our energy needs.

It is essential, however, that we recognize that there are factors other than energy involved in our decision on deepwater ports. These are the impacts of the deepwater ports on the areas both in and off which they are built. And while we must find ways to meet our energy needs, it will not do us any good to meet our energy needs if we so foul our country that it is not fit to live in.

I come to these hearings prepared to be pretty stubborn on this last point. Our concern for energy cannot be allowed to overwhelm our need for decent places in which to live and work and play.

The quote from a Belgian official in the A. D. Little report, "Foreign Deep Water Port Developments," is appropriate: "Effective concern regarding environmental quality can occur only in a rich and polluted society; we haven't been rich quite long enough."

(491)

I think our country has been polluted long enough and rich long enough that it can afford to clean itself up and not create any more.

So I am prepared to insist that deepwater port legislation must recognize the critical importance of preserving what we have and perhaps even be a vehicle for improving it.

To be parochian for a moment, I am not prepared to build a port off Delaware at the cost of oil on the beaches of my State; at the cost of destroying marine life off the coast of Delaware on which many people now depend for a living; or at the cost of seeing polluting industry spring up all over the rural parts of my State when people need these open areas as a balance to the already highly populated northern area. What is more, on a national basis, I am prepared to support people who feel about their States the way I do about mine.

I mentioned that perhaps port legislation could be used to encourage State and local governments to control their environments and even improve them. Certainly the land use legislation which Senator Jackson so ably guided through the Senate represents an opportunity for States to do the kind of land use that will prevent the outrageous growth that we all have seen in our metropolitan areas.

However, in the bill that Senator Muskie and I introduced on deepwater ports, S. 1316, we went a step further and tried to use deepwater port legislation as a positive tool to do the things that would offset the potentially harmful effects of deepwater port development.

Our bill does this by requiring certain land use and pollution controls as a sort of trade-off for a State's veto power over construction of a deepwater port. I have no particular pride of authorship. But the provisions of my bill in this respect represent the kind of thing I would like to see in any deepwater port legislation, if indeed there is to be legislation at all.

I do not at all mean by my remarks that I will oppose anywhere in the country any and all proposals for deepwater ports. I realize there are other sections of the country that have a positive desire to see them built. But I do feel an obligation to assure that anything done in this country preserves and protects the natural heritage which is an important and irreplaceable national asset.

Do you gentlemen have opening statements?

Senator LONG. Not opening statements. This is a continuation of the hearing, isn't it?

Senator BIDEN. Yes, it is. You may proceed.

**STATEMENT OF BRIG. GEN. JAMES L. KELLY, DEPUTY DIRECTOR  
OF CIVIL WORKS OFFICE, CHIEF OF ENGINEERS, DEPARTMENT  
OF THE ARMY**

General KELLY. Mr. Chairman, members of the subcommittee, I am Brig. Gen. James L. Kelly, Deputy Director of Civil Works, Office of the Chief of Engineers, Department of the Army.

It is a pleasure for me to appear before this special joint subcommittee to discuss deepwater port development.

I will begin my prepared statement by presenting the Department of the Army's views on S. 1751, the administration's proposed "Deepwater Port Facilities Act of 1973," and follow with a very brief summary of some of the findings of recent corps studies with respect to deepwater ports which may be of some assistance to this subcommittee in its deliberations.

S. 1751 would authorize the Secretary of the Interior to issue any citizen of the United States a license to construct or operate a deepwater port facility located beyond 3 nautical miles off the coast of the United States and to be used principally for the transshipment of commodities to the United States.

The Secretary's issuance of such a license and its retention would be dependent upon the applicant's satisfactory and continuing demonstration that the construction and operation of the proposed facility will meet necessary requirements to protect the public against adverse significant effects on such factors as the environment, international navigation, and land use of the adjacent coasts.

In addition, section 111 of the act would insure that appropriate regulatory authorities of Federal agencies other than the Department of Interior would be applicable to the construction and operation of such facilities under the coordination and leadership of the Department of Interior.

The Department of the Army anticipates that its responsibilities concerning the construction of these facilities would remain essentially the same as our existing responsibilities under our permit program for the construction of artificial islands and fixed structures beyond the territorial seas in accordance with section 4(f) of the Outer Continental Shelf Lands Act and in cooperation with the Department of Interior.

Under the provisions of section 104(b) of S. 1751, the corps could provide technical assistance to the Department of Interior in determining standards and criteria for construction of deepwater port facilities.

The Department of the Army supports enactment of S. 1751.

I will now briefly summarize some of the findings of the recent corps studies on deepwater ports which I mentioned in my introductory remarks.

In December 1970, Congress authorized the first study of regional navigation requirements, "with particular reference to economies afforded by the use of supersized bulk transport vessels and tankers." The first regional study authorization pertained to the Texas gulf coast.

Subsequent study resolutions expanded the study assignment to cover the gulf coast from Brownsville, Tex., to Tampa, Fla., and also authorized regional assessment of navigational facility requirements for the North Atlantic and Pacific coasts.

Despite differing times for study authorizations and appropriation of study funds, the corps scheduled the three regional studies in concert, with the first field-level reports for each region to be completed by about July 1 of this year.

Each of the studies, while addressing unique regional conditions, was to achieve two common objectives: (a) Demonstrate the net advantage or disadvantage to employment of supership technology, and (b) Assuming adequate net advantage, identify the most likely or most feasible sites or locations for its employment within the respective regions under study, or conversely, identify the most likely transportation system alternatives and associated problems, in the absence of deepwater port facilities.

A short synopsis of each of the three corps deep port studies follows.

#### GULF COAST

The gulf coast deepwater port study included the gulf coastal area between Brownsville, Tex., and Tampa, Fla. Historically, the gulf coast has been a surplus producer of domestic crude oil and refined products. Current projections indicate that production of crude oil along the gulf coast is peaking and will begin to decline in the foreseeable future.

However, current demands by the crude oil deficient areas of the Southeast, Northeast, and Mid-continent have increased total demand for gulf coast crude oil and finished products to the point where importation of foreign crude oil to the gulf has become necessary.

Crude oil imports are projected to come from the Middle East and North Africa. Without deepwater port facilities along the gulf, small vessels may continue to transport the crude oil direct to the gulf, utilizing existing navigation channels; or, more likely, very large crude oil carriers will transport the crude oil to a deepwater port in the Bahamas and transfer it to smaller vessels for transshipment to the gulf. Thus, a deepwater port in the Bahamas was used as the baseline condition in our economic analysis.

The following deepwater port facility systems were investigated:

(a) No action—existing system. Or in effect, the Bahamas case.  
 (b) A five dredged-channel-system to inland ports with depths ranging from 60 to 100 feet. The channels included in this system are Mobile Harbor; Mississippi River, Southwest Pass to Baton Rouge; Sabine Pass; Galveston Harbor; and Corpus Christi.

(c) A system of artificial islands protected by breakwaters for offloading supertankers and storing crude oil located offshore in approximately 100 feet of water with barge or pipeline distribution to the refinery complexes. The three site locations considered are in the vicinity of Mobile-Pascagoula, approximately 32 miles offshore; Bayou Lafourche, approximately 17 miles off the Louisiana coast; and, Freeport, 30 miles off the Texas coast.

(d) Monobuoy systems located offshore in approximately 100 feet of water with pipeline distribution to intermediate landside storage and barge or pipeline distribution to the refinery complexes. The monobuoy site locations considered were:

(1) Panama City, 13 miles offshore; (2) Pensacola, 24 miles offshore; (3) Mobile-Pascagoula, 32 miles offshore; (4) Southwest Pass, 15 miles offshore; (5) Bayou Lafourche, 17 miles offshore; (6) Sabine Pass, 80 miles offshore; (7) Freeport, 30 miles offshore; and (8) Corpus Christi, 23 miles offshore.

The dredged channels, artificial islands, and monobuoy systems were considered as mutually exclusive systems. Due to time and funding limitations, we were not able to investigate all possible alternatives. Alternative actions at various sites were individually looked at as finite pieces of the total package, but were not tested in all possible combinations.

Evaluation of these systems showed that the no-action alternative would pose a more direct threat to estuaries and marshes than offshore facilities and the probability of oil spills would be greater. However, secondary—landside—impacts would be less than with the other alternatives because of dispersion. The dredged channel system would have the most direct impact on the environment; the monobuoy system the least. Offshore facilities would generally reduce possibilities of oil being spilled directly into biologically productive estuaries and marshes; but, depending on location, associated secondary development may place a severe stress on a region's land, water and air resources.

The major social and economic impacts would be caused by the changes in the scale of crude petroleum refining activity. Changes are measured in employment, population, earnings, and income for subareas of the gulf coast region.

From these measurements, other social and economic effects were estimated. Overall, the social and economic impacts would be favorable.

#### SUMMARY OF FINDINGS

1. Development of deepwater ports along the gulf coast to import foreign crude oil in large quantities is economically feasible.
2. The no-action alternative has neither economic nor environmental advantage.
3. The monobuoy system is the most economical and environmentally feasible system investigated.
4. A single-port system is the most desirable environmentally and the least desirable economically.
5. A four-port system is least desirable environmentally.
6. A two- or three-port system is most desirable economically.
7. Dispersion of import facilities would tend to maximize favorable social and economic impacts.

#### PACIFIC COAST

The west coast deepwater port study covered the coastal area between Bellingham, Washington, and San Diego, Calif. The consumption of petroleum on the west coast is projected to rise from 2 million barrels per day in 1970 to 3.4 million barrels per day in 1980, and 5.8 million barrels per day in 2000.

In 1971, waterborne shipments of crude petroleum to the west coast were about 600,000 barrels per day. Projected future petroleum consumption would require waterborne shipments of crude petroleum to west coast ports of 2.2 million barrels per day by 1980 and 4.9 million barrels per day by 2000.

Twenty-two potentially suitable deepwater port sites on the west coast are identified for review. Based on preliminary considerations of engineering factors, environmental concerns, transportation eco-

nomics and expressions of local public attitudes, study emphasis was placed on six of the more logical sites: Ferndale, Wash., in Puget Sound; central San Francisco Bay and approximately 5 miles offshore, south of the Golden Gate in northern California; and about 1½ miles offshore at Point Fermin, Los Angeles Harbor and Long Beach Harbor in southern California. These six sites, plus several of the apparently viable alternative sites—Anacortes, Everett, Tacoma, and Port Angeles, Washington, and Richmond, Moss Landing and Port Hueneme, Encia, Calif.—were studied in detail.

At these 14 potential sites, 41 alternative port systems, including the "without" deepwater port case, were studied in a variety of facility configurations and combinations, considering various mixes of the tanker fleet. The evaluations were made under two sets of assumptions: One, that the Trans-Alaska pipeline to Valdez would be built, and two, that the pipeline would not be built.

Reduced ship traffic, long-haul distances from the Middle East and Indonesia, and the economies of scale in ship construction and operation all favor the use of larger tankers over the continued use of smaller vessels.

Assuming construction of the Alasna pipeline to Valdez, the study identifies three alternatives which would have the greatest potential economic value and cause the least change to existing conditions:

(a) Three deepwater ports: One deepwater port would be located in each of the Puget Sound, San Francisco Bay, and Los Angeles-Long Beach areas. Facilities would be provided for handling 210,000-d.w.t. tankers in Puget Sound and San Francisco Bay, and 325,000-d.w.t. vessels at Los Angeles-Long Beach.

(b) Two deepwater ports: One deepwater port would be in the San Francisco Bay area, capable of handling 210,000-d.w.t. tankers, and one in the Los Angeles-Long Beach area, capable of handling 325,000-d.w.t. Puget Sound would continue to receive crude oil at its existing ship terminals and through the Trans-Mountain pipeline.

(c) A single deepwater port: Deepwater port facilities would be provided at either San Francisco Bay or Los Angeles-Long Beach for tankers up to the 475,000 d.w.t., with transshipment by sea in smaller vessels to other ports. Again, Puget Sound would receive oil through its existing facilities.

If the Trans-Alaska pipeline is not built, waterborne imports of crude petroleum may come partly from southern Alaskan sources, but the bulk of the imports would have to come from the Middle East and Indonesia. There is the additional possibility that the North Slope oil would be moved through Canada and that Puget Sound refineries could tap this source by pipeline interconnection. This combination of possibilities indicates that there might be less incentive to develop major additional deepwater port facilities in Puget Sound.

Assuming that major additional facilities would not be needed in Puget Sound, the two most likely alternatives would be:

(a) Two deepwater ports: One deepwater port located in each of the San Francisco Bay and the Los Angeles-Long Beach areas, with each port capable or accommodating 475,000-d.w.t. tankers.

(b) A single deepwater port: A facility capable of accommodating 475,000 d.w.t. tankers could be located either in the Los Angeles-Long Beach area or in the San Francisco Bay area, with refineries in the other area served by transshipment from the deepwater port.

The corps study evaluated all of the above alternatives including various possibilities for providing facilities both within existing harbors and through offshore monobuoy systems. Overland pipeline delivery up and down the west coast from a single deepwater port was also considered.

Expanded oil refinery operations could have adverse impacts on air quality conditions. These adverse effects are related to the amounts of petroleum processed and the environmental controls exercised. Development of deepwater port facilities would not affect total refinery capacity but could alter refinery locations.

Marginal piers, used in onshore areas, are more adaptable to oil spill containment and cleanup procedures than are monobuoys used offshore. Nevertheless, monobuoys appear to present environmental advantages over marginal piers because they take oil tanker operations out of the biologically sensitive inshore areas where oil spills are likely to be more damaging.

In the Puget Sound area at Ferndale, facilities capable of accommodating the largest size tanker considered in the study could be built without any requirement for dredging. Monobuoy facilities, such as those suggested for Offshore Golden Gate and Offshore Point Fermin sites, could also be built without any requirement for dredging. Development of deepwater port facilities within San Francisco Bay, within Los Angeles Harbor, or within Long Beach Harbor would require dredging large volumes of material. Disposal of this dredged material could present environmental problems, particularly if the material is polluted.

#### SUMMARY OF FINDINGS

1. By or before 1980, there will be a great economic incentive to develop deepwater port facilities on the west coast capable of accommodating tankers in the size ranging from 210,000 d.w.t. to 475,000 d.w.t.

2. If the Trans-Alaska pipeline is built, west coast deepwater port facilities would be expected to generate net savings in the cost of transporting crude petroleum from source ports to west coast ports of about \$100 million to \$160 million per year. These savings would be gained at a net yearly cost of about \$10 million to \$30 million.

3. If the Trans-Alaska pipeline is not built, the major source of oil for future West Coast needs would be the Middle East and total transportation costs would be higher. In this case, deepwater port facilities might generate net transportation cost savings as high as \$200 million to \$300 million per year, at a net annual cost of about \$10 million to \$30 million.

4. Using a smaller number of larger tankers would reduce congestion in shipping lanes and decrease the probability of massive oil spills caused by collisions and groundings.

5. The use of deepwater port facilities could reduce adverse environmental impacts on areas now used for oil transfer operations.

However, adverse landside environmental impacts may be transferred from existing oil terminals to those areas where deepwater facilities would be located.

6. Deepwater port facilities could have an adverse economic impact on existing port and harbor areas from which oil transfer operations would be diverted.

#### NORTH ATLANTIC

The North Atlantic coast deepwater port study included the Atlantic coastal area between Eastport, Maine and Hampton Roads, Va. The North Atlantic coastal region is a deficit fuel area and receives over half of the crude oil currently imported into the United States.

In 1971, North Atlantic refineries processed 1.3 million barrels per day. Despite estimates that existing North Atlantic refineries can more than double their capacity at their locations, new refineries will be required if the area is to meet projected demands.

Daily imports and refinery capacity are expected to be about 2.0 million barrels per day in 1980 and 4.0 million barrels per day in 2000. These projections assume maximum expansion of refinery capacity at existing locations and little or no production of crude oil in this region.

Initially 19 areas were selected for study and evaluation. These initial areas included seven sites along the Maine coasts; two sites in Massachusetts—Massachusetts Bay and Vineyard Sound; East Passage-Narraganset Bay off Rhode Island; the entire Port of New York area, including Montauk Point and Long Island Sound; the Raritan Bay and Sandy Hook region; the ocean off Long Beach, N.J.; sites in and just beyond Delaware Bay—including the Atlantic Ocean off Cape Henlopen; and several sites in Chesapeake Bay in the Norfolk area.

These sites were explored and evaluated in terms of construction costs, distance to major refineries and markets, economic impact on the region, and other indices of comparison. Those which failed to meet standards of economic feasibility were gradually eliminated, until only Raritan Bay, in lower New York Harbor, the Atlantic Ocean, off Long Branch, N.J.; two sites within Delaware Bay, and two sites in the Atlantic Ocean, off Cape Henlopen, at the entrance to Delaware Bay remained. In-depth study of these sites was conducted to further consider their economic feasibility and the environmental and ecological ramifications.

#### SUMMARY OF FINDINGS

1. The projected quantities of crude oil to be imported into the North Atlantic region will come mostly from the Middle East and North Africa and will require the use of very large crude oil carriers, VLCC's to service the refineries in this region.

2. Economic considerations indicate that facilities to accommodate VLCC's serving existing North Atlantic refineries should be located along the reach of shore between New York Harbor and the Dela-

ware Bay area. Maximum reduction in the effects of oilspills can be attained by construction of facilities offshore.

3. Development of facilities to accept VLCC's in the North Atlantic region is not desired by the affected States at this time. Fears of large oil spills affecting the recreational beaches of New Jersey and Delaware and of large industrial complexes which would affect those recreational areas has caused local opposition to such facilities.

4. Assuming the most likely projections of imported crude, the most efficient and economic method of accommodating VLCC's in the North Atlantic region would be to provide a regional monobuoy unloading facility approximately 13 miles off the New Jersey coast in the vicinity of Long Branch.

If the low level projection of crude—no refinery expansion—is assumed, the most efficient and economic site would be located in Delaware Bay off Big Stone Beach. In all cases, the New Jersey and Delaware River refineries would be connected by pipeline to the offshore facilities.

#### GENERAL SUMMARY

The Corps studies found that:

a. Most crude petroleum deepwater port alternatives studies show highly favorable economic benefit/cost ratios. However, hypothesized deepwater transshipment ports for handling dry bulk imports and exports appear, at least at present, economically unjustified.

b. The prospective justification for deep port facilities to accommodate petroleum supertankers varies considerably between regions. In the North Atlantic region, for example, such facilities could now be economically employed to service existing refining facilities. On the Gulf and Pacific Coasts, new deepwater facilities would be economically justified only if the volume of crude imports increases substantially.

c. By decreasing the number of operating ships, the chances of collision and groundings are reduced. The fewer ships will also reduce the number of transfer operations and the consequent risk of spills.

d. Unless carefully regulated, development of deep port facilities are likely to generate substantial expansion of refinery-petrochemical complexes. Some States seek such economic expansion. Others, especially in the Northeast, do not. Determination as to whether or not industrial expansion is desirable and where such expansion should take place can be resolved through coordinated land use planning.

e. The traditional method for accommodating large size ships, that is increasing channel depths through dredging, is generally not a viable alternative on the North Atlantic and Gulf Coasts.

f. Private or non-Federal public ownership, financing, and operation of deepwater port facilities is seen compatible with the public interest if accomplished under adequate and effective Federal control and regulation.

g. There is no presently foreseeable need for the Federal Government to undertake the major capital investments which would be required to bring deepwater port facilities, storage facilities, and pipelines, into operation.

The three regional studies were completed as of June 30, 1973, and are now being reviewed by the Board of Engineers for Rivers and Harbors. The reports will be processed through the Office, Chief of Engineers, to be coordinated with Federal and State agencies. After transmittal to the Office of the Secretary of the Army and coordination with the Office of Management and Budget, we hope that they could be submitted for consideration of the Congress later in this calendar year.

That completes my formal statement. I will be happy to respond to any questions you might have.

Senator BIRNEX. Thank you.

Senator LONG. I don't see a word in here about the monopoly problem. My understanding is: these 13 major oil companies want to combine a port beyond the reach of State laws, in consort with Federal authorities.

How would you handle the monopoly problem?

General KELLY. As we would visualize it, this terminal would likely be operated as an interstate common carrier, under ICC regulations, and would require access be allowed to any reasonable user. I think there would have to be some minimum quantity of throughput by each user.

Senator LONG. Well, the largest of these companies, Exxon, is the old Standard Oil of New Jersey, and we can thank them for the Sherman Antitrust Act of 1890, and the problems we have had with that, plus the follow-on Antitrust Act to try to meet the sophisticated efforts that people were able to devise to get around that act with the Clayton Act and the Federal Trade Commission Act. These fellows sitting down there run together. Theoretically they are just sitting down for social activity, but they have a dinner. They provide markets, fix prices, destroy competition.

How are you going to keep those fellows, when that consortium of 16 companies sits down together, from getting together on deals to overwhelm the public interests, the way the electrical contractors did before they finally got caught at it and were made to pay very large damages to the Government.

You are familiar with that antitrust case, aren't you?

General KELLY. I'm not; no, sir.

Senator LONG. You ought to familiarize yourself with it. Wouldn't that be the same problem you have here?

General KELLY. I'm sure there is this potential, sir. It was considered in the drafting of the legislation. This is one reason that the legislation was written such that there would not be a particular limit on the number of ports.

Senator LONG. But what difference does it make how many ports you have. If you have the 13 largest oil companies operating together? How do you know they aren't talking about how to operate the port and whose ship will come to port next, that they are not talking about how to divide up the market and put the independent merchandisers out of business, things of that sort?

General KELLY. This is a potential problem, yes, sir; and we certainly have not resolved that in the studies the Corps has conducted.

Senator LONG. I understand the FTC is talking about a proposal to make these oil companies divest themselves of their marketing activities now on the theory that they have succeeded in monopolizing the market, and to the extent that the public interest is not being protected they ought to be made to divest themselves of their service stations.

Now, doesn't this move in just exactly the opposite direction, when you permit the 13 major oil companies, the 13 largest, to get together and operate a port? Doesn't this give them a good excuse to sit down and meet and get their business together?

General KELLY. Yes, sir. I would say that in the evaluation of the permit application this is a question which is going to have to be considered.

Senator LONG. Well, now, if they are going to be permitted to operate as though they are one company for the purpose of operating the port, why shouldn't they be able to operate as one company for purposes of transporting the oil—in fact, they are already running a pipeline together, as I understand it.

General KELLY. They are, yes. Common user pipelines.

Senator LONG. Do they commonly own the pipeline?

General KELLY. I'm not sure. It is operated under interstate commerce regulations with a fixed tariff. But I'm not familiar with the details.

Senator LONG. So far at least they are not permitted to jointly operate filling stations, are they? I mean they haven't even proposed that thus far, have they?

General KELLY. Not to my knowledge.

Senator LONG. To what extent has this matter been studied from the monopolistic point of view?

General KELLY. The Corps studies really have not addressed that problem. We recognize and are working now on the institutional problems but it is not an area that we really feel we have a handle on, or are prepared to make recommendations on.

Senator LONG. Now, when the States of the Union were formed, and later when other States were added, there were never any domains, any land area above the water that was beyond the boundary of a State so much so that when the entire 48 States in the Continental United States was all one contiguous area, the Supreme Court ruled that the boundaries of the United States were coexistent with the boundaries of the States, and that there was no area of the Continental United States that was beyond the boundaries of the States.

For example, Catalina Island is a part of the State of California.

What would be the difference in the legal situation, as far as the State laws are concerned, between operating a port of this sort on Catalina Island and operating one 3 miles off California?

General KELLY. If it is within the 3-mile limit, we would say—

Senator LONG. I mean beyond three miles.

General KELLY. Beyond 3 miles? I think we would say that one would be international waters.

Senator LONG. Your bill would create a Federal domain. If this manmade island had been there when California was brought into

the Union is there any doubt in your mind that that would have been a part of the State of California?

General KELLY. I think it probably would have been.

Senator LONG. So the citizens of that State will be permitted to help pay the taxes to build this manmade island, and they have to sustain the pollution problem, but they won't have any say about it, according to your bill, isn't that right?

General KELLY. I'm not sure I understand the statement that the citizens would build the island, sir.

Senator LONG. They would pay their share of the taxes. The people of California pay their share of the Federal taxes and any other taxes. They will pay their share as consumers for the cost of building and maintaining the island, won't they, like everybody else?

General KELLY. Well, as consumers and users of the product, yes; but there is no recommendation of a Federal expenditure in the process.

Senator LONG. Aren't these people supposed to get their money back out of this?

General KELLY. I'm sure they wouldn't be putting it in if they didn't expect to get it out.

Senator LONG. As far as the consumer, what is the difference, whether he pays it as taxes or pays the price of the product. What is the difference whether you put a tax on it, or whether it is just rolled in the price? It's all the same thing to him.

General KELLY. I guess in one case he has a choice whether to pay it or not.

Senator LONG. Does he not have that anyway?

General KELLY. Yes, sir.

Senator LONG. What is the difference? I mean the point is that you've got some problems here that are relevant to the States. I have been in the Bahamas, both before and after they started using their superport. It used to be you could go swimming in the beautiful clear waters there and you would come out with a little salt on you, and that's all. Nowadays when you come out of there most people around those beaches have a can of distillate to wipe the oil off, little pellets of grease that float around in the water.

Why should a State be barred from protecting its own interests with regard to that type of thing?

General KELLY. We would say, sir, that the State can bar this from happening by controlling the use of the landside by preventing development there.

Senator LONG. The way I understand this bill, it carries out what the oil companies want. One of their officers came and discussed the problem with me about the port of Delaware. They are not able to get the State of Delaware to do what they wanted, and he thought the Federal Government ought to use its powers to club its way through Delaware on behalf of the oil companies.

It sort of makes my hair bristle to have them talk about that, not that I get upset about them doing it to Delaware, it's thinking about them doing it in Louisiana. Then my hair really stands on end.

What is in this bill to keep that from being done? That was that officer's objective. What will keep that from happening?

General KELLY. Excuse me, sir—

Senator LONG. As I read this bill the Federal Government has power to protect the States of Louisiana or the State of Delaware. But those States don't have the power to protect themselves in the bill here, do they?

General KELLY. We conclude they do, sir.

Senator LONG. They can talk to you?

General KELLY. Well, there is consultation. But our basic position is that no one is going to build that port unless he has a place to put the oil, refine it or do something with it. He can't build that facility if the State precludes it. This we believe gives the States effective real control.

Senator LONG. What is to keep them from using the Federal power to lay the pipeline right through your State, and build the refinery somewhere else in the next State? If that is what they have in mind what is to keep them from doing that?

General KELLY. As far as the Corps is concerned, sir, in the permitting aspects, when you get within the 3-mile limit in, where the Corps would be involved directly, we have a policy which would not authorize a permit over the objection of the Governor.

Senator LONG. You mean inside the 3-mile limit?

General KELLY. Yes, sir.

Senator LONG. That is a policy you would advocate. But under this bill wouldn't the Federal Government have the authority, if the governor objected, to go ahead and build the pipeline anyway?

General KELLY. I believe that would be the case.

Senator LONG. It seems to me it is just not in keeping with the traditional position of the Corps, to be recommending something that could do violence to the concept of the Federal-State relationship.

I do think this monopoly problem ought to be studied.

I think those two aspects of it—apparently the Government witnesses have not mentioned them—but they are of extreme concern, it seems to me.

I think maybe we ought to invite the officials of the FTC to come and give us their views about the monopolistic aspects of this thing.

You do recognize that that is a problem, don't you?

General KELLY. Yes, sir. This, I think, is predicated on the present supposition that we would have groups of oil companies coming in. The converse, of course, is a problem as well, if you have, environmentally, only a limited number of sites available. If you then issue a permit to one oil company and then to another oil company and then to another—and let's presume that there is the maximum number that would be environmentally sound—those permit holders would have a monopoly.

Senator LONG. All you have to do then is give the permit to someone else. The State could operate it. It could operate a port authority. They could give it to somebody who is just in the business of port management. There are such firms, aren't there?

General KELLY. I'm sure if there aren't they could be formed.

Senator LONG. So there are all kinds of ways to handle that. In other words, you aren't limited to just authorizing the 13-company consortium to join together and operate the port.

General KELLY. No, the State could apply or an individual could apply.

Senator LONG. I know the integrated companies. They would like to organize so that they own the land—not lease it—own the land under which the oil lies, and then they would own the pipeline, own the ships, own the ports, own the refineries, own the filling stations.

And if you let them, I suppose they would probably like to own the automobiles, just lease them to us, the way the telephone company does. You know, they own the telephones; we just lease them. It's their telephone.

So if you let them do all of that, I assume they might like to do business that way.

But I would submit to you that you should have your lawyers study this monopoly problem, and I think they would then become persuaded that these companies are under severe criticism. If your lawyers haven't read about it, and you haven't read about it—the public has been reading about it, I've been reading about it—the fact that the FTC thinks they have been permitted to go too far already in owning everything from the lease right down to the pump that puts the gas in the automobile. It would seem to me that we ought to answer this problem, whether we want to let the 13 companies operate in this fashion, and if they are going to, I should think the Federal Trade Commission ought to be permitted to have their say about this thing.

General KELLY. I definitely agree. In the normal procedure—speaking of the way we would go about permitting—if there were an application, we would have a public hearing on it. We would also go out for comment and try to determine what is in the public interest. I would presume then the potential monopoly problem would be one of the factors considered.

Senator LONG. We are holding our hearing now, though.

General KELLY. Yes, sir, I understand.

Senator LONG. We ought to save you a lot of those problems, if we could, by asking the questions to begin with and get your views, as well as other views.

The same people that testify before you will testify before us.

General KELLY. Yes, sir. I understand.

Senator LONG. Thank you very much.

Senator BIDEN. Thank you, Senator.

Senator METCALF?

Senator METCALF. General Kelly, you suggested in your statement that perhaps the use of supertankers was more environmentally sound than the use of a larger number of smaller ships.

Have you any definitive studies on that to back up that statement, statistics, and so forth?

General KELLY. Sir, basically we have—

Senator METCALF. Is that just a conclusion?

General KELLY. No. It is not based on studies that the Corps has done. The statement is based on Coast Guard studies and work that has been done by other agencies. In our efforts to put our studies out, hopefully in a timely manner, we did utilize as many inputs as we could from other sources. And so the Coast Guard is really the source of the type of information to which you refer.

Senator METCALF. I would certainly hope that you would use studies from other branches of the Government rather than embarking upon parallel duplicative studies of your own. But I was asking what are those studies? Do you have them?

General KELLY. Yes, sir.

Senator METCALF. Can you give them to us?

General KELLY. Yes, sir.

Senator METCALF. Now the second thing is do you have any comparison between the environmental impact of supertankers in large ports and the oilspills and so forth, and offshore drilling platforms?

General KELLY. We have not made such comparisons in our studies sir. My strong feeling is that there is data for both which could be married but we have not put them together.

Senator METCALF. I didn't want to marry them, I just wanted to bring them up here so we could compare them.

Would you know of any such studies? Has the corps gone into that at all?

General KELLY. No; sir.

Senator METCALF. You haven't been concerned about a comparison between offshore drilling platforms, which is an important thing in Louisiana and important all over the area where we have substantial undersea deposits of petroleum, as against this business of going over to the Asian countries and importing oil in huge tankers.

Now isn't that a matter of comparison? Shouldn't we know that when we decide whether or not we are going to further explore offshore or build some huge superports for supertankers?

General KELLY. We have made no environmental comparisons between the two. Our studies are premised on the fact that the demand and requirement for oil is such that you are going to have to bring crude in from offshore, certainly through 1985. And the range of low import, medium import, high import, will vary depending upon changes in demand, other power sources coming on line, perhaps offshore drilling, but our conclusion is that at any of these levels, the supertanker is the better way to bring in large quantities.

But I agree the alternative sources have got to be looked at. We are not looking at it, sir. It is in Interior's areas and I presume that is part of their work.

Senator METCALF. Thank you, General.

Thank you, Mr. Chairman.

Senator LONG. The question has come up, and if you have these figures, I think you should make them available. It is my understanding that about 2 or 3 percent of the pollution at sea is due to oil spills of the producing wells, about 28 percent or about 10 times that much is due to the movements of the tankers and perhaps the spills in the ports, things of that sort. It is about a 10 for 1 factor.

Now where does the other 70 percent come from? Do you have that?

General KELLY. A good portion of it, sir, comes from cleaning out of the ballast tanks. In other words, intentional spills.

Senator LONG. That is something we ought to be doing something about.

As I understand it, what is happening is that tankers, whether the yare big or small, at some point with heavy oil, after they pump it out, have a lot of it left on the sides of the tanks and they flush the tanks. Putting all of that slush out into the sea.

Now that apparently is the biggest item, and it is deliberately done, not done by accident, they just intentionally do it. Like the time when I had some polluted fuel in my little LCT during the war, and I couldn't find anywhere to get rid of it, I sneaked out of the breakwater one night and just pumped it out.

What ought to be done is these people should be required to clean their tanks at one end or the other, not while they are out at sea. At some point they ought to be required to clean those tanks, because that is where the biggest part of the pollution is coming from, is it not?

General KELLY. That is my understanding, yes, sir. There are on-ship systems being developed. It is a recognized problem. They are working on an international agreement to try to resolve this type of issue. I know the shipping industry is developing certain systems on its tankers to wash the tanks and then control the disposal. But the problem certainly is not totally resolved.

Senator LONG. Just to get the problem where it is, the problem of these oilspills at sea, and the problem of cleaning tanks on the tankers, is 50 times as much of a problem as the operation of these wells on the Outer Continental Shelf.

Senator METCALF. If the Senator would yield just a moment, since we are having a Seabed Conference in Geneva at the present time, and the representative of the Interior Committee has just returned from that conference and has given a report and we are sending another one of our representatives to take his place. He told me that he didn't think we are going to reach an international agreement this year, next year in South America, the year after that in Indiana. So while the hope for international agreement is way in the future, we have to realistically face this business of oil companies who don't care where they dump the oil, the cheapest way to flush those tanks is the way they will do it unless we put controls on them.

What I wanted to know, and what I wanted you to bring out is the various comparisons of the ways we have of obtaining oil for this country. You go up to Canada, and they just had one of these supertankers go ashore, and break up, and they are scared to death of having a deepwater port, just one of those accidents with a huge tanker is equal to many of the flushing and oil spills from smaller tankers.

You talk to some of the other people in international concern, and they are—even the kind that they are going to bring from Valdez to the west coast, they are afraid of those big, huge tankers.

So we should be thinking of the environmental impact of maybe one breaking loose and breaking up on the shores of Delaware and New Jersey and a larger spill in Santa Barbara. It has been my experience with the oil companies that they will do anything they can the cheapest way they can to make a profit.

Senator LONG. If the major importing countries agree to require by law certain things be done, they can do it. Just like we have a safety at sea law, which is applicable to all the ships that land here. That is the way it works, is it not, General?

General KELLY. I am just not familiar with that, Senator.

Senator LONG. I am saying we can reach a great deal of this with the United States law. I think we could do something about it.

Senator BIDEN. Senator Johnston?

Senator JOHNSTON. General, how many superports do you foresee in the United States?

How many on the Atlantic, how much in the gulf, how many on the Pacific?

General KELLY. It would be a very difficult thing to predict, sir. It is going to depend on how many propose to build and how many are going to be permitted. As I see it, for instance, if there is a proposal to build one in the North Atlantic region and no State in that area wants to permit the pipeline to come ashore, we would not see any being built there.

Senator JOHNSTON. How many would you say we would need?

General KELLY. Again this would vary on the type and location. But it would appear that you could build about four to eight, something on that order.

Senator JOHNSTON. Four to eight nationwide.

How many of those in the gulf?

General KELLY. We would see two to three as being logical in the gulf.

Senator JOHNSTON. How much throughput in each superport? Is there any limit, practical limit of the amount of throughput you can have in one superport?

General KELLY. There is. You reach the point with a monobuoy system, where additional buoys are not advantageous.

Senator JOHNSTON. You really can't handle more than one ship at a time, can you?

General KELLY. No, sir, I don't believe that is true. At any one buoy you can't, but you could have a cluster of three or four buoys. It is an expandable system.

Senator JOHNSTON. Your pumping system, do you foresee enough pumping capacity to be able to have numerous supertankers all being drained at the same time?

General KELLY. It would be possible. In certain locations the tankers themselves could have the pumping capacity, depending on the length of the pipeline and the size of the pipeline. I would foresee a possibility of having two or three tankers within about 3 miles of one another.

Senator JOHNSTON. Two or three tankers within 3 miles. I would suppose you would have positive navigation controls to avoid collisions between the tankers.

**General KELLY.** This would be one of the situations that we believe would be improved by the utilization of the large tankers. You have fewer ships, you have specific offshore locations and you could establish good navigation systems for them.

**Senator JOHNSTON.** I would hope so. I hope that would pertain also to the shippers and the oyster people who are navigating in those waters, particularly off Louisiana.

What kind of parameters are we talking about of maximum and minimum throughput at a superport?

**General KELLY.** Our best estimate—and industry might not agree with the figure—is that you need a million barrels a day to really be economical.

**Senator JOHNSTON.** What is the anticipated minimum and what is a maximum?

**General KELLY.** I would like to provide that answer for the record, sir. It is such a variable.

[The following information was subsequently received for the record:]

The lower throughput for a monobuoy system is approximately 1 million barrels per day for economic operation. The upper limit would generally be limited by the capacity of onshore facilities for processing and refining, the bing served.

**Senator JOHNSTON.** What is the capacity of the pipeline that terminates at Convent, Louisiana?

**General KELLY.** I don't recall. I can provide that for the record also.

**Senator JOHNSTON.** All right.

[The following information was subsequently received for the record:]

Current capacity is 510,00 barrels per day with ultimate expansion potential pumping and pipeline capacities, the storage facilities and the marketing area to approximately 1,200,000 barrels per day.

**Senator JOHNSTON.** I wish you would. I am interested in determining to what extent the pipeline capacity, existing pipeline capacity, what kind of limit that will put on throughput of a superport. And what additional pipelines would have to be built, particularly in these various locations.

You studied eight locations off the gulf. Which one of those in your judgment was the best?

**General KELLY.** We didn't make any conclusion as to individual ports. We looked at them in systems and truthfully there were several systems that were very close from an economic viewpoint. I am sure the variables in our assumptions would override some of the differential in alternative systems. We found basically that the Mobile-Pascagoula, Bayou Lafourch and Freeport appeared to be logical spots, and also Corpus Christi possibly. In other words, those four appeared to be the more logical ones.

**Senator JOHNSTON.** Why is that? What do you look for in a superport location? One thing I am sure is the number of miles offshore.

**General KELLY.** I was considering transportation economics when I spoke there. In the report we also rank alternatives on an environmental basis and with respect to economic and social effects.

Senator JOHNSTON. Do you have copies of that report?

General KELLY. Yes, sir, copies of each regional study have been provided to the Committee. Before me is just the summary volume. All together there are about 13 volumes.

Senator JOHNSTON. I would like to get copies of those.

General KELLY. The reports do give you the environmental ranking, the social and economic ranking, projections on area development, and data on the throughput problem.

General KELLY. Yes, sir. There are obviously many assumptions that go into this type of study. For instance, if you are going to expand your refinery capacity, you make an assumption as to where new refineries might be built. That has a tremendous impact on the economics of the port system. So the study then moved the refineries to different locations to see what the impact was.

Senator JOHNSTON. What are the main pollutants put out by refineries?

General KELLY. You have an air pollution problem and heavy water use requirements.

Senator JOHNSTON. I know you have air problems.

General KELLY. You get sulfur in the air, though I am not familiar with the particular pollutants.

Senator JOHNSTON. I note on page 6 of your statement, General, you say that overall the effect would be favorable, overall the social and economic impacts would be favorable. Obviously overall is a qualifying statement. Tell me what is unfavorable about a superport.

General KELLY. Well, we would see, first, a rapid influx of people to work, a requirement for schools, road systems, transportation systems, utilities.

Senator JOHNSTON. Where would these people be working chiefly?

General KELLY. We would see a small number, as far as the port goes, and then as the refinery system builds up and the follow-on industries the larger group would be needed.

Senator JOHNSTON. What kind of follow-on industries do you foresee?

General KELLY. I presume you would get into plastics, fertilizers, and chemicals.

Senator JOHNSTON. Most of these are pretty capital-intensive, automated industries, aren't they?

General KELLY. I would think so.

Senator JOHNSTON. And most of these industries are pretty good air polluters themselves, aren't they?

General KELLY. They are historically, yes, sir. Obviously these industries are working now to reduce pollution, but they make heavy demands on the water system and have been heavy air polluters.

Senator JOHNSTON. If you have an area such as Louisiana, which already has a pretty good saturation of pollution, it would strain our air quality down there pretty much, would it not?

General KELLY. Sir, rather than make a general statement, I think it is a problem that must be very closely looked at both by the State and by the permitting agency, for each individual site.

I made a statement that one of the advantages of leaving the existing system in being is the dispersion aspect. Having refineries

located in a more dispersed manner reduces the impact in any given area.

Senator JOHNSON. We have got air pollution, we have requirements for water, we have got schools, roads, et cetera. Now the schools and the roads and that sort of thing would have to be built on a permanent basis; you don't build a road for say 10 years or so, but aren't we really going on the assumption that heavy use of imported oil and superports is a relatively short-term thing as far as big demands are concerned?

We have been operating on the premise in the Interior Committee, or at least Chairman Jackson says we are looking at 1983 as a goal to be energy self-sufficient.

I personally don't think we will make that, but if we shoot at it maybe we can make it in 15 years. By that time it means we won't be using superports that much, doesn't it?

General KELLY. Based on that assumption, that is correct. Our studies don't make that assumption, really. We utilized the more common projections which still show considerable oil imports beyond 1983. Obviously any conclusions we reached are contingent upon the assumptions we make as to the level of imports. But the Corps is not the primary determiner of that kind of estimate. We accept the national estimates of Interior.

Senator JOHNSON. One of the problems here would be if you build all of these schools, roads, et cetera, build them permanently, for a 30-year life, and then the oil dries up, the imported oil, most of it dries up in 10 or 15 years, that is another problem that is created by the superport, isn't it?

General KELLY. Yes, sir, it is a potential problem. If you make the assumption that you are suddenly going to go out of business, it is a problem.

Senator JOHNSON. Right. Of course, the point I am establishing, which we have been talking about here for some days in these hearings, is that having the superport off your shore is a mixed blessing. Along the Atlantic Coast they think the mixture is rather negative. On the Gulf Coast where we have high unemployment and we need the economic impact, most States, at least at this point, think on balance that it is perhaps favorable. At least they are willing to have it in most Gulf States.

But it seems to me after considering everything that these States ought to be entitled to some compensation to put together something, some environmental funds or funds to take care of roads and schools and services, these other things. Doesn't that appear to be a pretty basic justice and equity to you?

General KELLY. I can certainly understand your position on that; yes, sir.

Senator JOHNSON. That means you are in sympathy with it, I am sure.

General KELLY. I am very sympathetic; yes, sir.

Senator JOHNSON. Good. How long would it take to build a superport and to get the gathering system for the oil if we told you to get going today?

General KELLY. I think we have got considerable leadtime built into the permit action. I think it will take about a year to process a permit request. My recollection is that the industry doesn't believe they could have a deep port operational until about 1977. So we are talking about 4 years.

Senator JOHNSTON. 1977, from the time of enactment of legislation?

General KELLY. Yes, sir. I think that is probably a pretty reasonable estimate, 4 years. That is probably optimistic.

Senator JOHNSTON. I see. I believe that is all I have.

Senator BIDEN. I have some questions, General, if I may.

First of all, in your testimony and the testimony of just about everyone else that has come before us, we talk about the economic advantages of supertankers and superports. That is viewed in a number of ways, the economics of how much it costs per gallon to transfer it, to the economic advantage which may inure to a State as a consequence of development in that State.

One of the things that concerns me—and which will come as no surprise to you, and a good portion of my questioning will be very parochial, is the affects of developing deepwater ports on the east coast, the Northeast particularly, and more specifically, Delaware and New Jersey.

As you know, in Delaware and New Jersey, a significant part of our State economies are a consequence of our recreational facilities along the shore. Has there been a study done that would indicate, number one, the economic advantage that exists now as a consequence of, for example, in Delaware, of all our summer-related beach and shoreline activities, and what potential damage could be expected as a consequence of constructing of a superport? Has that kind of study been done?

General KELLY. In the studies we evaluated and state very clearly what the economic advantages are. The figure that comes to mind is about \$300 million a year as the benefit accruing from the beach resource. The potential damage was not identified in dollar figures.

We see the basic question not being necessarily deep port versus conventional port, but really how much crude are you going to import into a given area? That factor is really the greatest determinant of how great the pollution problem would be.

Senator BIDEN. Isn't it true, though, if you develop a deepwater port facility that it is going to, in effect, act estimate the crude oil import requirements for the Northeast, not just Delaware or New Jersey, but the entire Northeast, and you give a figure of 1.3 million—for the major portion of oil imports to this region? Right now that oil is coming in from several, if not tens of diverse spots. It is coming up to Delaware, coming into New York and up I guess the Hudson, it is coming up around Massachusetts, it is coming in in Maine, it is coming in all over, all along the east coast, from a number of different spots in smaller quantities, larger numbers of ships.

But isn't it true that once that superport is built, or several superports are built, that will concentrate the area in which oil imports

will be brought into the Northeast so that although there may be 500,000 barrels a day coming up the Delaware River now, if you put that port in Delaware Bay or off Delaware's coast or the New Jersey Coast, of the 1.3 million, 1 million of that will be coming in at that one spot. The economics, as I understand it, would dictate that such development is only feasible if in fact the pipeline from that facility and the attendant refining capacity that goes along with that pipeline are nearby?

In short, it makes no sense to go off Big Stone Beach, according to your figures, run a pipeline through New Jersey, across the Hudson, up into Massachusetts to a refinery, does it?

General KELLY. That is correct.

Senator BIDEN. So by the very fact we say we are going to construct a deepwater port insuring that the area near that port—when we say near, we can argue whether that means 2 miles or 80 miles going across New Jersey to Philadelphia—that the area near that port is going to have to increase its present capacity to refine oil, number one, and number two, it is going to become the point from which the rest of the Northeast, or a significant portion of the remainder of the Northeast, has their energy needs met.

Is that correct?

General KELLY. Well; yes, sir; but that is really not a great change. Right now the crude oil for all intents and purposes comes in on the east coast in two locations, along the Raritan Bay and the Delaware Bay, and that in effect triggers the economics of the deep port because the deep port logically should be located to support the existing refineries.

Senator BIDEN. Let's talk about that for a minute.

Now, we talked about the source of the crude which we are going to be relying on, not just in the Northeast, but nationally, the source of imported crude we will be relying on. As I understand it, that crude comes primarily from the Persian Gulf area and, I guess, North Africa. But primarily, the Persian Gulf is going to be the area upon which we will have the most heavy reliance for the importation of crude oil. Is that correct?

General KELLY. That would be our estimate; yes, sir.

Senator BIDEN. Also, it is my understanding, and I have raised this question before in these hearings, and it is going to loog repetitious in the record, but I think it is important so I understand this situation, that the majority of that crude which is gong to be imported from the Persian Gulf area is what is referred to in the trade as sour crude, as opposed to sweet crude. It has a higher sulfur content. Everyone agrees it is a different breed of cat than we are relying on right now.

You are familiar with my State. You have put up with an awful lot of public hearings there, and I think you are to be commended for your patience, and some of us aren't always rational when we are discussing these questions with you in Delaware. But the type of refinery we are going to need, as I understand it, is the kind we have in Delaware now, which is the Getty Oil plant.

I am told, for example, when Shell Oil wanted to come in and Senator Long, said the oil companies wanted to own everything,

Senator, my State is a small State and Shell came in and bought up one-fifteenth of the whole county, and there are only three counties in the State. But, anyway, they bought up a significant portion of the State. And everyone was saying well, Shell, look, we don't want you in because you are going to be a dirty polluter like Getty and just come down the road and look at Getty, and you don't have to be a scientist at all to realize what is happening there. And Shell comes back and legitimately says well, you know, those guys are different than we are, and I thought well, I didn't realize that, but then they went on to explain the difference and it seemed to me a reasonable difference at the time. I almost bought it all.

They said the reason why they are polluting so darn much is because they are refining sour crude and the reason they are refining sour crude is because old John Paul, whatever his name is, the old dud, he went out and bought up all the holdings that were sour crude holdings, so that is where they are making their money. Okay, they said, but we are not going to do that. We are a sweet outfit. We will be refining sweet crude. So we won't have the problems they have. Consequently you won't have the pollution.

As a matter of fact, they even went on to say not only will we not pollute at all, but our refinery will look like a school complex.

It was nice to know that.

But now I hear in the last year, everything building up, that as a practical matter there just ain't going to be no sweet crude on the east coast, practically speaking, that any increased refining capacity will have to be the increased capacity to refine sour crude.

So, okay. So far we are on target. Now your study is premised on the position that it is only economically feasible to have deep-water ports in the Northeast, in the suggested spots, so let's narrow it down to off Delaware and off New Jersey, if in fact the refining capacity is there. If there is no capacity to refine, there is no good reason to bring it in there. Right?

General KELLY. Right.

Senator BIDEN. So the feasibility of these ports depends on the ability of U.S. refiners to process the Persian Gulf sour crude.

Now, if the Middle Atlantic refineries are unable to process the crude in a manner consistent with the environmental standards that were set up, wouldn't this eliminate the feasibility of any port off the Northeast?

General KELLY. It would tend to eliminate the feasibility of any port. It would tend to eliminate the feasibility of importing sour crude.

Senator BIDEN. Okay. I mean is the same capacity lacking everywhere else in the country?

General KELLY. No, sir. But if you are going to consume a product, someone has to refine it. If you presume it is refined in the United States, you are going to have to find a way to refine this sour crude in an environmentally acceptable manner.

Senator BIDEN. To back up, right now according to—there were some of us who took what was considered to be not a very well thought out position that maybe the energy crisis wasn't as much of a crisis as it appeared to be. There were some young skeptics

down here that thought maybe there was a little bit of jockeying going on.

Well, that fear was allayed by having pointed out to us to me, that there is a serious problem because we are now, on the East Coast at least, operating refineries right up to capacity. We are refining. Our refineries are running 95 or 97 or 90-some percent of capacity. So that right now, based on the amount of crude that is being imported, it is my understanding, if I am to believe, and I always do believe what the oil companies tell me, that we are at the limit now. You know, we couldn't import any more crude, practically speaking, unless we increase the refining capacity.

Is that the case in the Gulf area and the West Coast? Are they as full up, so to speak, on refining capacity as we are?

General KELLY. I know some time ago they were not. My understanding is that they are now refining pretty much to capacity. But I am not the best source for that information.

Senator BIRNEX. It is a little unfair. I am taking you out of your bailiwick. I was just pursuing it because of your comment that this is the case all over.

General KELLY. My point, sir, is let's assume you never build another refinery in the North Atlantic. Ultimately you are still going to have to put this sour crude, into some U.S. refineries.

So I think we are facing the problem of how to refine the sour crude. If we don't do it in the North Atlantic, we will have to face the pollution problem in other locations if you accept the assumptions that we have made regarding imports. First, you are going to consume a certain amount of product; therefore you have to import a certain amount of crude; and the major source of supply logically comes from one general location. Pollution control-processing problems will be the same all over the country.

Senator BIRNEX. I am informed by staff, as we have been informed earlier, that without some major modifications of the existing refineries now processing sweet crude, they could not tomorrow begin to refine sour crude.

I don't want to beat this to death, but I think one of the important things about your study and about this bill are the findings of fact in effect from which we start.

You know you can build just about any logical facility, depending on from whence you start, what your basic premise is. The basic premises you start with and the bill before this subcommittee starts with, are things that really tend to eliminate any real argument that Joe Biden could later have about not having a port constructed.

How could I say that we don't want a facility off the coast of Delaware if in fact I accept as U.S. Senator the following findings of fact: It is in the national interest to use larger vessels and the development of deepwater facilities to serve them; such deepwater ports protect the environment and citizens from pollution and other dangers caused by increased traffic at onshore facilities; construction and operation of deepwater ports under this act is a reasonable use of the high seas under international law; such construction and operation should be subject to Federal licensing regulations,

coordinated with the Outer Continental Shelf Lands Act, and it goes on to other assumptions.

So if I am willing to say as a U.S. Senator that it is in the national interest to construct this, that we are going to have to rely on these other facilities, how in the devil can I turn around and say at a later date that all of these other questions raised by my friends from Louisiana, Senator Metcalf and my other colleagues and other witnesses, how can we even raise those points?

We are almost precluded from saying there is a monopolistic problem. We are almost precluded from saying there are environmental problems. We are almost precluded from saying that we want to maintain a Clean Air and Clean Water Act, because, you know, I am less experienced than anyone down here, but I will tell you what: Were I a gambling man I would be willing to give you 8 to 5 that from the time these deepwater facilities are constructed, if in fact they are, that the next hearings being conducted by the subcommittee of which I am a member, the Air and Water Pollution Subcommittee or a panel like this, is going to be us trying to justify, in the national interest, the continuation of the Clean Air Act. I believe it will be pointed out to use that we cannot refine sour crude and meet the standards of the act.

So, again, we have accepted—it is in the national interest—

Senator Long. Senator, could I respond for just a moment? You are going to be in the same situation the Shell Oil Co. left you in if you do that. Let me explain this to you.

Twenty years ago this Nation was a net exporter of oil and generally speaking it made sense to refine the product in the areas where you produced it. So it was refined in Texas and Louisiana.

The oil that was being produced at that point in Venezuela could more economically be refined at places like Bayonne, N.J., because it made no sense to move it by ship to one point in the United States and pick it up and move it a second time to get it to the point of destination.

Now, the same logic would indicate that if the oil companies had their way, they would put 80 percent of the refineries on the eastern seaboard today because the oil is coming from Nigeria, Venezuela, and the Persian Gulf.

The areas which I have the honor to represent are depleting domestic reserve areas. They are declining in their capacity.

The oil companies, if they could, would be shifting their refinery capability to the eastern seaboard because, from their point of view, it is cheaper to take the oil directly to New Jersey and the New York area if they can than it is to haul it to the gulf and then move either by pipeline or by ship into your area.

Now, if New Jersey and Delaware and other States in that area, Connecticut, Rhode Island, will give them the permits, they will just refine a great deal of oil in those areas.

To say, well, they must do it anyhow, is just to escape the point. For example, just recently there was a decision made to build a major plant to make gas out of oil near Donaldsonville. The reason it is being built there is because they couldn't get a permit to build that plant in New Jersey. So it is being built in our area.

We talk about what a good fortune that was to put some good jobs in Louisiana, but the fact of the matter is we have the jobs because New Jersey wouldn't have them. We know that and they know that, and while we have all this celebration about the plant that went in there, it is just because this is traditionally an oil refining area, an oil producing area, and we are accustomed to living with the problems.

I can fully understand somebody who has a nice area that doesn't have any air pollution to speak of and hasn't had to contend with the problem of an oil refinery or pipeline or wells and production; I can understand how these people, if they have a choice, would just as soon have something else.

If I could have some of those nice big drug manufacturing firms that I have seen up your way, that seem to clean the atmosphere rather than pollute it, I would prefer to have one. But beggars can't be choosers.

Senator BIDEN. As I said earlier, and I have said on the floor, Senator Long, the people of Delaware have commissioned me to promise you all our oil facilities that you want; any time you want anything like that you are welcome to have it.

Senator LONG. When President Johnson announced the war on poverty, he was speaking in the hills of north Louisiana. Some fellow said, "Have you heard about President Johnson's war on poverty? It means we have to get rid of it, wipe it out, get rid of it completely." He said, "Stop him, that is all we have got left."

Senator BIDEN. General, back to more specific aspects of the act.

I was intrigued to hear you say that it would be your policy not to grant the permit to a State that didn't want a pipe coming on shore. I am not quite sure what that means. Does that mean it is your policy now or would you be willing to have it written into the act; written in as a matter of law it would say that if a State didn't want that pipeline coming to shore that no permit could be granted?

I mean if it is your policy already—

General KELLY. Obviously, as you recognize, the policy is less binding than a law. I would say we would prefer not to have it in the law. I think that the veto question, which is apparently your basic question, is one which is not primarily an engineering problem. It is one of commerce and could be a national security problem. If, in the extreme, no State would permit a deep water port facility to be developed.

This would be one reason we would not like to have a State veto power in the bill, for if every coastal State denied access to off-shore crude petroleum handling facilities, the Federal Government, would feel a certain responsibility. And this, although it may be an outside possibility, is one which should not be in the law.

Senator BIDEN. Your study narrows down in the east coast, two spots, New Jersey and Delaware primarily, and other than having someone come up, one of my Sussex County farmers come up and put a shotgun at your temple or something, could it be made any clearer to you that Delaware and New Jersey don't want the port? Is there anything else that could be done?

We have had the Governors of both States, in both administrations, Senators from both States, Congressmen from both States, local officials from both States, through Democrat and Republican, through change of administration, indicate they don't want a facility.

You say it is your policy not to go with a place where they don't want one. And I believe you mean that. But yet then you come down with a recommendation as to two places when Delaware and New Jersey have made it explicitly clear short of, you know, another Fort Sumter and seceding from the Union, that they don't want that facility or any such facility.

Isn't it really true that you guys are between the rock and the hard spots? As a practical matter, if a facility is going to go up that way, it is going to go up in either Delaware or New Jersey?

General KELLY. In that specific area, as far as the region goes, yes, sir. Although there are changing views. Apparently we have gotten indications of interest in Maine now. Some people who were much against are now thinking that perhaps it is not bad. This is a change in view.

So if you count that the North Atlantic region—

Senator BIDEN. We would be willing to count it. On what basis would you recommend that if a deepwater port be built that it be privately build?

I don't quite understand why that recommendation, why privately built as opposed to involvement of the government in some way, Federal, State or local?

General KELLY. Two reasons, I think, sir. First, we say no reason to change our current position. The Federal Government, particularly the corps, is not involved in building or operating ports. We dredge channels to make port facilities accessible. We don't dredge around piers. We saw nothing which would require us to change, particularly when we found that industry, and some States were interested, in building the facilities. If non-federal funds are available, we came to the conclusion, their use would be acceptable.

Senator BIDEN. Assume for a moment that this committee agreed—and it may very well, I don't know—that it is in the best interests of the environment that we go—and again let's narrow it down to a place where there are a lot of imports, Delaware River, Delaware Bay—and that in the environmental interest, more specifically to prevent oil spills, that is really what we are talking about, when we talk about lightering versus deepwater facilities—it is in the environmental interests of the State to move to a single facility or monobuoy system as opposed to the multilightering that takes place in the open sea or the mouth of the bay.

Now, even if we accept that premise, that on the whole there would be less environmental degradation as a consequence of having a single facility, isn't it true that with the single facility the potential for a single incident, the environmental degradation that could come as a consequence of a single incident, is much greater?

General KELLY. The larger the ship, the greater the chance that a collision could result in a catastrophic situation.

Senator BIDEN. With that in mind, we get to the question of meeting our energy needs, a perspective which really hasn't been ade-

quately addressed. We are now talking about—if you can accept what has been stated—that it is not unrealistic in the near future to anticipate a million deadweight tons, a potential for that kind of ship, and even right now—I thought we had very good cooperation from the oil companies that testified and some captains, keepers of these larger ships—even right now in a 350 deadweight ton tanker it takes something like, if it is traveling at 16 knots, or 15 knots, it takes something like  $2\frac{1}{2}$  miles and 20-some minutes, for it to stop.

If we move to a million ton tanker in the Delaware Bay—I live way up the Delaware, not on the Delaware, but much beyond Wilmington, which is like 90 miles—a million ton tanker in the bay might end up in my living room by the time it stops if there is a miscalculation. But we are talking about eliminating morass that exists now as a consequence of all of the smaller ships.

If our energy demands continue as projected, and I see nothing in the near future that has been done to date that indicates the American people are going to do anything other than continue to try to satiate their insatiable needs for energy, it seems to me we are going to have a heck of a lot of big tankers roaming around off of the place wherever these facilities happen to be. Although right now one supertanker or five supertankers may be easier to manage than a hundred smaller tankers that are lightered, nothing has been shown to me that 15 years down the road, if the need continues, the appetite grows, that we are not going to be replacing 100 small ones with 80 big ones. To navigationally move around with a million deadweight tanker is like the difference between negotiating a motorcycle and a Rolls-Royce in a parking space, I mean you know I guess it is Exxon or one of them shows how these guys get in a big tanker and learn how to navigate these things.

So I really don't understand how we could be so conclusive about the environmental safety aspects from the long-range picture of importing and moving up in tankers or in tonnage.

General KELLY. Well, there are two aspects. One, I think as we go to the larger ships, we are going to tend to go off shore more than into the ports. And, two, in using your analogy of 80 large ships and compared to the present hundred smaller, you have to extrapolate that hundred up to a thousand.

Senator BIDEN. Right.

General KELLY. So we have a sizable problem there, too. But I don't want to leave the impression that I think this will solve everybody's problems. There are going to be problems, and they are going to have to be studied very carefully and attacked very hard as far as navigation and safety and control aspects.

Senator BIDEN. I have just a few more questions. I am sorry I am dragging this out so long. I will submit the rest of the questions in writing to you, if I may.

In the corps report it says "The impact (of an oil spill in the Delaware Bay) on the Bay's marshes, shellfish and other biological communities would be more significant than at Raritan."

Now in the draft environmental statement that was issued at the public hearing at Rehobeth, the same statement appeared except

the word disastrous was used instead of more significant than at Raritan.

Do both of these mean the same thing? Is disastrous the same as more significant?

General KELLY. Obviously it is not. I think it is relative. If within the Bay, in an unconfined manner, you had a massive spill and it all went to the shores, it could be disastrous.

If you have such a spill under controlled conditions—with containment facilities—it would be less than a disaster then. But it could have a tremendous impact on the economy of the area.

Senator BIDEN. Every place else we talked about the construction of a facility—I shouldn't say every place—but we have been talking in terms up to now of being up to 21 or 22 miles offshore, the rationale there being that if in fact there was a disaster or a serious spill, I believe one explanation was that the spill would be diffused to the point where many of the most toxic aspects of the spill would be out of it by the time it hit the shore, hit the marshes or whatever.

Now the Delaware Bay is fairly big, but my goodness, it is not very big at all relatively speaking. And doesn't that in return counter to this proposal to build a part inside the bay rather than outside? What rationale is there from an environmental standpoint of being in?

General KELLY. There are, I think, really two views; one being that if you have the facility in calmer waters, you can contain it better. You can establish better controls and any spill that occurs will be handled better. The other view would say that the farther out you go, the better off you are. Both of these are true. But which one is better, that is where you have the two different views.

Senator BIDEN. Don't we get down to the real simple question that I keep coming back to here, it seems to me no matter how we cut this, we come down to a question of impact and intensity of impact.

For example, I would agree if I lived in New Jersey, I would rather have it in the bay, because it could be contained more easily, I think just by geography. There is less amount of space for it to get out into the ocean and it would probably affect fewer square miles and fewer people.

But isn't it true that that which it would affect it would inundate? I mean it would be all over but the shouting if there was a major spill there.

Granted it may not affect as many people along the shore, but where it affected it, it would really affect it.

General KELLY. Yes. I think so.

Senator BIDEN. Well, I think I will hold up the rest of these questions. I really appreciate your cooperation and I think you have been candid about this thing. And we especially appreciate that, or I do anyway, because we are getting down to the point now that the decision we are going to make, assuming anybody bothers to adhere to it once it is made, is going to affect an awful lot of people in a very particular area and I guess if you accept the findings of fact, it is going to affect the national interest.

So the more candid testimony we have, the better equipped we will be to make that kind of decision. Do you have any further questions?

Senator JOHNSTON. Just briefly, General.

Looking at this report on the gulf coast deepwater port facilities, some of it is a little hard to understand on a quick reading, but looking at your summary of alternatives on table 36, on page 110, and the various alternatives you have in mind there, it looks like all of them included, at least two, sometimes four, superports, and it averages about three on your alternatives.

General KELLY. Yes, sir.

Senator JOHNSTON. Would I take that to mean that you are really planning on a minimum of two to meet the needs in the gulf coast, a maximum of four, and a probability of three?

General KELLY. I would say that is a valid analysis if you remember that this is premised on assumptions as to the level of imports, which may not be that accurate as time goes on.

Senator JOHNSTON. On the availability of the product, you mean?

General KELLY. Yes, sir, or the demands for the product. Obviously this can be impacted upon by what happens in the North Atlantic.

Senator JOHNSTON. Right. Also I notice that virtually all of these alternatives have a location off Louisiana, either Bayou Lafourche, or Southwest Pass. Going back to your testimony a little earlier, I believe you stated that of the four locations, one, I believe Bayou Lafourche was considered to be one of the top three.

Is there anything that can be said for the necessity of having one of the superports located in a particular zone like off Louisiana or if the top two were Mobile-Pascagoula and Freeport, or excuse me, let me back up. Pensacola, Louisiana, and Panaman City, fairly close together, could you just as well put them there all in one State, all relatively close together, where you must have dispersion along the gulf coast?

General KELLY. We think environmentally it would be advantageous to have some dispersion, especially from the landside impact point of view.

Senator JOHNSTON. What I am trying to get at is for those people in my State who want the superport, what kind of chance they have to get it, and for those who don't want it, what kind of chance they have to avoid it. It looks to me like the chances of getting it are very good, the chances of avoiding it not so good, off Louisiana. Would that be a fairly valid statement?

General KELLY. This is a difficult question to answer, sir, because it presupposes a number of things occurring.

I would say that the chances that the applicants will make an early effort to get a permit off Louisiana is very good. That is about as far as I think I could carry it because we still have the bill under consideration, and there is a question whether or not the authority to license would exist. But the first part I think is a very valid assumption—that there would be, an early application for some site off Louisiana.

Senator BIDEN. If the Senator would yield for an editorial comment, I think the chances of you having anything to say about the chances after this bill passes are no chance at all.

Senator JOHNSTON. I believe that is all I have. Thank you very much, General.

Senator BIDEN. Unfortunately Senator Johnston reminded me of a few other questions.

We talk about oil for deepwater facilities. How about bulk cargo?

Senator JOHNSTON. If I may interrupt to respond to a comment a minute ago, that our chances of having anything to say about the location of superports if this bill passed in its present form, I think that is probably correct. But I would hope that the bill does not pass in its present form, and I think the Senator from Delaware has some excellent ideas which we concur with in Louisiana, and that is that the adjacent State ought to have a significant say about whether you are going to have a superport, and once you have one, what kind of control you have over that superport.

Senator BIDEN. As the Senator knows, just coincidentally, I happen to have a bill in on this subject, and I look to you for the possibility of seeing whether you could see your way clear to support part of it anyway.

To get back to the bulk commodities—

General KELLY. Yes, sir. We did not do much work in the bulk commodity area. We did an initial study which showed the economics were not too promising, and in the interest of time, we really just pushed it off to the side. Based on a rather limited look, we found the economics just don't appear to justify the deepport facilities for dry bulk commodities. We would say deepening of certain existing ports seems a logical followon to handle larger ships, but not of the same magnitude as supertankers.

Senator BIDEN. You see, that gets me into—and I guess it puts you on the horns of the same dilemma it puts us on—we are saying we are going to go to a monobuoy type system offshore to preclude—and in your statement you mention this—to preclude the more disastrous environmental impact of having to dredge to accommodate the crude oil imports.

What I'm afraid of is we are going to get it coming and going. What will happen is we go with the monobuoy system and we say fine, we are doing that in part because of the environmental impacts of dredging to accommodate supertankers are just too disastrous. Then, further down the line, I'm worried we will say,—just taking your position to its logical conclusion—logical, extreme maybe, and we will dredge to accommodate dry bulk commodities, because the ships are getting bigger too, to carry the bulk commodities. The same rationale—granted they are not as big. I see a gentleman shaking his head no. Maybe that's correct. But as I understand it there are on the drawing boards new vessels which are going to carry larger volumes of bulk commodities, again in the interest of economy, because it is cheaper to get it across the ocean or around the ocean or whatever, and then we are going to be put in the position of saying again it is in the national interest to get

this in at the cheapest possible price to the consumer and we are going to get them both. We will get the Delaware River dredged, and we will get the facility offshore, and if we are going to end up getting it dredged, if it is going to happen, I would rather it get dredged now so the ships go right up and don't have to land in Philadelphia and Markers Hook.

I'm being a little facetious, but let me say my concern is a serious one, that we will end up getting it at both ends. If you want to comment on that, please do.

General KELLY. I would see a kind of a middle ground, sir. The monobuoy really wasn't selected primarily because of the environmental damage caused by dredging. Basically the selection is driven by economy. It also appears to be less damaging than massive dredging would be. If you look at the most of the east coast ports, some right now are at about their limit as far as economic dredging. Some can go to about 55 feet. Beyond that you are in bedrock, and you just don't have the economics to justify major, further work.

So we just don't see that happening. The offshore island, the large fill which could be used both for oil and dry bulk, doesn't appear to be economically justified. The big differences between dry bulk and oil is the rehandling problem.

Senator BIDEN. By rehandling, you mean how you get it from the point at which it is deposited to the point of destination?

General KELLY. Yes, sir.

Senator BIDEN. I recognize that, and I would just hope that when we do make a final policy decision as to how we are going to go in terms of accommodating our crude oil requirement for the Nation in the near future that if, in fact, it is likely that we are going to have to alter our attitude and method of handling dry bulk commodities that come across the sea, they might better be attacked together, in unison, so we don't end up with the worst of both for the wrong reason.

And again I'm not suggesting anything in particular. I'm raising the question. I have an overall concern, General. I have come into these hearings with a prejudice beyond the parochial concern I have, and I admit that parochial concern. But the prejudice is the American people tend not to take action—being a U.S. Senator I epitomize this, and I don't speak for my other colleagues, just for me—we tend not to take action until a crisis situation occurs.

And my big concern is that it is not in our national interest, clearly not in our national interest, to have to rely on foreign sources of crude oil to meet our energy requirements. From an international standpoint, in terms of international relations, our entire foreign policy, it is just a very dangerous position to put ourselves in.

But my concern is that once we accommodate the immediate needs and solve the short-range, 5-, 10-, 20-year problem of energy requirements, the pressures are going to be such that we will not make the maximum amount of investment that is needed to develop the alternate source of energy, that the inertia will be going the other way. It will not be in the interests of those people who are in fact supplying the energy needs by the method we now have de-

cided upon, whatever that happens to be, to develop that new source of energy. And what is going to happen is we are going to reach the Rubicon all over again. We will be standing down the road 20 years from now, having put ourselves in a darn box as a consequence of our short-term strategy.

And assuming Bennett and I are lucky enough to be here, or unfortunate enough to be here, whichever is the case, I turn to Bennett and say, "My God, we have to develop a new source of energy. What are we going to do? How about that 1,000-year supply of coal they talk about, or solar energy," whatever it happens to be.

Again I'm looking at the human side of the question, again with less experience than anybody else in this body. Just by virtue of age I have difficulty matching experience. But that is the prejudice with which I come to this hearing, or these hearings. And it seems to me we just may be solving the long-term problem with a short-term solution that is going to cause more long-term problems.

But I don't have any more questions, and no more speeches either.

Senator JOHNSTON. General, I'm a little concerned as I read about the study on the Southwest Pass, Bayou Lafourche.

Let me read a little bit here. They point out at Southwest Pass that the impact zone would cover over half a million acres, the marshes under the impact zone would cover over a million acres, that ground water supplies in the New Orleans area are generally good; however, some salinity intrusion has occurred due primarily to overpumpage by large industrial complexes and this could further be degraded by development in association with the superport, that pollution loads of the Mississippi River are already high, and associated secondary development in the area could further degrade the river, that productivity of the estuaries and bays for fishing could suffer considerable damage from an oilspill, keeping in mind that we produce over a billion pounds of commercial seafood off the the coast of Louisiana, that Grand Island, the major salt water beach of recreational importance in Louisiana, is within this impact zone and could be seriously affected by an oilspill. Also, the game refuges in the Delta could be damaged by an oilspill passing across the Mississippi River; prevailing winds are generally out of the southeast, which would tend to push an oilspill toward the productive estuaries and bays, currents in the general area around the site would tend to carry an oilspill north to Barataria Bay and east towards the bays and marshes along the Mississippi River.

That is the statement about Southwest Pass. I won't bother to read the one about Bayou Lafourche, except to say it is the same kind of conclusions. They end up there with a reassuring statement that winds in this zone are predominantly onshore.

It is safe to say, based on this, that the corps foresees major danger to the estuaries, to the beaches, to the capacity of producing seafood, of all of these areas along the coast as a result of putting in a superport, do they not?

General KELLY. Sir, we see the potential for considerable damage. That is why we laid out these facts, so people could understand them.

We would see the same or greater potential for damage if you bring in the same quantity of crude in smaller vessel. And so the point—

Senator JOHNSTON. You are not bringing any crude in now to Bayou Lafourche, are you?

General KELLY. That particular site, I don't know, sir. But ultimately, if we make the assumption—and this is of course what our studies are based on—that a given amount of crude is going to be brought into the gulf area, we would say that the threat would be less if they come in the larger ships to offshore ports.

Senator JOHNSTON. That is for the total gulf, but it is focused more on these particular areas.

General KELLY. That's right, sir.

Senator JOHNSTON. I tend to concur with that conclusion, General, both your conclusions that the total effect on the whole gulf area will be less, but the effect on particular areas, Southwest Pass or the Lafourche area is going to be considerably increased.

Part of the function of these hearings is education—not only of the committee members here, but education of the people. In my own case, people in Louisiana. And while we are anxious, or at least the indications are that people in Louisiana are anxious, to have these superports, I would like for the people there to understand the potential dangers and go into this thing with their eyes wide open.

I also want the other members of the committee to know—I know Senator Biden knows—that this is not the great bonanza that some of the witnesses have said it is, that it carries substantial risks and dangers which call, in my judgment, for some kind of compensation, some kind of fund to take care of the potential danger.

What do we do if we lose the fishing industry and recreational industry in south Louisiana? We need protection for that.

That is my absolute last question.

Senator BIDEN. General, you have been great. We really appreciate it. I know I and probably other members of the committee will submit some questions in writing to you if we may.

General KELLY. Thank you very much, Mr. Chairman.

Senator BIDEN. Thank you. I have been informed that there will be a rollcall vote in the Senate at noon and the witness list indicates that a three-person panel would be next up.

I suggest, with the permission of the panel, that we move on—and again this seems very parochial, but it really isn't—that we move to Dr. Gaither, who has a relatively short statement, as I understand it, and Doctor, I warn you ahead of time that there may be an interruption for 10 or 15 minutes and hopefully we can get your statement on and get you off between now and 12:30 or 1 p.m., and then move to the panel.

What we will do, with the indulgence of the witnesses, and I realize some have come from out of town at their own expense to testify, if not all, the vote will be at noon, Doctor, we can probably get your statement in before then. We don't have to leave right at noon, but we wouldn't be able to get back until 12:15 or 12:20, so

what we will do is, once we leave for the vote, adjourn until 1 p.m., so anyone who wants to catch a quick lunch, and be back here at 1 p.m., to finish up questioning you.

So if that is agreeable, Doctor, would you proceed?

**STATEMENT OF DR. WILLIAM G. GAITHER, DEAN, COLLEGE OF MARINE STUDIES AT THE UNIVERSITY OF DELAWARE**

Dr. GAITHER. Thank you, Mr. Chairman, committee members. My name is William Gaither, Dean of the College of Marine Studies at the University of Delaware. I am appearing before you today as the chairman of the Delaware Bay Oil Transport Committee at the request of Hon. Joseph R. Biden, Senator from Delaware.

My prepared comments are about 15 minutes in length if I present them fully. Would you like me to pare this back to any given amount of time?

Senator BIDEN. Whatever is most convenient to you, realizing in another 15 minutes, you will be interrupted.

Dr. GAITHER. Let me try to put in the key points as I see it here, and put the whole statement in the record.

Senator BIDEN. Without objection, that will be done.

Dr. GAITHER. Thank you.

My purpose is to relate to you the charge to our Delaware Bay Oil Transport Committee, its investigations, conclusions, and recommendations.

The Delaware Bay Oil Transport Committee was appointed by Gov. Russel W. Peterson on September 27, 1971, in response to the legislative request enunciated in House Joint Resolution 18. The essence of the charge to the committee was to:

Study the logistics of transport of oil to and from Delaware River and Bay port facilities and to prepare within one year a recommendation for developing and operating oil terminal facilities that would provide for much increased protection from spills and thereby safeguard our Coastal Zone and its recreational potential.

Delaware is unique in that it now has a major deepwater terminal located in the lower bay where lightering of large crude oil tankers regularly takes place. It has no fixed facilities but rather is a designated anchorage area marked by buoys.

The committee interpreted this charge in a statement of work which has in turn incorporated into a request for proposal. Proposals were solicited from nationally recognized consulting firms with known competence in this area. Based on the fee proposed by the selected consultant, the legislature provided an appropriation of \$130,000 to carry out the work of the committee.

The consultant, working closely with the committee, conducted a systematic evaluation of the following factors:

First, an examination was made of the present status of oil transport in the Delaware Bay and River. This included an examination of refineries, river traffic, existing lightering operations in the lower bay, other methods to bring crude oil into the Delaware Valley, the probability of oil spills, and cleanup responsibility.

Second, the committee examined future crude oil requirements. This included energy demand projections for the United States, crude oil import estimates for the United States, and the world crude oil transportation system.

Third, we examined alternatives available to Delaware. These included:

1. Stop all lightering in the bay.
2. Allow lightering to continue.
3. Concur with the construction of a deepwater terminal in Delaware waters.
4. Establish a means to develop and control a terminal in Delaware waters.
5. Encourage the construction and operation of terminals and refining capability remote from Delaware.

Next, the committee identified and examined alternative petroleum transfer systems which would increase the safety of oil transport in Delaware Bay. Twenty-one separate system options resulted. For the purpose of evaluation, these 21 options were compared, using the following criteria: (a) Operational factors, (b) environmental considerations, (c) economic factors, (d) legal considerations, (e) national defense, and (f) regional economic considerations.

Of the 21 options identified initially, 12 were selected for detailed analysis. From this analysis came the principal conclusions of the reports. In reaching these conclusions, it was the committee's purpose to represent the best interests of Delaware citizens and to be responsible to the legislative charge to the committee enunciated in House Joint Resolution 18.

First, two basic conclusions emerged which established the framework for the other conclusions which followed. These basic conclusions were:

1. Delaware can bring about the development and operation of oil terminal facilities that would provide for much increased protection from spills under State of Delaware control. This can be most readily accomplished within the boundaries of the State.
2. If Delaware chooses to forbid oil transfer within its boundaries, it will probably have little or no voice in the alternate methods selected by the petroleum companies to supply the Delaware Valley refineries. While some alternatives which the companies might select would be safer than a terminal in Delaware waters, other solutions would be less safe.

Next, I will outline several of the more significant conclusions reached by the committee. Further details and supporting material are presented in the summary report dated January 15, 1973, which is attached to this statement for your committee's information and records.

1. Delaware could attempt to stop all lightering in the bay. However, it is not clear that this could be accomplished unilaterally by the State.
2. Delaware could accept continued lightering, but impose certain specified safeguards and inspection to insure maximum safety of operation. The committee did not favor this as a long-term solution because, (A) lightering is intrinsically less safe than offloading

tankers in a properly equipped terminal; and (B) lightering involves both increased river traffic and several more cargo transfer operations to both lighters and relinery docks for each arriving tanker.

3. The safety of oil transport can be increased by transferring oil directly from deep-draft tankers into a pipeline to be pumped directly to the refineries.

4. From an operational point of view, there are no clear and compelling reasons to favor an in-bay terminal over the NADOT-type terminal proposed by the Maritime Administration to be located 8 miles outside of the bay. The factor which favors an in-bay site is the sheltered water. The counter argument—to the in-bay terminal—is the longer approach channel and the potentially greater environmental risk associated with regular spills or a collision which would release crude oil in the bay.

5. The optimum environmental solution from Delaware's point of view, to increase the safety of petroleum transport in Delaware Bay, is to eliminate as much of the petroleum traffic as possible and to make as safe as possible that petroleum traffic which remains.

This can be accomplished by at least two methods. First, a deep-water terminal of the NADOT type could be located off New York Harbor or the upper New Jersey coast to supply Delaware Valley refinery needs by pipeline across New Jersey from the north or east. This would essentially eliminate lightering in the lower bay.

A second method to achieve the goal of eliminating crude oil shipment and transfer in Delaware Bay can be accomplished, in part, by encouraging the development of transshipment terminals in remote locations such as Canada or the Bahamas. This would reduce lightering in the lower bay.

It would not, however, reduce ship traffic in the estuary to the refineries as small or shallow draft ships from foreign transshipment ports would still enter the bay with crude oil. Also, if Delaware Valley requirements for refined products are met by foreign refineries, product ship traffic would no doubt increase.

While our committee felt that either of these two solutions would be desirable since they would reduce or remove hazardous operations from Delaware Bay, the State has little ability to make either come to pass. Accordingly, the committee concentrated its attention on those solutions which both increase the safety of petroleum transfer operations in the bay and which are also within the power of the State to put into effect.

6. The committee believed that the most serious consideration, from Delaware's point of view, if a deepwater port is built in or near Delaware Bay, is the potential for uncontrolled development of refineries and other heavy industry in the coastal zone. It did not however, believe that any greater adverse effects than now exist would necessarily accrue to the State from a well designed and operated petroleum transfer facility in Delaware waters since extensive crude oil transfer operations are now carried out near Big Stone Beach in the lower bay.

7. Finally, from an economic point of view, our studies showed that the crude oil transportation costs of a terminal in the bay which could accommodate 250,000 d.w.t. tankers would be virtually

the same as a NADOT type terminal outside the bay which could accommodate 326,000 d.w.t. tankers.

Further, the petroleum companies can realize lower transportation cost yet if they bring 400,000 to 500,000 d.w.t. tankers from the Middle East into the Bahamas and transship crude oil to east coast refineries.

Based on these conclusions, which are detailed and amplified in our Summary Report dated January 15, 1973, the following recommendations were made. The first three deal with the State's reaction to the present situation, and the last two are concerned with longer term actions.

1. The committee recommends that the State of Delaware adopt and maintain the strongest possible prohibition against any new oil refineries in Delaware.

2. The committee recommends the immediate establishment of a complete program for the regulation of petroleum transfer operations conducted within Delaware's jurisdiction.

3. The committee recommends that appropriate steps be taken to alter the traditional limited liability and standards of liability with respect to damages caused by spilled oil so as to provide an adequate remedy to private property owners.

4. The committee believes that the matter of petroleum requirements and the possible need for a terminal is a regional problem, and, further, that Delaware's elected leaders should take the initiative of exploring with the States of New Jersey and New York the feasibility of constructing a terminal along their respective coastlines which would serve the regional refineries by pipeline and thereby reduce the risks inherent in petroleum traffic in the Delaware River and region.

If, in the last resort, it is proven to Delaware's satisfaction that no adequate alternate location is available, and it is demonstrated that the petroleum river traffic is increasing beyond safe limits, the committee recommends that increased safety of oil transport can be achieved by the construction and operation of a transfer terminal in the bay with a pipeline to the refineries, as opposed to the extensive expansion of lightering in the bay.

Should the conditions described above in this recommendation be met, the committee recommends that a Delaware authority be created to:

One, serve as agent for the State of Delaware to consider proposals for the construction and operation of petroleum transfer facilities in Delaware Bay or coastal waters adjacent to Delaware Bay, and,

Two, plan, finance, construct, operate, and maintain such petroleum transfer facilities.

I should say at this point when we speak of a transfer terminal, we are speaking of a totally enclosed transfer operation with fixed facilities, including automatic safety equipment and operational safeguards, as well as navigational traffic control.

Senator BROWN. You are not talking about what is referred to as the monobuoy system when you talk about a terminal.

Dr. GAITHER. No, sir.

The committee recommends that a national plan be developed for the location and defense of deepwater terminals and new refinery complexes which will minimize the vulnerability of petroleum transportation and refining activities in time of war.

Based on these recommendations, provision should be made in federal legislation to provide a meaningful way for States which are affected by a deepwater terminal to participate in the conception, design, operation, and removal of a terminal built in their region. By this, I mean that offering review and approval to the affected States may not be sufficient.

Even this is not provided in S. 1751 but is provided, in part, in S. 1558 and S. 1316. Incentive should be provided in Federal legislation to encourage States to form regional authorities for the specific purpose of developing and operating deepwater ports. In this way, the affected States could plan the most suitable system of offshore and onshore terminal facilities as well as overland transportation systems to serve their particular regional needs.

Financial incentives could also be provided in such forms as tax exemption and redistribution of operating revenues to participating States in proportion to their investment and/or risk.

This, Mr. Chairman, concludes my prepared statement. I will be pleased to answer any questions you may have.

Senator Biden. Thank you very much, Doctor.

We are going to have to go vote now and adjourn until 1 p.m. But I know some of the questions which my colleagues, Senator Johnston, will have. You are the first one to raise something he has been talking about for some time, and that is a State participating not only in decisions concerning what type of facility, but participating in the revenues in some way.

And you are also the first one. I think, that has mentioned anything about a method of reparation for damage done to whomever happens to be damaged as a consequence of what seems to be inevitable.

So I'm sure we will have a number of questions for you. I have at least 10 or 12 based on your statement. I would like to adjourn now until 1 p.m., at which time we will come back with Dr. Gaither and then proceed to the panel, and at that point go to Mr. Taggart, president of the Sea Transfer System, Inc., Fairfax, Va.

#### AFTERNOON SESSION

Senator BIDEN. The hearing will come to order.

Doctor, I apologize for being late. We were informed there was going to be a vote on the highway bill at 1 o'clock, and we sat on the Floor ready to vote at 1 o'clock and they extended the time of the vote until 1:55.

Senator Johnston is on his way.

If I am correct in my recollection, you had finished your prepared statement and are ready for some questions.

Dr. GAITHER. Yes, indeed.

Senator BIDEN. Doctor, one of the things that seems to be at the basis of your report which was done at the request of the gover-

nor's office of the State of Delaware seems to be that the conclusions which you have reached are in part based on, or in part at least a consequence of a distrust of either the oil companies, the independent agencies of the Federal Government or any one other than the State, because you keep talking about the control.

I believe at one point in your statement you said although there might be some safer method, other than construction inside of Delaware Bay of the type of facility which you suggested, there is no assurance of that, so it is in the best interests of the State to do it themselves to insure they at least know what is being done.

Am I correct in assessing that there is a distrust for whomever else might construct the facility?

Dr. GAITHER. Possibly in one sense. Delaware has a unique situation at the present time and that is that there is a major deepwater terminal in Delaware Bay right now; it just has no facilities; it is the lightering operation that goes on off Big Stone Beach. As a consequence, within the framework of the charge to the committee and that is to make a recommendation for developing and operating oil terminal facilities that would provide for much increased protection from spills, we felt we were constrained to look at this from Delaware's point of view, and for that reason we had very specific interests of the State at heart and we also had a setting, as a result of this terminal activity that goes on now, that made us feel that the only way we could be assured that Delaware's interests would be respected would be to have a controlling hand, if you will, in determining what the solution to the present problem would be.

So it was in that positive sense that we stated that.

Senator BIDEN. Now there is, to paraphrase you, a terminal without a terminal in the bay now? There is a good deal of lightering going on in the bay. I assume the bulk of that is crude oil?

Dr. GAITHER. Yes.

Senator BIDEN. That is not a refined product?

Dr. GAITHER. No.

Senator BIDEN. And that crude oil is going to one refinery in Delaware, the majority of the crude though is going to the Marcus Hook and Philadelphia refineries.

Is that correct?

Dr. GAITHER. Yes.

Senator BIDEN. Now if in fact the recommendation for construction of a terminal—I am going to use the terminal and monobuoy system to mean two different things—in the bay was acceded to, either by the State or whomever would construct it, independent conglomerate of people or whatever, isn't it true that it would attract additional crude oil into the area beyond what the present requirements and needs for the area are?

Right now we have, 500,000 barrels a day?

Dr. GAITHER. About 913,000 a day.

Senator BIDEN. 913,000 barrels a day being refined in the Delaware valley primarily. If we put in this terminal in the Delaware Bay, isn't that going to increase the total number of barrels coming in because of it being the only convenient spot of its kind on

the east coast? I mean isn't that likely to attract additional imports beyond what is needed just to meet the requirements, the energy requirements of the Delaware Valley and the refineries that are there now?

Dr. GAITHER. I would answer that with a qualified yes. I think there are two kinds of additional oil that might flow through if a pipeline were built from the upper end of the Delaware Valley to the New York area refineries. In other words, to supply all of the New York area refineries from a terminal in the lower bay, by pumping it up the valley and across New Jersey. That would be an increase not quite double the Delaware Valley needs.

The second kind of increase that would probably occur is that additional refinery capacity would be built in the present valley, and that additional refining capacity would then require more crude being brought in. If we don't build a terminal there, it is conceivable that the oil companies would tend not to build refineries and be bringing in products to satisfy the market need, but not crude.

Senator BIDEN. Additional refining capacity.

Do you see any way in which an oil or a pipeline could run either from Big Stone Beach or 20 miles off the Delaware shore to the Delaware shore, or off Long Branch, N.J. across New Jersey, whatever route the pipeline would take? Do you think there is any realistic possibility that once that pipeline is constructed either New Jersey or Delaware would in fact be able to withstand the pressure to develop additional refineries along that pipeline route? And related petrochemical industries?

Dr. GAITHER. I may be naively optimistic, but my feeling is that we are on our way in Delaware to doing that now with the Coastal Zone Act, and it seems that since the alternative confronting the State is to continue in a dangerous way with lightering taking place in the bay, and if an improvement were a terminal in the bay and a pipeline up the State, it seems to me we could say from a legal point of view forcefully enough that we want no more refineries, as we have said now, and in fact could make it stick.

Senator BIDEN. Doctor, I like you, you are all right. I wish I could share your optimism, but as you well know—well, I won't go into that. I have asked you the question and you gave me your honest opinion.

With regard to the question of pollution as a consequence of a terminal or deepwater facility, whether it be a terminal you talk about or a monobuoy system, over the past several days in these hearings, talk about two types of environmental degradation that comes as a consequence of construction of such a facility. One is that which is related to the actual construction of the facility, and the oil spills as a consequence of using that facility, that is the one type of environmental degradation.

And the other type is the land-use development.

Now in the Delaware Valley, with the exception of moving west, west of Philadelphia, west into Westchester County, out of Chester into Westchester County, in the Pennsylvania area, I know of no

area which could really accommodate expansion of a major new facility.

Shell Oil told us they needed, for example, at least 2,000 of the 7,000 acres that they purchased in Delaware to build their facility. I know of no 2,000 acre spot—I don't mean this in any way to reflect on Shell, I just took that as one case I was familiar with in Delaware, but I know of no area in the Pennsylvania area on the Delaware side of the Delaware River, unless you go significantly west of Philadelphia, which could accommodate a new refinery. Maybe you do. I don't know of any.

From Claymont up beyond the airport, Philadelphia International Airport, there isn't any open space along the Delaware River. I mean it is all owned, all developed now. And I think north of Philadelphia along the Delaware is in the same situation.

So everyone states that we are going to have to have new refineries, whether it be by converting those that now exist sweet crude to processing sour crude or just to meet the increased demand.

I understand it is going to go from 1.3 million or thereabouts to 2 million by 1980, and then projected up to a maximum of 6 million barrels per day that would have to be refined. So obviously we are going to need new refineries. And assuming your optimism about human nature of elected public officials is well founded, just from a geographic standpoint, I wonder where the new refineries can go, if in fact the pipe comes ashore in Delaware somewhere. Because that effectively eliminates the refinery on the other side of the Delaware, only a mile away, unless you are going to run the pipe out of Delaware, back under the river or over the river or whatever—maybe we can just let it float across, I don't know—to New Jersey.

Where are they going to construct any new refinery?

Dr. GAITHER. I think my answer will be in several parts to that.

First the matter of river crossings is a well developed technology, so having a feeder pipe going back and forth across the river from either side would be well within the state of the art for pipelining and a safe operation.

With respect to where new refining capacity would go, I think here are two things that could happen. Based on our discussions with the oil companies during the committee work in Delaware, it developed that probably most of the petroleum companies felt that they could roughly double their refining capacity, in other words, up to about one million eight on their present sites by modernization and that kind of evolution of their refineries.

We saw, for example, when the committee visited the Shell refineries in Louisiana, and the one in Washington, that they pointed proudly to a grassy spot in the center of the refinery and said now that is where the original refinery was located.

We have just continued to build on this site, continually updating and modernizing.

The second thing is a lot of space is taken up on a refinery site by storage tanks. And if a terminal were built, a common terminal were built, it is conceivable that certain of the sites that now exist

could reduce their commitment to tank storage and it could be placed closer to the marine terminal, giving them thereby access to more land.

So I think the possibilities of the Jersey sites are quite feasible as far as access under the river is concerned.

Second, I would say we go up to a million eight, to 2 million barrels a day using existing sites.

Senator BIDEN. And by relocating tank farms?

Dr. GAITHER. To a certain extent.

Senator BIDEN. To a degree?

Dr. GAITHER. Yes.

Senator BIDEN. Now, you also mentioned about the remedies that you would feel would be necessary. I will let Senator Johnston go into that and will skip to another question.

What would be the effect on the ecosystem in the Delaware Bay as a consequence of a major spill from a 327,000-deadweight ton tanker, the bulk of that tanker somehow putting its oil into the bay, whatever the reason? What would be the effect on the Delaware Bay?

Dr. GAITHER. I think if you presumed a spill where the total contents of a large ship were disgorged into the bay it, of course, would just be disastrous. And the point that I think the committee wished to make and I think felt reasonably confident in making is that, No. 1, the large tank ships are being compartmented in ways now that prevent losing the whole cargo at once. In other words, there are elements that could be spilled.

But, second, within the sheltered waters of the bay it appears to be quite feasible to construct a well-engineered containment system which the ship would enter before hooking up any hoses and would then remain in this wet dock, if you will, completely surrounded by barriers high enough to contain a major spill until it had completed transfer and was free to leave.

Now, of course, there is a type of accident that is not covered by this, and that is the accident that occurs on the way to the dock as you come up the bay or the accident that ironically could occur if you had all of this equipment and the tanker ran into it on the way in.

But with traffic control and with positive containment devices, I think we would expect an extremely safe operation and could expect no spills.

Senator BIDEN. You know one of the things when I practiced law, I did a lot of criminal trial work, and before I put a witness on the stand on behalf of my clients, a favorable witness, I would ask myself and the witness two things: Number one, assuming the jury believes everything that my witness has to say, what is the best that can happen for my case, what is the best possible thing that can happen. If that was, for example, assuming the jury would believe my witness, that my clients would go free, then that was the optimum that occur.

I would also ask myself the question and the witness what is the worst thing that can happen as a consequence of putting that

witness on the stand that could reasonably happen short of the witness standing up and taking out a gun and shooting the judge or something, as a consequence of cross-examination by the prosecutor. If the worst thing that could happen would be insuring that my client who was up for murder got hung, then I thought twice—I thought an awful lot prior to determining whether or not I would put that witness on the stand.

If the downside risk was grave and the upside benefit was minimal, I wouldn't put the witness on the stand.

It seems to me that these are the kinds of judgments we in Delaware and around the Nation are going to have to be making. You say that barring the unlikely, unforeseeable situation, the ship running into the very facility designed to contain it, or having an accident on the way to docking prior to coming inside the bay which would be disastrous for the Delaware Bay, the benefit that can accrue as a consequence of proceeding as you recommend is to lessen the possibility of numerous small spills, which thus far apparently haven't had a dramatic impact on the ecosystem in that area. I am really lead to the position that maybe it is better to stick the way we are and not make the big move the way you go.

Obviously you have decided the other way. You have decided that the risk involved is worth taking because the system we have now in the longrun will do more harm to the ecosystem in the State of Delaware than what you are suggesting.

Is that a fair analysis or is that unfair?

Dr. GAITHER. I would like to qualify that a bit because I think Delaware is in a unique position compared to any other State in the Union vis-a-vis the deepwater terminal question, and that is that we have this really extensive lightering operation in the lower bay right now, and the legislative charge to the committee was very specific, it took into account the question or the fact that we have this extensive lightering operation there and it asked us to make a recommendation for developing and operating oil terminal facilities that would provide for much increased protection from spills.

Now, we took that literally and we said what do we have now, what may we have if this continues, as the legislature seemed to envision, and good evidence was showing was happening, and, therefore, what can we do in the State to improve this situation.

So our recommendations in this report were based on what we thought to be the most realistic feasible approach for Delaware that they could make happen—

Senator BIDEN. Given the facts you had to start with?

Dr. GAITHER. That is right, and the constraints of that legislation.

So I am not advocating the terminal per se. I am just saying we had that constraint.

Senator BIDEN. I understand that. I didn't mean to misrepresent the position that the Commission had taken nor impugn the motives of the Commission. I don't mean that at all.

Dr. GAITHER. I understand.

Senator BIDEN. I am glad you clarified that.

I would like to ask two more questions and then yield to my colleague from Louisiana.

What is the extent of the lightering going on in the Delaware Bay now? Do you know? Do you have figures on that?

Dr. GAITHER. The lightering is increasing fairly rapidly. The number of ships lightered last year were on the order of 250 to 300, each ship requiring at least two lighters to say 8,500 to 10,000 deadweight tons of crude to be taken off.

So this means there were typically three floating objects in the anchorage area on the average at any given day, two barges and a tanker, plus the tugs that brought the barges, so maybe four or five floating objects.

The projection is that this may rise to 500 to 750 ships this coming year and our early reports, in fact one weekend in March just after we submitted the report, there were 11 ships simultaneously in the anchorage area over one weekend, in fact they bulged out the ends.

Each ship takes about a half square mile to be safe and there is only 2 miles by 1 mile or 8 spaces inside, so there were ships out beyond either way. And this means that using the same rule there were probably between 30 and 40 floating objects in this small area.

So I think what we are really seeing then is a definite increase and one that we can see this kind of quantity of vessels being a regular caller in the lower bay.

If, on the other hand, this crude were brought in tank ships of 250,000 deadweight tons, and pumped out completely down there, there Delaware Valley requirements at the present time would be satisfied with about two ships a week.

So you can see the traffic comparison is quite dramatic.

Senator BIDEN. Now, what is the record of oil spillage as a consequence of the lightering operation over the past several years, do you know?

Dr. GAITHER. We inquired specifically about this, both of the Coast Guard, who are legally responsible for reporting it, and we also talked to the Department of Natural Resources and Environmental Control of the State, but they don't have a full-time observation system.

We also talked to the lightering company, and we found that there were no spills of reportable size during the past decade.

Now, that seems to be an extremely good record.

Senator BIDEN. Now, one last question in this vein. Your committee felt that there were no precautions, no safety measures, that could be implemented that would in fact make the lightering operation a more feasible operation for a long-term duration than it is now. Is that correct?

Dr. GAITHER. The committee felt that to provide positive containment around these ships with the lighters alongside was a difficult operation and possibly operationally more hazardous than going on as they are now.

On the other hand, it did feel that there should be a very specific investigation of this matter between the State and the towing companies and the Coast Guard to determine if there was some way in which it couldn't be made safer, possibly not with booms that would be put around the ship as they were lightering, but rather have emergency equipment standing by immediately next to it so if anything did happen it could be quickly contained.

Senator BIDEN. You didn't get into the question of coupling devices and the type of devices—I mean that wasn't something you were commissioned to do, really, but you didn't stumble across reports or studies that speak to that question?

Dr. GAITHER. No. It is obvious—two things seem to be obvious to us. Number one is the hoses and coupling methods used by the present lightering group on the tankers are tested to pressures that exceed their operational pressures substantially. And, second, that any method of using hoses such as are used between ships and lighters, where both can move, is less safe than the rather well-designed articulated grass-hopper-like loading arms put out by Enco that are solid devices, have good joints, quick release devices and shut-down valves.

These seemed to be safer, but they are necessarily used only on fixed piers.

So only to that extent did we get into that matter.

Senator BIDEN. I will yield the floor to Senator Johnston.

Senator JOHNSTON. I'm very interested in your statement relative to the necessity, or your committee's recommendation that appropriate steps be taken to alter the traditional limited liability and standards of liability with respect to damages caused by spilled oil, so as to provide an adequate remedy to private property owners..

I'm not only concerned about that, but even with respect to people who don't own property. For example, you have a shrimper who makes his living in the Gulf, never at the same precise spot, but in the general waters off the coast. If you have an oil spill he loses the ability to catch as many shrimp. Or the menhaden industry loses. They are particularly liable to an oil spill, I think. They lose their ability to catch this crop.

We need some good thinking as to how we can provide for liability from that kind of loss, a real loss, and yet one that as far as I know would not be compensated under traditional concepts of law.

Have you done any study on that kind of problem?

Dr. GAITHER. Only a limited amount. At that time our report was being completed, a very momentous, it seemed to us, test was being carried out in the courts, and this was the State of Florida versus the American Waterway Operators. And this was won, as our counsel advised us, a law to permit States to assess liability for damage that occurred in waters adjacent to the State. And it went through a step of being struck down, but then eventually upheld, as I understand it.

So here it appears that we have a model by which States can assess individuals or groups that cause damage to their resources:

or their activities, and could set up, possibly, funds that could be used to compensate them if such spillage occurred.

So it appears the mechanism is there.

Senator JOHNSTON. It is more than just a question of a fund. If you have a fund there, that is one problem, having the money there. But it is the concept by which you would compensate someone and the procedure by which you do it.

The shrimper, for example, who has an income within certain parameters, but necessarily is up and down from year to year, then you have an oil spill and then he makes less the next year, and his projection is uncertain as well. He has a real loss. But it would be very difficult to determine how to compensate him.

How do you compensate the State for the loss of oyster beds off the coast, for example? It is very difficult and a real problem. And if you or your group can give us some procedures and some thinking on that, it would be very helpful. Also on the question of the sharing of a fund, where you have two or three States involved in the impact of a superport. Do you have a formula or an approach by which we might solve that problem?

Dr. GAITHER. Not specifically, but it appears there are several kinds of damage that can be suffered. One, of course, would be the direct damage from the oil coming up on objects on the coast. The other would be a more remote matter, which would be effects on commerce that might be brought about by the spillage, even farther inland—even on States that don't have a waterline adjacent to the terminal.

So it would appear that this question could be put in perspective by systematically evaluating each of the kinds of damage that could occur and it would have to necessarily be done based on the geography and the oceanographic conditions offshore of a particular terminal situation.

In other words, given a terminal that was to be put here, then you could set about the question of beginning to identify the damages that might accrue both direct and indirect, and by some formula coming up with at least a logical method by which compensation could be paid if a certain kind of damage occurred.

Senator JOHNSTON. I'm not even talking about compensation or liability for damage. I'm talking about, let's say this committee should come up with a bill that would provide that the adjacent State or States should get say 10 cents a barrel tax from the throughput for certain uses. How would you allocate that 10 cents a barrel?

Now, off Louisiana there is no problem, because in our own case we would be the only State affected. But with Delaware, you have Delaware, New Jersey, perhaps New York—

Senator BIDEN. Maryland, possibly.

Senator JOHNSTON. How would you allocate that tax if we should enact one?

Dr. GAITHER. Let me clarify one thing. Would this tax be the total revenue from the operation of this?

Senator JOHNSTON. No. this would just be a tax on the throughput, which I think we ought to have.

Senator BIDEN. The oil in the pipe that is pumped from the facility.

Dr. GAITHER. This would be set aside into a compensatory fund?

Senator JOINSTON. Not necessarily. Maybe directly to the State to build schools, roads, et cetera.

Dr. GAITHER. I see. It would seem to me, then—this, by the way, is just personal thinking, it certainly doesn't reflect anything we discussed in the Committee—it would seem there would be two things you would want to do with that money.

Number one, you would want to build a fund up to a certain level that you felt sufficient to handle the maximum plausible disaster, and have some adjustments formula almost in the sense that I'm sure insurance people have, to adjust for windstorm damage, by which you would compensate people who had claims; and then the second, after you had built the fund to that amount and paid the claims and had an actuarial experience you could rely on, next you would want some method by which the money would flow back to the States, presumably in proportion to their investment in the facility, how much capital they had put up, or how much equivalent, such as lands or service had they provided to this.

Senator JOINSTON. Actually, the private companies are going to build the superports I think, off the gulf coast. They will purchase the lands for their own tank farms. Actually, the cost of the superports is a relatively small thing considering the importance of it, I think. Probably the total cost of a superport with lands is less than a billion dollars, isn't it?

Senator BIDEN. I believe that is correct. That is some of the testimony we have heard.

Senator JOINSTON. And considering—I think it is probably substantially less than that—and considering the amount of oil that will move through it, that's a fairly small investment.

But we need the mechanism by which we would share liability, share compensatory funds, share taxes, share all of those things. And if you can come up with some guidance for us, it would be very helpful.

Thank you, Doctor.

Senator BIDEN. Doctor, I have a few more short questions.

Would your committee, do you think, go along with the corps if the corps came along and said, "We are going to have a monobuoy system within the bay." Not your terminal, but a monobuoy?

Dr. GAITHER. Based on the studies that we made in the committee, I believe that we would be very reluctant to favor that unless there were some new ideas about protection that we felt were more operationally feasible than those we were able to consider.

It would be less desirable than the fixed pier and pipeline.

Senator BIDEN. One of the most desirable aspects of the fixed pier, as you see it, is that you have the built-in containment device. That is, once the ship pulls into the slip, whatever it happens to be, you can effectively seal that—assuming it gets in there safely—you can effectively seal that ship and its cargo off from the bulk or remainder of the bay by booms and other facilities. Is that correct?

Dr. GAITHER. That is, I would say 50 percent of it. The other 50 percent is the fact that on the pier you have the very reliable unloading equipment, and you are dealing with a ship that can be moored tightly to a fixed device, as opposed to two floating devices working against each other.

Senator BIDEN. In the monobuoy system, I think, there are at least one and I think two floating devices, and you don't have that option which you refer to as the grasshopper—

Dr. GAITHER. The articulated legs, yes.

Senator BIDEN. You don't have that. You have hoses hooking up, and there are various methods we have been shown, either the stern or bow or amidships system of the ship, depending on which system you look at.

So it wouldn't have that control feature, that design feature that you were looking for when you suggested the terminal.

Dr. GAITHER. That's right.

Senator BIDEN. Now, did your committee go into the questions relating to liability, not only liability for cleanup, but liability for third-party damages?

I know that has been touched on by Senator Johnston, but did you do much in that area in terms of any concentrated effort?

Dr. GAITHER. Only to determine that the 1970 Water Quality Act—I do not have the exact quotation for it here—the Water Quality Improvements Act of 1970 did provide for extensive fines and liability in connection with spills. So, there was that element.

Senator BIDEN. That is only for cleanup, though, if I am not mistaken.

Dr. GAITHER. Right.

Senator BIDEN. You know once you clean the damage up in the marsh, you get the oil off the top of the water, that is as far as it goes. That does not go to the cost, dollar value assessed as to the value of that marsh in terms of its role in the ecosystem and food supply chain, or it does not go to the question of any permanent damage that might be done.

As I understand from some of the testimony, what happens oftentimes in shallow estuaries is that eventually the oil or part of the oil will settle on the bottom, parts of it will actually settle out on the bottom and then, depending on currents and water conditions, you may, at a future time, have that all stirred up again and a month later have another slick on top of the water without an additional spill.

So, there is really no method I see from reading that act and discussions we have had where anything beyond the initial cleanup operation is called for.

Are there any criminal liabilities in that Act? I am not sure whether there are or not. But it does not speak to third-party damage.

Did your committee look into that at all?

Dr. GAITHER. Yes, I think the extent of that is best explained by our recommendation No. 3 which states that appropriate steps be taken to alter the traditional limit of liability and standards

of liability with respect to damages caused by spilled oils, so as to provide an adequate remedy to private property owners.

Now, we only got into it far enough to realize that the present protections do not seem adequate and we were unable to expend the effort to draft any sample legislation or anything of that nature.

Senator BIDEN. Again, I realize that was not your charge, but I know you did a very thorough job and I thought you may have, in the course of your investigation, come across additional studies or inquiries which had been made that you would be aware of.

Dr. GATHIER. We felt that this Florida case, *Askew v American Water Waste*, held sufficient promise for Delaware to implement a similar piece of legislation, that it was worth following that very carefully through the Supreme Court, which has upheld it, and possibly modeling legislation for Delaware along that line.

Senator BIDEN. Do you think there is any merit in moving in that direction that we have in other areas of law in this Nation, of providing absolute liability for oil spills or damage done as a consequence of oil spills for either the carrier or that group which maintains and/or operates the facility? Would you favor, in any way, a move in the direction of absolute liability?

Dr. GATHIER. I am not sufficiently sure that I understand the legal implications of it. I presume that that is that anything a court would award could be collected complete to the entire assets of the corporation. Is that correct?

Senator BIDEN. In part, yes. That is part of what I mean by absolute liability. I guess rather than pursue that question now, it would be better to move away from liability, because again it is not what you were commissioned to do.

The last question is, and then I would also like to ask permission to submit some questions to you in writing, so we do not tie you up further—there are other pieces of legislation which are referred to, some of which have been introduced by Senator Roth, myself, Senator Muskie, Senator Case, there are 11 of them relating to deepwater ports. Some of them have features that are akin to that which appears in my bill and that is that we give a veto power to the State. It varies from bill to bill.

In mine it gives the Governor veto power, puts a burden on him to exercise some positive measures in order to maintain that veto, so to speak. Other legislation gives veto power to the Governor and the legislature; some of that is concurrent, some can be individual; it varies.

But we get into the question of the right of the State, the affected State, to be able to determine whether or not such a facility can be built in the first instance. Did your committee address itself to that at all, and if not, do you have an opinion as to whether or not that should be written into any legislation?

Dr. GATHIER. I would say we dealt with it only in a limited way, in that we recognized that in Delaware we are a member of such a possibly similar bistate organization right now, the Delaware River and Bay Authority, which requires concurrent legislation from both Delaware and New Jersey if something, a new project

such as this, is to go ahead in the Delaware Bay. And it seemed to be a mechanism that had been thoughtfully established.

With respect to anything further than that, such as the broader question of veto over terminal construction outside State waters, the committee did not specifically speak to that.

Senator BIDEN. Did not?

Dr. GARTNER. Did not specifically speak to it and took a narrower view, if you will, in saying we cannot predict what external arrangements might be made, but that to guarantee a State voice in this matter, the solution that is most positive is to do it within State territorial waters.

Senator BIDEN. The question of the State's interest in the construction of such a facility—does that interest change or is that altered by the distance from the State that the facility is constructed? In other words, does Delaware have any less of an interest in the construction of a facility 20 miles directly off its coast than it does one in the Delaware Bay in your opinion?

Dr. GARTNER. That is difficult to quantify. I think I will try to answer it most directly by saying that each State is affected by tidal currents, ocean currents, and winds as to how a spill of oil would move and disperse from some terminal nearby. And it seemed to us that danger did not necessarily lie in proximity, as far as shortest geographical distance is concerned, but rather was in the question of where were prevailing currents and winds most likely to move a spill, so it could well be with the general southward movements of ocean currents along the Delaware coast that a terminal located off the southern part of New Jersey could place Delaware in greater jeopardy than New Jersey, and in the same way a terminal straight off Delaware's coast might create a greater jeopardy to Maryland and Virginia on the southern end of the peninsula.

Senator BIDEN. Coastal zoning legislation, with which you are very familiar, in your opinion, and in the opinion of your committee—would that present legislation accommodate, without having to amend it, a pipeline coming from a facility on the Delaware shore—whether or not it went up along the coastline is irrelevant for purposes of my question—would it allow the construction of a pipeline into or through the present coastal zone?

Dr. GARTNER. We did not request a written opinion from the Coastal Zone Industrial Control Board in regard to this, but informal inquiry indicated that the pipeline per se would be accommodated, could be accommodated.

Senator BIDEN. I have no further questions. Thank you very much. We appreciate it.

As you all have been hanging around here for years now it seems, you now have become aware that the buzzer means another vote on the Senate floor. I will try to be back in 5 to 10 minutes, assuming there is only one vote, and when we come back we will hear from the panel which is made up of Barbara Heller, Mr. Greenberg, and Mr. Futrell.

[Recess.]

Senator BIRNBAUM. Maybe we can begin again. I understand there is not going to be another rollcall vote for about an hour, but I make no guarantees of that.

Maybe we can begin in whatever way that you all would feel most convenient.

**STATEMENTS OF BARBARA HELLER, ENVIRONMENTAL POLICY CENTER; ELDON GREENBERG, CENTER FOR LAW AND SOCIAL POLICY; AND WILLIAM FUTRELL, SIERRA CLUB, TASK FORCE ON OFFSHORE DEVELOPMENT**

Ms. HELLER. We have divided up our testimony to save you some time.

I am Barbara Heller from the Environmental Policy Center. I will be talking about the economic aspects of superport development.

Bill Futrell from the Sierra Club will talk about the environmental aspects and Mr. Greenberg will talk about regulatory aspects of oil port development.

I would like to thank you for inviting us to testify. We certainly appreciate the opportunity.

I would like to begin by saying that the Environmental Policy Center fully endorses the statements of Mr. Greenberg and Mr. Futrell.

We believe that if all the relevant issues are investigated with regard to oil port developments and if the true costs are included in the economic analysis of the proposed development, it could be that there is no net economic benefit or that, if there is, what benefits do occur will accrue to industry while the consumer, the taxpayer, and possibly regional economies may suffer net economic loss.

Several issues arise with the question of port construction and operation. One is the important issue of tradeoffs, including tradeoffs between increased imports as opposed to domestic development and development of alternative sources of energy, tradeoffs between different kinds of port development, and the important and often neglected tradeoffs between oil development and other users of the marine environment, especially the fisheries.

To date, no agency, institution, or person has taken the kind of total look at the tradeoffs involved in development of the various energy options, which is necessary to structure a national energy policy.

We desperately need that look. We need to know how much energy we will require for the foreseeable future, taking into account possible energy efficiency and conservative measures.

None of the projections that have been given do include energy conservation possibilities.

The Office of Emergency Preparedness report on the potential for energy conservation suggests we may be able to save as much as 7.3 million barrels a day of oil if we take some of their suggestions for energy conservation.

We also need to look at comparative costs and benefits, including environmental and social costs and benefits, of developing each of the energy sources available, including such resources as deep minable low sulfur coal, as well as possible future sources like solar and fusion power.

The tradeoffs between development of these various resources should be studied in relation to our needs. We should know, for example, whether oil shale development, the trans-Alaska pipeline, or new offshore development is most costly from both economic and environmental viewpoints.

We need to know whether it makes more sense to develop our diminishing resources now, as the administration is advocating, or to establish national energy reserves and import our oil as long as the world political and financial situation will permit.

It is interesting to note, for example, and this is just to give an example of the kind of work that hasn't been done, but ought to be done; that burning oil at today's market prices on the east coast is considerably more expensive than burning deep mine coal. The cost of a barrel of residual oil F.O.B. Philadelphia is \$4.25.

The utilities in New England, the Middle Atlantic States, Delaware, and Washington, D.C. consumed 203,709,000 barrels of oil a day in 1971—Steam Electric Plant Facts, 1972; National Coal Association. The cost of this oil at \$4.25 a barrel was \$865,763,250.

Assuming that 3,956 barrels of oil is equal to 1 ton of coal, the oil consumption of these utilities in 1971 equalled 51,480,667 tons of coal.

The cost of a ton of deep mine West Virginia coal in New Hampshire is \$13.09.

Using this as an average cost, although it is certainly too high as an average since it is the farthest distance from the mine, it would cost \$673,881,931 to burn the equivalent coal.

Therefore, the cost of burning coal would have been \$191,881,319 less than the cost of burning oil.

These are rough, quickly-done calculations, but are an example of the kinds of trade-offs involved in one aspect of energy consumption.

Senator BIDEN. Is it environmentally as safe to burn coal?

Ms. HELLER. It depends on whether it is low-sulfur coal or high-sulfur coal. These calculations are not low-sulfur coal because I didn't have the figures at the time the calculation was made.

It turns out that low-sulfur coal is competitive, slightly cheaper, but not much cheaper than low-sulfur oil.

Senator BIDEN. It is almost impossible to get though, isn't it, in the quantities needed?

Ms. HELLER. No. I think that is a misconception. A lot of information has come out in the coal hearings. The reserves of low-sulfur deep minable coal in this country, to strip minable low-sulfur coal, is 30 to 1. [This ratio is derived from Bureau of Mines and National Coal Association data.]

Another of the complicated trade-offs involved in oil port development concerns possible conflicts between oil and other users

of the oceans, especially the fisheries. The Maritime Administration's environmental impact statement on the tanker construction program analyzes the possible impacts of a major oil spill on the commercial fisheries and coastal recreational industries.

Senator JOHNSON. What analyzes that?

Ms. HELLER. The Maritime Administration's impact statement on the tanker construction program.

They estimate the Louisiana shrimp industry is valued at about \$100 million annually, and the loss of an oyster crop for 1 year would represent a loss of about \$10 million.

Although the value of the recreational fishery and tourism is not known, Marad estimates that it is probably larger than the value of the commercial fishery.

After a massive spill in Machias Bay, Maine, damage to fisheries could be as much as \$20 million, with a processed value of about \$48 million.

Additionally, an entire tourist season could conceivably be lost with serious economic loss to coastal New England communities.

Considering these potential impacts and the fact that the east coast fisheries are in serious trouble from overfishing and from foreign fleets, we believe that the commercial fisheries need the best possible protection from potential damage from oil pollution.

You might note we are testifying on behalf of several commercial fisheries organizations in New England.

If a major spill should occur the fisheries could suffer disastrously, not only from actual damage to their equipment and possible tainting of fish, but also from indirect economic effects of the spill.

Last summer in New England there was a "bloom" of red tide. Although only a few species of commercially available fish were actually tainted by the red tide, the public was sufficiently frightened by the adverse publicity surrounding the incident to stop buying all kinds of fish. Fish sales plummeted for a period of over 3 weeks, causing serious financial problems for the commercial fisheries of New England.

The same kind of damage could and probably would result from a sizable oil spill.

I think this kind of psychology impact could very quickly happen with a major oil spill.

These potential injuries to the commercial fisheries must be taken into account in any consideration of offshore development. In Massachusetts alone the commercial fisheries employ 10,000 to 12,000 people.

Although oil is extremely important to our energy needs, we have heard a lot of bluster and rhetoric about the energy crisis. The oil industry is quick to point out the financial trouble and the expense to which it must go to meet some of our admittedly lofty environmental safeguards.

Yet few will point out the potential loss to other industries which may result from the lack of these safeguards.

Oil is a nonrenewable resource which will not last forever. When it is gone we will have to find other means of satisfying our insatiable energy demands. This certainly argues for extreme cau-

tion in development, and for the least wasteful ways to transport, refine, and distribute oil.

Fish, on the other hand, are a valuable renewable resource which much of the world relies on for most of its protein. We would be foolish indeed to allow our thirst for oil to destroy our fisheries.

Any discussion of oil port facilities must include consideration of secondary development which could result from offshore development. Such secondary impacts include refineries, petrochemical plants, tank farms, and ship repair docks.

The question often arises of whether new industrial facilities should be constructed in areas which have already been developed or in previously undisturbed places.

An economist would talk about marginal damage, citing less marginal damage in areas which are already developed.

If the area of a new deepwater port is already heavily developed, new growth may lead to congestion which places severe strains on existing utilities and public services. This may still result in marginally less damage than building entirely new facilities in a new underdeveloped area.

Such analysis is not, needless to say, very comforting to people in those already industrialized areas like Delaware and New Jersey, but nevertheless when Senator Biden stated earlier that you don't have to know what they are, you can see them and you know it is bad, I would go further and say you could drive along the New Jersey Turnpike blindfolded and you would know they are there just by the smell, and you would know just exactly what they are. Having driven that route recently, I can testify to the reality of the experience.

On the other hand, building entirely new modern facilities in a previously undeveloped area may result in lower overall quantity of emitted pollutants.

Senator JOHNSON. Excuse me for interrupting, but is anybody advocating one big one?

This morning I was questioning the gentleman from the corps and he indicated from two to four in the gulf, for example. But has anybody put out a proposal for one big huge superport?

Ms. HELLER. I don't think anybody has put out such a proposal. I would question General Kelly's assumption that three or four is the most economically feasible number. I don't think there is any basis for that in the studies they have done or that anybody else has done. That is one of the things we think ought to be looked at very carefully.

Clearly more than marginal damage must be considered in decisionmaking which may affect an entire region. Again, we are trying to distinguish some of the trade-offs which should be taken into account.

Relative advantages and disadvantages of building off-shore facilities with their attendant onshore impacts in industrially developed or undeveloped regions should be studied as should the relative benefits of different kinds of installations before development occurs.

I think some of the discussion last week at these hearings indicates the inadequacy of the knowledge of the various kinds of fa-

ilities, even though those who testified are in the business of building superports.

One of the statements was that 9 out of 10 days in the North Atlantic a single point buoy would be operable, and I would question that statement.

We have very severe weather on George's Bank off New England.

The industry's arguments for deepwater ports often appear persuasive on economic grounds. They say that supertankers and superports are the most efficient way of bringing oil into the country, that unit transportation savings are significant, and that the consumer will benefit.

The truth of these assertions is not at all clear. Several questions are implicit, however, in stating them.

One such question concerns efficiency. An efficiently operating industry should be economically viable on its own. This argues against any kind of Federal subsidy for development or operation of oil port facilities.

The Interior Department's environmental impact statement on the administration's superport legislation says that "industry may also anticipate the Federal Government's assumption of one of the major costs of sea island construction, dredging."

Supertankers are valuable as part of a transportation system, but are not worth much of themselves. As part of a system they may need accommodating ports.

The issue is whether a transportation system with supertankers and superports is more efficient than a system without them. If subsidization is necessary, then some other system is more economically efficient.

Any assertion of a need for a subsidy is incompatible with the assertion that supertankers and superports are efficient. We would firmly oppose any Federal subsidy for construction or operation of any phase of superport development.

The contention that unit transport savings are significant and that the consumer will benefit raises two interesting issues: what are the relative unit transport savings, and who will really benefit from whatever savings may occur?

It does seem clear that cost per deadweight ton decreases with the increasing size of the tanker because cost per ton of construction, of fuel consumption, of maintenance, and of crew is less. However, little attention has been given to the distribution of these savings.

The economics of scale of tanker operations were delineated in the Interior Department's impact statement on the administration's superport legislation:

Tanker size (deadweight tons)	Transport cost (Persian Gulf) (per ton)	Transport cost per gallon of gasoline
65,000.....	39.05	30.079
750,000.....	6.55	.021
326,000.....	6.15	.019
500,000.....	5.45	.017

(The last column is our calculations.)

The study indicates that the maximum savings to be obtained within this range of feasible tanker sizes would be 1.2 cents a gallon.

The committee report on the Ports and Waterways Safety Act states that "seaborne transportation accounts for only a tiny part of the final price to the consumer. Even the peak rates prevailing in early 1971 amounted to only 1 cent per gallon for transporting crude oil from the Caribbean to the United States. This compares with, for example, taxes of 10.8 cents per gallon of gasoline levied by Government. Since seaborne transportation costs account for so small a proportion of oil cost, even large percentage escalations of that cost would have very little impact on consumer prices."

The oil companies would be much more likely to absorb the cost differential in their profits than to pass them on to the consumer, given the size of the saving. The oil industry's historical patterns confirm this.

To give an example, on South Capitol Street, about a mile from here, there is an Exxon station and right across the street there is an Alert station. Alert is a discount chain which is owned by Exxon. You can buy regular gasoline at Exxon for 37.9 cents a gallon and you can buy regular gasoline from Alert for 35.6 cents a gallon. That is gasoline coming from the same company.

If they can pass along that much savings in one gas station, they ought to be able to average it out for all of their gas stations.

Thus it seems reasonable to say that relative savings per gallon of product to the consumer are small, if in fact they exist, and that benefits from unit transport savings resulting from super-tanker-superport use will very likely accrue as profits to the oil industry.

Presumably any legislation which does emanate from these congressional committees will include economic as well as environmental regulation. We consider economic issues to be inseparably connected with environmental, particularly where the oil industry is involved.

We would question the role of the integrated oil companies in any aspect of superport development other than use of the facilities once they have been constructed. Oil ports should be owned by a company independent of the oil and tanker industry. It should be a private enterprise situation subject to public utility constraints. Possibly under the regulatory constraints of FPC, but in any case, not under the surveillance of a maritime agency.

This is one idea, not a firm suggestion.

Operational safety should be regulated by the Coast Guard.

We would hope any legislation would require that oil ports be available to all members of the industry on equal terms.

The American oil industry is not known for its economic efficiency, its sense of ethics, or its concern for the public interest. The major integrated companies are so structured that they reap tremendous profits at the wellhead and pay minimal taxes.

The cost to the U.S. Treasury, and thus to the American taxpayer, of the intangible drilling deduction, the foreign tax credit, and the depletion allowance, is many hundreds of millions of dollars annually.

Environmentalists would like nothing better than to see the oil industry operating in a truly free market economy. If they were, and if environmental and social costs were included in the price of the product, oil would be developed, transported, and refined in the most economically efficient and environmentally sound manner.

We have tried in this statement not to provide any answer but to raise questions which we feel should be answered before we plunge into new industrial development. It is essential that we prevent the random development which has occurred so often in the past.

There have been proposals, as I am sure you are aware: In Massachusetts we have an incredible proposal for a superport in Massachusetts Bay, in Eastport there are hearings going on now for a questionable proposal near the Canadian border. There are Seadock, Loop, Ameraport, and an incredible proposal for Delaware Bay by Hudson Associates which is a very imaginative piece of science fiction, I think. It includes—

Senator BIDEN. Is that one of Disneyland's?

Mrs. HELLER. Yes, Disneyland—(an amusement park)—a boat marina, a multilane causeway out to a superport 6 miles offshore. Something for everybody.

Senator JOINSTON. And a refinery that looks like a schoolhouse.

Mrs. HELLER. They told me it would look like a motel.

I think we have to look at superports as a national issue, not at a regional issue.

To do this, and to develop the energy facilities we need as rationally as possible the environmental and economic questions which have been raised at these hearings must be faced.

It should be clear that before we proceed with more and more proposals, more permits, more local opposition, the basic question of whether, in fact, the need for deepwater port facilities exists should be answered, and if and when it has been established that there is such a need, a mechanism for determining the most environmentally and economically sound location for such a facility should be developed.

It is not clear that supertankers are going to be important in 20 years. If we could become domestically self-sufficient we should certainly look very hard at the question of the need for mammoth tankers. It doesn't make sense to rush into a system that may be obsolete in 10 or 20 years.

As we said earlier, our current energy problems argue for cautious development and for finding the most reliable, least wasteful means of bringing oil into the country.

I would like to talk for a second about coastal zone management and about the industry viewpoints. I have a letter from the chairman of the API Task Force On Superports in which he says he agrees with a lot of things I said at the House Merchant Marine and Fisheries hearings on superports, and he agrees all of these studies should be done but that building superports shouldn't be contingent on them.

I think the problem environmentalists had for so long is that everybody wants to put the burden of proof on the environment, not on the industry where it belongs.

The need and the consequences should be established first, not by trial and error.

As with energy policy, coastal zone management must be viewed as a whole, not by individual projects.

We face new Outer Continental Shelf development, deep port development, refinery proposals, offshore nuclear power stations, commercial sand and gravel operations, and numerous other coastal development proposals.

If all the various industrial proposals for our coastal waters should become reality, we will not have much of a coastal zone to manage.

We have resources along our coasts which need protection. Congress passed a Coastal Zone Management Act and it was signed by the President and I think it is going to be funded someday, giving the States money and a mandate to develop coastal zone policies.

It doesn't make any sense, as far as we are concerned, to give the States such money, hopefully, and a mandate, and then tell them what should be part of their coastal zone policy.

We urge that when you are considering legislative proposals for oil port development you give full weight to the importance of environmental and economic tradeoffs and costs and benefits involving the coastal zone and especially those marine resources which are not part of the oil industry's plans. If you do, we are convinced that rational rather than random development will occur.

Thank you.

Senator BIDEN. Do you all want to proceed and each give your statement, and then we will question you?

Mr. FUTRELL. I am William Futrell, associate professor of law at the University of Alabama Law School, a member of the board of directors of the Sierra Club, a nationwide conservation organization and a member of the board of directors of the Alabama Conservancy, a statewide conservation organization with about 10,000 members.

I have been active in the environmental movements in Texas and Louisiana, especially in Louisiana, and in Alabama and Georgia.

I have been with you for 4 days of these hearings, and I admire, Senator Johnston and Senator Biden, your patience and your probing and searching questions.

It is one thing for the spectators, those who prepare testimony, to be here, but the extent and the degree to which you have questioned have indeed been admirable.

I have prepared a written statement which I offer for the record. I will not read it or read from it except to point out the highlights, and then pass on to Mr. Greenberg's statement.

Senator BIDEN. Your entire statement will be put in the record.

Mr. FUTRELL. Thank you.

I have chosen to discuss the topic of environmental consequences of deepwater ports, and I wish to make this point, that in the days that I have been listening it appears to me that the question is out of focus. The attention given to superports is out of focus. We must

establish our priorities and our priorities should be the integrity of our coastlines and the splendor of the seas.

Congress should take no action on development of superports until the Coastal Zone Management Act has been funded and a coherent, comprehensive and effective framework for coastal zone management and protection has been established for our American shorelines.

I am proposing a very practical thing to you, and that is to tie superports to coastal zone management. No funding of coastal zone management, no superport legislation.

The claims of the Alaskan Natives supposedly were inchoate for years, until there was a desire to build an Alaskan pipeline. When the pipeline question came up, the Alaskan Native Lands Claim Act went through the Congress in record time.

Coastal zone planning would become an effective—would have a better chance of becoming an effective reality if it would have behind it the force and backing of the oil industry.

Senator JOHNSTON. If I may interrupt at that point, Mr. Chairman, I think there is a great deal to be said for that idea. And it may well be that part of the throughput can be taxed for that purpose. I haven't looked at the figures in dollars, but that may be one way to get an immediate funding of the coastal zone management.

Mr. FUTRELL. And by funding, I mean funding which is not token funding, and funding which is not for a mere lip service compliance.

Senator JOHNSTON. How many dollars are you talking about?

Mr. FUTRELL. One figure that has been thrown around is \$20 million. But I'm not in the business of drawing up a budget. Any suggestions from other members of the panel for an initial funding?

Senator BIDEN. I would hope they would have higher suggestions than that.

Mr. FUTRELL. For the first year of planning funding?

Ms. HELLER. The rumor was that yesterday or today the administration was supposed to announce funding of the act.

Mr. FUTRELL. The rumor has been around yesterday, and for months to come. But until there is some force behind and some motive for the funding of this administration, to fund coastal zone planning, I fear we may well be without it.

Turning to the points that I want to make on environmental consequences, the establishment of a deepwater port will have profound environmental consequences, including the opening of American coastal waters to super tanker traffic, massive secondary effects on the coastal zone from onshore support operations, and ecological changes effected by the construction and maintenance of the facility itself.

An assessment of the environmental consequences of deepwater ports involves an analysis of the environmental effects of increased oil imports into the United States. Chronic pollution from oil in the ocean is such a problem that the health of the marine and coastal environment has become a pressing national priority which should be an overriding concern to all of us.

The health of the marine and coastal environment should be an overriding concern in all marine operations.

Senator Metcalf was asking earlier today about the breakdown comparisons between offshore drilling and routine tanker operations and collisions and what have you.

The truth of the matter is that the primary source of oil in the ocean is from routine operations of ocean vessels. These figures are set out in the Maritime Administration's Environmental Impact Statement in chapter IV, page 2, on the environmental impact of the program.

Senator Long had the correct figures; 28.2 percent of oil in the ocean does come from ocean tankers, and approximately a million tons a year comes from the flushing of ballast into the ocean.

Efforts to mitigate the adverse environmental impact of oil transportation are needed. One means of lessening oil spilled in tanker traffic is to restrict entry to American deepwater ports to vessels embodying environmental design features, such as double hulls and double bottoms, totally segregated, clean ballast systems, features which would reduce accidental oil spills. Few ships have features such as bow and stern thrusters, controllable pitch propellers, and the twin screw propulsion systems which are features that increase vessel maneuverability.

It appears to us that regulation of the types of vessels calling at American ports could significantly decrease the environmental impact of the operation of supertankers.

This line of suggestion was foreshadowed in Senator Long's questioning earlier today. It is discussed in the Environmental Impact Statement of the Maritime Administration at chapter V, pages 1 to 16, for an explanation of the types of ship design which could decrease the oil spilled into the ocean.

One of the most important factors in connection with collisions and groundings is the crash stopability of a ship, the time in which it can come to a stop. One of the factors about supertankers is their lack of maneuverability.

I have offered to the committee and attached as an appendix to my testimony an article reprinted from the Sierra Club Bulletin of June, 1973, entitled, "It Was Sad When the Great Ship Went Down." It is a hypothetical accounting of the grounding in January 1976, of the "Colossus Maru," the world's largest vessel, and the subsequent massive oil spill.

The San Francisco Maritime Museum people wrote most of the scenario, and I believe most of the copies—are there any copies available for the committee—which I would like to call the article to your attention.

The best medicine for oil in the ocean is prevention. Prevention requires the strictest possible standards for tanker construction, strict licensing of tanker personnel, and the most modern traffic control systems, as well as strict licensing, inspection, and enforcement procedure for offshore facilities, if and when they are necessary.

The major thrust of my comments, and the thing which I, being from the Gulf coast, am most concerned about is the implications of deepwater port development on the health and integrity of the coastal zone. The direct impact will involve an incredible commit-

ment of resources for oil transportation, pipeline and refinery facilities, in the onshore support area. What the superport would mean in terms of onshore impact was outlined by Col. Richard Hunt, the New Orleans district engineer for the Corps of Engineers at the recent New Orleans hearing on the Louisiana location.

His studies showed the plans for such a proposed offshore superport would require the commitment of at least 36,869 acres of land for new refineries and related facilities in Louisiana. These facilities would need 291½ million gallons of freshwater from the Mississippi River daily. Industrial effluents from the support facilities would total 1.3 million additional pounds a day, in addition to 27.5 million pounds of particulate matter added to Louisiana's daily air pollution count. Within a 50-mile radius of the offshore Louisiana superport, 1.9 million acres of marshland and estuary which now produce 53 million pounds of shellfish annually would be endangered.

The corps study, signed by Col. Carroll D. Strider, of the corps Philadelphia office, observed that the magnitude of the water needs of the petrochemical complex, which would be associated with the offshore port, would pose a severe problem for the region as a whole and New Jersey in particular. The corps study predicts that the entire Mid-Atlantic region would become heavily influenced by refinery, petrochemical, and associated industrial development.

So, when we talk about superports, we must be aware of the onshore support impact. Without the funding of the Coastal Zone Management Act, the handling of the onshore impact becomes a remote possibility.

Talking with environmental people in the various agencies in the State of Louisiana, Georgia, and Florida, about what they expect in future developments in the deepwater port scene, they came back time and time again to the expected devastation that is foreseen from the construction of a deepwater port off their shores.

I believe that Congress must insure that the States are prepared to protect the integrity and health of the coastal resources. One suggestion is that no superport should be licensed until the neighboring State has in effect a coastal zone plan certified by the Secretary of Commerce, by NOAA, pursuant to the Coastal Zone Management Act of 1972.

The statute which this committee will prepare for passage by Congress, should provide that unless the State has an authorized coastal zone management plan in effect, that siting of a port off its shore will be ruled out.

One of the discouraging things for me in the current discussions on deepwater ports is the enthusiasm with which some State political leaders, in Alabama, Mississippi, and Louisiana, have sought to have a deepwater port located off their shores, without a commitment to coastal zone protection or environmental quality.

Congress, in exercising its stewardship over the ocean and coastal resources, should tie any deepwater port action to provisions insuring wise coastal zone planning has been effected. This is especially true in location of superports in waters off States where a congressional mandate for wise coastal planning is not being taken seriously.

In conclusion, we reiterate these principles on environmental protection: One, no action should be taken on superport development until the State and the Federal Government, working together, have come up with a coherent, comprehensive, and effective framework for protection of the coastal zone.

Secondly, no action should be taken until an assessment has been made of the impact of offshore terminals on the open ocean.

Thirdly, Congressional action should be drafted in terms of regulation of vessels using these facilities. Supertankers should not be allowed to call at deepwater ports unless they meet minimum standards of environmental design and operation.

And, finally, an institutional framework needs to be developed. An approach to drafting such a framework will be offered by Mr. Greenberg.

Mr. GREENBERG. Thank you.

I have some specific suggestions to offer with respect to development of a regulatory framework. My name is Eldon Greenberg. I am not representing the Center for Law and Social Policy, I might add.

The Center for Law and Social Policy is a public interest law firm in Washington and I am here in a representative capacity, representing a number of national environmental organizations, including the Environmental Defense Fund, the National Resources Defense Council, the National Parks and Conservation Association, Friends of the Earth, and the Sierra Club.

As Ms. Heller and Professor Futrell have discussed the issues of the need for and environmental effects of deepwater port development, I will not focus on these subjects except to note that they are difficult and unresolved.

Rather as Professor Futrell noted, I will address my remarks to the problems of creating an appropriate institutional framework for regulating any deepwater port development which might occur in this country. In particular, in light of the energy, environmental, and coastal zone land use planning problems which attend such developments and which have been alluded to fully by my colleagues, I will suggest certain general principles which we believe should govern national policy in this area.

And then with these principles as a background, I will go on to evaluate, specifically, the merits and the defects of S. 1751. I have a rather long prepared statement, which I will not read in full, but which I would like to submit for the record.

Senator BIDEN. It will be received and included in the record.

Mr. GREENBERG. With the chairman's permission, I would like to briefly mention the highlights of the testimony in terms of certain general principles which we propose—and I think these principles are fairly apparent from what Ms. Heller and Professor Futrell have already said—and then go on to talk about some of the specific problems that we have with S. 1751.

It is apparent that there is no adequate institutional framework presently in place in this country to deal with the problem of deepwater port development. Deepwater port development does involve fundamental questions of national energy policy and land use.

In particular, construction and operation of deepwater port facilities must be examined and regulated with a view to overall and consistent and rational use of this Nation's coastal zone. The construction and operation of deepwater port facilities further raises important questions of jurisdictional conflicts among existing Federal agencies, of possible constraints imposed by international law, and issues of private versus public funding, construction, ownership and operation.

Finally, any deepwater port developmental scheme, which is decided upon, must provide for regulation of port reception facilities, spill containment devices, traffic control systems, and design and construction characteristics of ships permitted to serve U.S. deepwater ports. It is obvious, at present, we have a crazy quilt of certifying authorities and overlapping jurisdictions. It is unclear if any Federal agency has the power to authorize construction of a port facility in areas beyond the territorial sea.

We don't believe any of the bills currently pending in Congress, including S. 1751, provide a comprehensive planning approach, for treating the energy policy land use and environmental issues which are at stake.

As a first principle, then, I would suggest, in light of what Professor Futrell has said in particular, that until an institutional framework is in place, and until the fundamental questions of the need for and environmental effects of deepwater ports are fully examined, no development should be allowed to proceed.

Should this country embark upon a program of extensive and novel coastal development, there must be a comprehensive systems approach to such development. This is the only approach which will assure effective environmental protection, and this approach would take into account all the relevant economic, social, political, and environmental facts.

That is somewhat of a big order. However, I will go to suggest some of the principles which I think would be involved in the scheme. First, in addition to going slow until the issues of need for and framework for deepwater port development are resolved, any development which does proceed should be limited at least in the first instance. Possibly only a single pilot project should be authorized, with future port authorizations to be based on the results of the pilot project.

Second, we believe the Congress should consider specific legislative approval of any deepwater ports which are developed. I am not suggesting that legislative approval is a *sine qua non* of the environmentalists' position, but I'm suggesting it is something that should be considered seriously.

This is especially true in light of the fact that only a limited number of deepwater port facilities will be developed in this country.

Third, we believe that there must be adequate opportunities for regional, State, and local interests to participate effectively in any decision to site, construct, and operate the deepwater port facilities. The State and local governments have traditionally had the authority to regulate the kind of impact attendant upon landside industrial

development, as well as port development and in so doing, they have developed substantial resources and experience which have been recognized in Federal legislation concerned with air and water pollution, as well as in the Coastal Zone Management Act of 1972.

We thus believe it is essential that any State adjacent to deepwater development have the authority to disapprove such development, whether or not the facility is to be located within its territorial waters. I would think there would be two conditions that we would place upon that approval scheme.

First, that the State could disapprove the deepwater port proposal, if it would be inconsistent with an established State land use plan or policies, and/or second, if the port, as developed, is likely to result in significant adverse environmental effects within the State's jurisdiction. The decision to approve or disapprove should be evidenced by specific findings and conclusions and subject to judicial review.

Additionally, as a necessary corollary of effective State participation, we believe power should be vested in the States to prescribe stricter environmental or safety standards for facilities as well as transshipment modes, that is, pipelines and vessels, within their jurisdiction, than may be required by the Federal laws or regulations.

The next point relates to the establishment of a uniform regulatory scheme. We believe that the issues involved in planning and overseeing deepwater port development do not divide upon such an arbitrary line as the line between the territorial sea and the Outer Continental Shelf.

Any scheme should apply to development both within the territorial sea and outside the territorial sea.

Senator JOHNSTON. You mean the 3-mile, or the—

Mr. GREENBERG. The so-called 3-mile limit. That is right. I'm saying if, for example, the Department of Interior has the authority to regulate deepwater port development, it should have that authority within the 3-mile limit and outside the 3-mile limit. Otherwise, there is a risk of inconsistent policies, with, for example, the corps licensing a project within the 3-mile limit, and the Department of Interior licensing a different kind of project nearby, outside of the 3-mile limit.

Now, S. 1751, as now drafted, only applies to developments on the Outer Continental Shelf and would not provide any regulatory framework for development inside the 3-mile limit. As Mr. Gaither mentioned in prior testimony, there is substantial interest in deepwater port development inside the 3-mile limit. I take it that any port which is developed in Delaware Bay would probably not be subject to the regulatory scheme established by S. 1751.

Similarly, proposals in Puget Sound or in Eastport, Maine would also not be subject to the regulatory scheme established by S. 1751.

Next, a single Federal agency should have primary responsibility for coordinating and overseeing construction and operation of deepwater port facilities.

Senator JOHNSTON. Which agency do you see as being the more appropriate at this time? I know you want to study it, but which do you think is best right now?

Mr. GREENBERG. I think the issue of the appropriate agency is a very difficult one. I have more negative feelings than positive feelings about that. We have serious reservations about the Department of Interior regulating port development, largely based on two factors:

One, the apparent lack of ability to effectively regulate the offshore leasing program, as recently documented in the GAO report, which was done for Representative Reuss' subcommittee.

And two, because the Department of Interior has no demonstrable expertise with respect to port development or with respect to ship design.

I would think an agency like the Coast Guard, who does have expertise in the area, might be appropriate, perhaps with certification authority granted to NOAA for effects which deepwater port development might have on marine life and biota. I would suggest that the single Federal agency which does coordinate should be responsible for evaluating all facets of a proposed delivery system, that is vessels, site selection, construction mode, pipeline design, landside port facilities, etc.

The only way you can effectively evaluate the proposal is to look at the whole ball of wax. You can't just look at the monobuoy and say well, that is all right, without looking at ship design and seeing the interface between the ship and the monobuoy, or the interface between the pipeline and the monobuoy and its tank farm. You have to look at the whole system.

I would think this central agency might coordinate environmental reviews and appraisals which are provided by other bodies which have appropriate expertise in discrete areas and it would consult with those bodies.

In that way, you could develop a coordinated scheme for regulation and development.

Next, especially if only one or two deepwater port facilities are constructed, it is obvious, as Senator Long and others pointed out, that these will be a scarce and valuable resource, which will require substantial economic regulation. Financing, ownership and charges for the use of deepwater port facilities should thus be covered in any regulatory framework, in particular because of the monopoly problem.

We suggest that perhaps some share of revenues should be provided to coastal states to assist in dealing with any adverse environmental affects.

Senator JOHNSTON. Do you have any formula, first for determining the amount, and secondly for determining the distribution between States where it affects more than one State?

Mr. GREENBERG. I'm afraid I don't have a formula to offer, I haven't developed one. I think Mr. Gaither has suggested some possibilities in terms of the relative effects. I think it is probably very difficult to quantify the relative benefits and effects of any deepwater port facility on one or two or three adjacent States.

Obviously, you have to work out some kind of allocation scheme.

Senator JOHNSTON. How about an allocation or procedure based on this, to say that someone, say the corps or someone, shall initially

determine what States are possibly effected, as they have in this report here on the gulf coast.

Secondly, provide for an arbitration procedure where the Governors of the various States get together and any allocation they voluntarily agree upon shall be a firm allocation. And then failing in that, that some third party, perhaps the EPA, should be the final arbitrator, to adjust the differences.

Mr. GREENBERG. I think that is certainly a possibility. What you suggest, and I think rightly so, is a political problem that has to be worked out between the States which are affected.

If we are talking about putting a deepwater port facility outside Delaware Bay, we have got a couple of States that are affected, New Jersey, Delaware, perhaps Maryland, perhaps New York, three or four States, but a discrete number in any event that have to get together and really work out the allocation among themselves.

It is not clear to me that the Federal Government may be the best party to allocate, or set up the allocation scheme. It may be that that scheme ought to be worked out in the context of some sort of coastal zone regional planning mechanism among the several States.

Let me mention three more points. Standards for the delivery system should be set by the Federal Government. There is present Federal authority to regulate vessel design, provide for vessel traffic service and systems and to regulate the design construction and operation of facilities used for bulk transfer of oil. This authority must be expanded to include facilities which will be located in the contiguous zone or in the Outer Continental Shelf.

I might mention that several of the Senators indicated concern today about the issue of regulating ships, for example, which use our ports. There is authority in existing Federal law under the Ports and Waterways Safety Act which was enacted in the last session of Congress, to provide standards for all ships, regardless of country of origin, which enter United States ports.

The Coast Guard has recently proposed, in January 1973, that all ships which do enter our ports after a certain date be equipped with a segregated ballast, achieved in part through a double bottom. That design feature goes a long way towards providing environmental protection.

So, the authority is there, and I think it is important that the authority certainly be extended to any deepwater port facilities which are developed on the Outer Continental Shelf.

I might add that S. 1751 does provide for extension of authority under the Ports and Waterways Safety Act to facilities on the Outer Continental Shelf. So, presumably the Coast Guard's proposed rule, should it be implemented, would apply.

In addition, I would think that some consideration might be given to setting special standards of design and construction for vessels which use deepwater port facilities, higher than those required for vessels which use conventional port facilities.

Similarly, it is conceivable that special standards for traffic control systems, oil spill containment devices, and pipeline connections might be required of such facilities.

As to the location of facilities—and this is really a substantive point—we believe that at least given the present state of knowledge, deepwater port facilities should be located offshore at a substantial distance from bays and estuaries; they should be dedicated solely to the petroleum trade, and should be isolated from other vessel traffic.

It is conceivable that these conclusions might be altered by some further studies.

Senator JOHNSTON. You say solely to petroleum as opposed to dry cargo, for example?

Mr. GREENBERG. That is right. I would suggest any deepwater port facilities that are developed should be used solely for petroleum, and dry bulk cargo carriers should not be permitted to use them.

The reason for this is obvious. One of the environmental advantages of an offshore facility is that there is decreased vessel traffic, with the resultant decrease in the risk of collision. To the extent that you bring other kinds of vessels, dry cargo vessels and such into the system, you are just increasing the risks, and you undercut some of the purposes of putting the facility offshore.

There are a number of reasons for putting it offshore: It avoids dredging and construction. It does reduce the risk of groundings and collisions, which are generally associated with operations within narrow and shallow harbor approaches.

I might add that Mr. Gaither talked about the risks which would be decreased by having the inshore facility in Delaware Bay because you have a pier and you would be able to prevent spillages at the terminal.

The problem is that the most common form of tanker casualty, the grounding, occurs at the approach to harbors—it does not occur in the terminal itself, but in the channel entry. By putting the facility offshore, outside of Delaware Bay, you obviate that problem to a large extent.

Finally, if you do have an oil spill offshore, there is at least a greater opportunity for confinement and cleanup before it becomes a threat to the coastal environment itself.

As others have pointed out, the bays and estuaries and coastal regions of this country are extremely delicate eco systems, highly sensitive to the kinds of disruption which is caused by oil spillage. To the extent that you can prevent spillage in those regions, you have got a net environmental advantage.

I might add when you spill oil offshore, crude oil, for example, or any form of oil, a weathering occurs before the oil reaches the inshore areas and in the weathering process, the more toxic fractions will tend to evaporate, so by the time the oil reaches the shore it will be relatively less environmentally harmful than it is immediately after the spill. The weathering process can take anywhere from a couple hours to several days.

Finally, oil should be transported from deepwater port facilities to shore by buried pipelines—routed around significant marine breeding grounds—rather than transhipped in smaller tankers and barges. Although pipelines are not free from environmental risks

and substantial efforts are needed to improve pipeline safety technology, this approach would appear to minimize vessel traffic congestion and spill probabilities incident to tanker accidents and ship loading and unloading activities.

This requirement and the requirements of isolating deepwater ports well offshore and establishing special standards for associated delivery systems are of such importance that they should be expressly set forth in authorizing legislation, rather than left to agency discretion.

With those principles in mind, in my written statement I go on to evaluate S. 1751.

Let me just say one or two words about the bill without going into the specific details of the criticism.

I believe this bill falls far short of creating an adequate regulatory scheme for deepwater port development. In applying only to deepwater port facilities on the Outer Continental Shelf (section 102(b)), it creates the risk that there will be a uniform scheme or regulation of deepwater port development; by specifically excluding examination of economic effects of deepwater port facilities (section 103(c)), it provides for no effective limitation on the number of ports to be constructed and effectively precludes any planning for development; by providing only for consultation with States, rather than specific State approval (section 103(e)), it does not adequately recognize state, local, and regional interests in deepwater port development, in making no specific provision for review of secondary impacts of deepwater port development (section 103(b)(3)), it ignores what may be the perhaps most significant effects of deepwater port development in any given region.

Perhaps most importantly, the act in no way provides for an overall, systems approach to particular projects or to deepwater port development in general, taking into account all relevant economic, social, political, and environmental facts.

A close reading of the act indicates that this proposal is essentially designed (a) to encourage rather than to plan for and regulate deepwater port development and (b) to limit challenges to such development.

The act is basically a developmental statute. The relative unimportance of environmental, economic, and social considerations in the regulatory scheme is underscored in particular by the findings in section 101(a) which declare deepwater port development to be a virtually unalloyed blessing that must be facilitated by the Federal Government, but which express no recognition that such development may pose severe problems which require stringent Federal regulation.

At the same time, the licensing and review procedure established in sections 105 and 106 make substantial inroads into the general rules of procedure established under the Administrative Procedure Act and seem intended to limit evaluation—and review—of the merits of a particular project rather than to provide for the fullest possible assessment of its total costs and benefits.

As I say, my detailed criticisms of the act are set out in my testi-

mony. I do think this legislation would have to be drastically revised before it would be acceptable to the environmental groups I represent.

That concludes my prepared statement.

Senator JOHNSTON. We welcome your statements. They have been very good, very helpful to the committee.

As you have sat in these hearings and heard, at least this Senator has great concern for the environmental impacts of a superport, particularly off my State's coast.

Mr. FUTRELL, you referred to the total enthusiasm of Louisiana, Alabama, Mississippi, for a superport. There is an almost unqualified enthusiasm of virtually the entire political community in my State certainly and I think that is true of other States. And it is based to a large extent on the supposed benefits to come to the State.

Now, can any of you tell me about those benefits and why the basic assumption of, say, my State, is not correct in terms of the benefits? I am not talking about environmental degradation, but just benefits alone.

Mr. FUTRELL. Senator Johnston, your questions through the several days of these hearings have reflected an awareness of the environmental consequences of superports, the increased air pollution, water pollution. You showed an awareness of Dr. Sherwood Gagliano's studies of marsh deterioration in Louisiana, the erosion of the 16½ square miles a year, the loss of 300 square miles of marshlands due to channelization and dredging of Louisiana marshlands over the last 20 years by the oil and gas industry, and by certain activities of the Corps of Engineers.

Dr. Gagliano has conducted, and is continuing to conduct these studies on marsh impact in Louisiana. I had hoped he would be here this week. He had sought to appear at these hearings, and he has additional testimony on environmental impacts of superports that would be of help, I believe, to the committee.

Senator JOHNSTON. He is not scheduled to testify?

Mr. FUTRELL. This is Sherwood Gagliano of the Wetlands Institute of the Louisiana State University.

Senator JOHNSTON. Excuse me. We will get a statement for the record from him.

Mr. FUTRELL. Your question was to the benefits, but I talked about the consequences again, the difficulties expected. I am from the Red River Valley of Louisiana, Grant Parish, and went to high school in Caddo Parish. The term benefits, as used by the last generation of political leaders of our State was quite frequently phrased in terms of development. In the South we have been led to think that we are poor people. Our leaders sometimes say that we are a poor people. Actually I think that we are richer than we know in terms of the human resources; in comparison to what I have seen in the Western United States and in other sections of the country.

This is a social observation. Part of the South's richness for the coming years will be in its natural resources, the water resources, and in its environment. I think that the construction of deepwater ports and especially the onshore support facilities—again, my focus of con-

cern is the onshore port facilities—is an irreversible and irretrievable commitment of long-term resources for a short-term use. What is uppermost in the minds of our political leaders is the immediate short-term use for the coming decade, the financial return that will be gained from construction, the ability to keep a share of the petrochemical market that we have on the gulf coast.

Senator JOHNSTON. Again, though, you would not have any specific comments on the validity of the claim that it is enormously good for development of jobs and economic impact onshore?

Ms. HELLER. May I comment on that for a minute?

I think the question that I tried to raise in our testimony was that the benefits have not really been considered adequately. I can give you an example of what was done in Massachusetts when the Massachusetts Port Authority came out with its proposal, and had long lists of figures on benefits. What these did not tell you was the number of jobs that would be eliminated.

They had refinery figures; new refineries do not employ large numbers of people; if they are good refineries, they are highly automated. The new onshore tank facilities they planned would have put a lot of workers out of work from the old tank farms they would be replacing. The piping in from offshore would replace the truck drivers that come in now.

They considered gross benefits for their own little plan, but they did not consider what net overall regional benefits would occur. I think this is something that has been done too often in proposals, when they are looked at purely from an industrial point of view.

Mr. FUTRELL. The three of us just recently returned from a trip to Wales, where we visited Milford Haven. The government of Wales is very concerned, even more concerned about development than are people in Louisiana. And this is a country which the expressed political concerns are reminiscent of the things I heard in the Deep South.

Milford Haven was one of the leading fishery communities in the United Kingdom. I think it was the West Wales Naturalist Trust Officials who cited it as being the third largest fishery in Britain. There has been a 9-percent decline in the size of the Milford Haven fishing fleet since it was developed as an oil port. There is no quoted direct cause-and-effect consequence between the fishing fleet decline and the establishment of the deepwater port there. But the two are contemporary events; the two developments occurred at the same time. There are other factors that were involved.

Senator JOHNSTON. Do you suggest a cause-and-effect relationship?

Mr. FUTRELL. No; I am suggesting the fishery was of importance to the people of southwest Wales. Other communities in Cornwall, across the Bristol Channel, have moved in and have developed the Irish Sea fisheries, and Bristol Channel fisheries; but I am suggesting the fishery resource of the Louisiana Gulf is one of the most important natural resources of the North American Continent.

Senator JOHNSTON. There is no question about that.

Mr. FUTRELL. And that you are playing with it, not you, sir, but we are playing with it in the onshore development of these deep-water ports.

**Senator JOHNSTON.** I wish each one of you, if you have a chance, or if you run across the information and supply it to the committee, to question the supposed advantages of the deepwater port as it relates to my State or any other States. After all, you are not going to change the tremendous enthusiasm you have in my State, and I am not speaking as an opponent of the superport; I am just talking about practical politics. If people in my State believe that the superport is going to bring a great many jobs and great economic impact, they are by and large going to be for it. And I would say that any opponents to the superport ought to challenge some of those basic assumptions. And that is the first basic assumption, that the superport is going to be the greatest thing in our State since the discovery of oil.

**Mr. FURELL.** May I say one thing as a Louisianian for all but the last 2 years, before my immigration to Alabama to teach: one thing that may be important to Louisiana is not to be so enthusiastic about the superport. It may be easier to establish the environmental protection and guidelines, the guidelines Mr. Greenberg has outlined, if the State leadership is not so completely enthusiastic.

The commitment of a million dollars to the environmental baseline studies at Louisiana State University is a measure of Louisiana's seriousness in the superport question. That is not matched by any other Gulf Coast State.

**Senator JOHNSTON.** Louisiana is anxious to keep control of the superport for environmental protection and for my part I want to see that that is written into any bill we have, that the adjacent State, my State, would have environmental protection ability to control this thing.

Have you done any analysis on the proposed LOOP plan to locate the 36,000 acres' worth of tank farms in the lowlands, the wetlands?

**Mr. FURELL.** Yes, sir. I would hope the committee could address questions to the Louisiana State University research teams which have what they consider a far superior location to the LOOP location, located off Venice, La., which would tie into existing pipelines, tie into existing levee arrangements, and existing channel arrangements in the lower Mississippi River distributary system. It is considered—this was developed by Louisiana State University people and is considered a far more environmentally acceptable siting than the LOOP plan.

**Senator JOHNSTON.** Do you have that much land down there?

**Mr. FURELL.** I would refer you to the people who have done the study, sir.

**Senator JOHNSTON.** How about the danger of a tank farm located in a wetlands area where I think the 50-year tide is something like 43 feet, 50-year wave at least. What are the dangers of having a tank farm in a wetlands area?

**Mr. FURELL.** The Sierra Club has a slide show on oil and water, oil and the ocean, and the slides that get the biggest response from audiences who are seeking to understand this problem for the first time are the aerial views of tank farms in wetland areas, because they show ribbon sheens extending out for miles, aerial views.

You have mentioned flying across the State, and one of the most educational things, I think, in taking people who are interested in oil and the water is flying at about 3,000 or 4,000 feet from New Orleans to Beaumont and Port Arthur, Tex., below the intercoastal canal and looking at some of the facilities, as well as looking at the checkerboard pattern of channelization and canals that now criss-cross the Louisiana marshes.

Senator JOHNSTON. Would a superport bring you more checkerboard pattern?

Mr. FUTRELL. It would without planning.

Senator JOHNSTON. What about the necessity for channels caused by a superport, other than the main pipeline?

Mr. FUTRELL. Distributary pipelines and secondary development. Any time you build in the marshes and try to put permanent installations and industrial developments into the marshes, you channelize, dredge, and canal.

Senator JOHNSTON. I believe it was you, Miss Heller, who talked about private versus public funding, and the necessity to be concerned about monopolistic power of the oil companies and that you ought to have the control of the superport separate from those who were going to use it.

You suggested, I think, either public control or private control proper wording to make it clear that you are going to be a non-

Certainly, when you establish a monopoly or allow one to be sufficiently clear; we have been looking at that—but it says the provisions. So, the wording is not very good. But assuming we put that was not related to the oil companies.

Mr. GREENBERG. I think it does go some of the way towards solving use of the facilities.

established, you have to regulate the charges that the port authority lations and those regulations shall include nondiscriminatory carrier provision, at some sort of regulated rate.

talking about?

Why would not either, say, a common carrier provision. or a non-Secretary shall, or the Secretary is authorized to promulgate regulatediscriminatory carrier, why wouldn't that solve the problem you are discriminatory carrier provision—we have one in the bill; it is not

Ms. HELLER. I refer your question to Mr. Greenberg. relatively inefficient economic system with a high price being asked

I think that in general control over deepwater port facilities should be vested in an entity other than the integrated oil companies, or a consortium of them, in order to inure to the greatest possible extent that there by—within the limits of the regulations—a relatively fair and efficient rate system.

I think one can certainly surmise that if the oil companies themselves are operating the terminals, and are also operating the tank farms and the ships which are entering the terminals, that the rates which are set are not going to be the rates which are ultimately the most beneficial to the consumer.

The chances are they will be most beneficial to the oil company.

Senator JOHNSTON. Well, suppose we put the nondiscriminatory

carrier language in, and then provided for the ability to regulate the rates. Would that solve the problem, or must there be some third party? After all, the third party would then be interested in making as much money as they could, and the third party would then be a monopoly unto themselves, and they are not necessarily interested in the public interest, either.

Mr. GREENBERG. I think you certainly go most of the way if you have nondiscriminatory access, and regulated, reasonable rates. That is the situation we have now, with public utilities.

I think Ms. Heller in her testimony indicated that the public utility analogy may be useful for considering possible schemes of regulation for deepwater ports.

Senator JOHNSTON. Can any of you tell me which of these projects in the gulf coast—I think there are 10 or so listed in the corps study—which are the best and which are the worst, environmentally?

Mr. FUTRELL. Well, we are far down the line from that, and we are just drawing the guidelines on superports at the present time.

Mr. GREENBERG. I might add that the studies which have been done at virtually all of the proposed sites for the deepwater port facilities have indicated there are still a substantial number of questions which have to be answered before any definitive conclusions can be reached. If you look at the corps study, you will see repeated references to the lack of information about the effects of oil on the marine environment, lack of information about the movements of oil spills, and the lack of information about ultimate long-term environmental degradation which results from low-level spillages.

One of the problems in this that I think both Ms. Heller and Professor Futrell pointed out very well, is we don't have an adequate informational base to evaluate the environmental impact of locating a port in any one location, or locating a port anywhere off the United States.

The whole problem of oil and the marine environment is one that is being increasingly studied, but in which there are still vast areas of uncertainty. And hopefully, some of the studies—I have not seen the corps study in full—which are being currently carried on, and which will be carried on in the future, will help resolve some of these issues.

But I don't think we are in a position right now to come to a definite conclusion about any of the particular sites.

Senator JOHNSTON. I'm not asking for a definite conclusion.

Mr. FUTRELL. I've read, looked through, about one-third of the red volume corps study you are referring to on the gulf locations, and I would be very unhappy to be pressed to state that this is the least undesirable location for a deepwater port at the present time, because I don't think the studies have been finished or have been done. Even the baseline studies haven't been done. And that is based on conversations with people in the Louisiana Wildlife and Fisheries Commission, Louisiana State University, people at the University of Alabama, people who have been doing the contract work for the various private firms that are making these enthusiastic proposals to this committee.

Might I just say something about each of the sites? The Ameraport location (Pascagoula and Mobile, Ala.) for the superport would be located off a national park, Gulf Island National Seashore. Both the islands that make up this seashore are proposed for wilderness.

Past the Barrier Islands we come to the Mississippi gulf coast and the Alabama gulf coast, which you know are one of the most heavily used recreational areas in the lower south. It is just intensive recreational use.

On Mobile Bay, there is a city of a quarter of a million people right on the water. I ask the Ameraport people where are you going to put the onshore support facilities? And the answer is you destroy part of the park, part of the recreational facilities, part of the living environment that exists there already; a solution that is terribly undesirable as far as I'm concerned.

Senator JOHNSTON. I know they don't have enough baseline information on the effects of oil in the water, but what has been the effect over where they had the *Torrey Canyon* disaster?

Ms. HELLER. I wanted to talk for a minute about the *Torrey Canyon*, if you don't mind.

Mr. FUTRELL. On the gulf coast, but the impact of a Louisiana site would be on a fantastic biological resource. The Texas location of the Sabine River is at Beaumont/Port Arthur off one of the largest refinery complexes in the country. There is one 400,000 barrel a day refinery and several 250,000 barrel a day refineries.

Senator JOHNSTON. I think it is the biggest in the country.

Ms. HELLER. There haven't been very good studies on what happened to the *Torrey Canyon*, the effects around the area after that, but what is known is that most of the damage that occurred was caused by the dispersants that were used to clean it up.

Good studies have been done in Falmouth, Mass. which is right near Woods Hole, where the Woods Hole Oceanographic Institute is, and those studies showed that there are serious long term effects of oil. They were the first studies of that kind that had been done.

Senator JOHNSTON. How long term?

Ms. HELLER. For 2 or 3 years.

Senator JOHNSTON. But how long—

Ms. HELLER. I think the study was in 1969.

Senator JOHNSTON. Do they have any idea how long it takes for an area fully to recover? Say you had a *Torrey Canyon* off the Louisiana coast, and the winds blew it into the marsh.

Ms. HELLER. That is the kind of thing that is not known. There is conflicting evidence. Some studies of the Santa Barbara spill show the effects are not long term, but there are a lot of things that were left out of those studies, according to Max Blumer at Woods Hole. There is a lot of conflict within the scientific communities about the effects, with different kinds of oil, different areas, different organisms.

I think it can be safely said that the effects on bottom organisms, clams, oysters, and things, are fairly serious over the long term, because they are filter feeders and they retain the oil. And it is known that oil concentrates up the food chain.

Mr. FUTRELL. You were asking about the *Torrey Canyon*, and about marshes. The oil from the *Torrey Canyon* went ashore on rocky

coasts, and sandy beaches. On the beaches of Cornwall, 13,000 tons of oil were estimated to come ashore. To disperse this 13,000 tons, 10,000 tons of chemical dispersants and detergents were used, and it allegedly took 4 years to recover from the *Torrey Canyon* disaster. The damage was estimated at \$17 million, \$10 million to the French Government and \$7 million to the British Government.

The oil companies paid \$4 million to the British Government, and I do not know what they paid, if any, to the French Government.

But remember that the *Torrey Canyon* was a smaller type vessel, as large as it was.

Senator JOHNSTON. How many tons was it?

Mr. GREENBERG. 117,000.

Mr. FUTRELL. You are talking about 350,000 to 400,000 tons off the marshes of the richest biological fishery area on the North American Continent.

Senator JOHNSTON. How about beaches? Do beaches finally clean themselves? Say you had a spill off Pensacola, that beautiful beach there. Suppose it was covered with oil. How would you recover from that?

Ms. HELLER. Well, the best way of cleaning up oil now, just offshore, is still chopped straw. Dispersants are highly toxic. They have scrubbers and things for rock.

There isn't really any good way of cleaning up oil off sand. They have things that sink it, but when it rains it comes back up. I think oilspill containment and cleanup is a very serious problem, and the oil industry generally concedes this.

The Georges Bank study that was just done says that the possibility of cleaning up an oilspill on Georges Bank, should there be oil facilities there, is futile; don't even bother to try it. It is a highly respected study.

Mr. FUTRELL. The Maritime Administration, which is not allied with the Sierra Club, or other environmental organizations, published a final environmental impact statement on the supertanker program which discusses this problem of beach cleanup at chapter 4, pages 58 and 59. It suggests such methods for rocky areas as sandblasting or steam cleaning. For sandy beaches it suggests digging up the top layer and leaving the bottom layer of sand, and carting the top layer of sand away, and disposing of the debris in other areas than the area where the oil was spilled.

Mr. GREENBERG. I think the point of all this is we don't have very sophisticated techniques for handling the oilspill problem. The technology in the whole area is relatively undeveloped, and oilspill containment devices, which we have, or cleanup devices which we have only work in very limited circumstances and only do a limited amount of good. Therefore, I think from the point of view of the environmentalists, the most important issue is preventing the spill in the first instance. If you prevent it in the first instance, you don't have to worry as much about the effectiveness of your cleanup techniques.

Senator JOHNSTON. Do you have anything else to add, Mr. Futrell, about the locations on the gulf coast? I guess, in the final analysis,

a lot of that is just a value judgment. So what is more valuable, a pretty beach, a fishing industry, or a lot of people?

Mr. FURRELL. The value judgment is between the only national park in the lower South, not just a pretty beach, a fishing industry; not just a fishing industry, but the Louisiana coastal fishing industry, which is something special. And they are hard choices, and we do not have the answers. And we haven't even defined the parameters of debate, or the issues. We haven't even clarified the issues.

We appreciate the opportunity to be here today with the committee, and the attention that the committee has given to the problem.

Senator JOINSTON. Thanks very much to each one of you. If you do have further information to add, if you will contact me or the committee, either one of us would be very glad to get further information from you.

Mr. Greenberg. Thank you very much.

Senator JOINSTON. Senator Biden, I'm sure, will have questions he will submit to you in writing.

Mr. GREENBERG. We would be most happy to answer them.

Senator JOINSTON. Thank you very much.

[The statements follow:]

#### STATEMENT OF J. WILLIAM FURRELL, SIERRA CLUB

Offshore development of deep water ports should not be permitted to proceed until the fundamental questions of their environmental effects are resolved. Such environmental studies should focus on the unexpected and indirect consequences of deep water construction as well as the often mentioned impact of oil spills and secondary development onshore.

All major development projects are bound to have ecological consequences. These should be carefully evaluated at the time of planning and not dealt with haphazardly after the deed is done. In any discussion of environmental consequences, the temptation is strong to focus on the expected primary impacts and ignore the long range effects of the undertaking. Yet, one of the significant teachings of the discipline of ecology is that the true environmental costs of different courses of action are hard to evaluate because of the complex interactions of unexpected and secondary effects.

There is a long list of projects which have resulted in unexpected and unwelcome consequences. The Aswan dam is one of the best known. This great public work project, easily as significant in its undertaking as the construction of a deep water port, was supposed to have been an unmixed blessing for the Egyptian peasant. Its secondary consequences, all unexpected, including the destruction of traditional fisheries in the eastern Mediterranean and the increase of parasitic diseases, serve as a classic example of unexpected environmental consequences.

Another less known example is offshore drilling in the Gulf of Mexico. The expected hazard resulting from drilling on the Louisiana outer continental shelf was a decline in the fisheries resource. This has not come about. But OCS drilling activities have resulted in such an unexpected deterioration of marshlands that it has been designated as Louisiana's number one environmental problem. Professor Sherwood Gagliano of the Louisiana State University Office of Sea Grant Development's Center for Wet Land Resources in a paper delivered at the American Association for the Advancement of Science in December 1972 explained that the onshore support facilities and the extensive channelization and canal dredging to move drilling equipment through the marshes have resulted in detrimental changes in runoff, tidal patterns and salt water intrusion. Through detailed studies of maps and photographs of the area made periodically during the past 30 years, scientists at LSU have established that the deltaic coast of Louisiana is no longer gaining new land as it has for the past 4,000 years. Rather it has been losing land at the phenomenal rate of 16½ square miles per year. The LSU measurements

document a total loss of approximately 500 square miles during the past 30 years. According to Dr. Gagliano, the mineral extraction industry is responsible for 65% of the total dredging and drainage canals which in turn are responsible for approximately 40% of the total land loss in the coastal area.

This wetlands destruction could have prevented by environmentally based coastal zone planning. But no mitigating efforts were made to protect the coastal wetland resource and as a result a major portion of one of our most valuable renewable resource areas was severely impacted. Scientists in the field of coastal studies warn us that unless immediate and drastic restrictions are imposed on unbridled development our most important natural systems and renewable resources areas will be lost before wise

The establishment of a deep water port will have profound environmental consequences including the opening of American coastal waters to supertanker traffic, massive secondary effects on the coastal zone flowing from onshore support operations, and ecological changes effected by the construction and maintenance of the facility itself.

*Supertanker Traffic*

An assessment of the environmental consequences of deep water ports involves an analysis of the environmental effects of increased oil imports into the United States.

*Oil in the Ocean*

Chronic pollution from oil in the ocean poses a threat to marine life, and recreational and fishing resources. The health of the marine and coastal environment is a pressing national priority which should be an overriding concern in all oil operations.

Oil is becoming one of the most widespread contaminants of the ocean. Dr. Max Blumer at Woods Hole Oceanographic Institute has estimated that 1 million to 10 million metric tons of oil per year may be entering the oceans from all sources. Most of this influx takes place in coastal regions, but oil slicks and tar balls have also been observed on the high seas. Investigators have found that tar balls were more abundant than the normal sargassum weed in the open Atlantic, and their their net quickly became so coated with tar and oil that they were unusable. Thus, oil pollution of the sea has become a global problem of great (though inadequately assessed) significance.

Although accidental oil spills are spectacular events and attract the most public attention, they constitute only about 10 percent of the total amount of oil entering the marine environment. The other 90 percent originates from the normal operation of oil-carrying tankers, other ships, offshore production, refinery operations, and the disposal of oilwaste materials.

The following estimate on sources of direct oil pollution were offered in the Corp of Engineers.

	Percent
Tankers .....	24
Other ships .....	23
Offshore production .....	5
Refinery operations .....	14
Oil wastes .....	25
Accidental spills .....	9
Total .....	100

The Environmental Impact Statement filed by the Maritime Administration states that "of the 1.457 million tons of oil lost per year which tankers and tank barges are held accountable for, 967,000 metric tons come from routine tanker operations and ballasting and cleaning of cargo oil tanks." Most newly constructed supertankers have the Load-on-top system for cleaning ballast tanks. LOT effectiveness depends greatly on sea conditions (in rough weather oil and water will not separate effectively), on length of ballast voyage (if voyage is short, time is insufficient to separate oil and water and complete the required pumping), and on oil-water interface detectors for which the technology is not adequate to the task. Furthermore, LOT cannot be applied to tankers in product trade because the various refined products cannot be mixed, even in the small amounts which would with the LOT system. Thus we believe that LOT is a stop-gap measure, only partially effective, and that segregated ballast systems should be required on all tankers which would use our port

facilities, as the Coast Guard has proposed (Fed. Reg. vo. 38, no. 17). Whichever central agency does wield authority for licensing deep water port facilities should work closely with the Coast Guard in establishing standards for tankers entering U.S. waters. Additionally, the most modern ballast treatment facilities should be installed.

Approximately 70,000 metric tons of oil per year are injected into the seas as a result of cargo handling operations between tankers and marine terminals. Although the amount is relatively small, these spills occur frequently in the same areas. Human error is the predominant cause of these spills, although mechanical and design faults are also contributing factors. Close supervision of transfer operations, and better crew training procedures would help alleviate this problem.

As we said earlier, we believe that pipelines are the best system for transferring oil to shoreside facilities. Smaller tankers and barges which could be used instead would add to port traffic congestion and might require additional waterfront facilities. Traffic problems are significant. Many U.S. channels are extremely narrow, and increased numbers of small tankers (which would be in the 35,000-85,000 DWT range) would increase the likelihood of polluting incidents.

Efforts to mitigate the adverse environmental impact of oil transportation are needed. One means of lessening oil spilled in tanker traffic is to restrict entry to American deep water ports to vessels embodying environmental design features.

Presently, only a handful of vessels in service or on order contain environmental design features. IMCO (the Intergovernmental Maritime Consultative Organization) has called for the load on top facilities to be in operation by 1981, but a grandfather clause keeps this from having full impact. Few ships under construction or in operation have features such as double hulls, double bottoms, totally segregated clean ballast systems, features which would reduce accidental oil flows. Few ships have features such as bow and stern thrusters, controllable pitch propellers; and twin screw propulsion systems, features which would increase vessel maneuverability.

Will any enabling legislation for U.S. superports include requirements setting standards for the types of vessels using them—or will single hull, single bottom, non load on top, single screw vessels have the license of the seas to call at U.S. terminals. Regulation of the types of vessels calling at American ports could significantly decrease the environmental impact of their operation.

Supertankers are no different in basic design than smaller tankers: Like smaller tankers, they have 1½" of steel separating their millions of gallons of cargo from the ocean. They differ in having larger cargo tanks and in being more difficult to maneuver, requiring greater distances and more time for an emergency stop than smaller tankers. The propulsion units currently installed on these huge vessels, exceeding 1,000 feet in length and 150 feet in beam is equivalent to a 1/3 horsepower motor on a 40-foot boat.

One of the most important factors in connection with collisions and groundings is the crash stop ability, which has decreased drastically as tanker sizes increase. The energy absorbed in stopping a ship is directly proportional to its displacement. In today's giant tankers with their 90 foot draft, engine power has decreased proportionally; the ships are designed for steady, moderate, and economical speed, and not for power to come to a stop. A handy tanker in the under 20,000 ton range can come to a standstill from full speed within ½ mile in less than 5 minutes, but even a small supertanker in the 200,000 ton range cannot come to a stop within 2½ miles and 20 minutes.

This lack of maneuverability is a characteristic of the supertanker which was commented on in an article in the June 1978 Sierra Club Bulletin entitled "It Was Sad When The Great Ship Went Down", a copy of which is attached as an appendix to this testimony. It is a hypothetical accounting of the grounding in January 1976 of the Colossus Maru, the world's largest vessel and the subsequent massive oil spill. Adherents say that supertankers will be less subject to collision because there will be fewer of them and they will be less apt to go aground since they will be loaded and unloaded at deep offshore terminals. Nevertheless the potential for a catastrophic spill exists in any supertanker mishap. A 200,000 ton tanker is sometimes seen as more of a pollution threat than ten 20,000 tonners. I have worked as a seaman and following my graduation from law school as an admiralty lawyer. The maritime calling

teaches the hard lesson that passage at sea is a hazardous undertaking. The difficulties of seamanship are inconceivable to the layman who does not understand that a ship is subject to many mishaps. The extent of these mishaps are a matter of statistics. The Environmental Impact Statement filed by the Maritime Administration on the tanker construction program which analyzes 1,416 tanker casualties during 1969 and 1970 states that every tanker on the average is likely to be involved in an accident once every nine years and that approximately one out of every six of these accidents, or 133 a year, is likely to result in an oil spill. The casualties are caused by structural failures, groundings, and fires and explosions. The study concludes that there is no clear indication that there is any relationship between tanker size, frequency of accidents and the amount of oil spilled other than that explosions are more apt to occur on large tankers. The Environmental Impact Statement, in seeking to assess the impact of supertankers and their effect on pollution of the oceans by oil spills, concludes that the period of their operation to date has been too short to assess their accident proneness. The study notes that accident proneness is more closely a function of age rather than the size of the ship.

Supertankers are not immune from the toll of the hazards of the sea. One thing that we can prophesy with certainty is that there will be accidental spillages and casualties from supertanker collisions and casualties. Not because the ships are poorly built or because the crews are incompetent: indeed, we assume that they will be excellently built and manned by crews of first class seamanship, but passage at sea is a hazardous undertaking, and the laws of fate declare that the sea will take its toll.

Increased ocean transportation of oil increases the potential damage from pollution and the establishment of deep water ports served by supertankers exposes an area to a catastrophic oil spill.

Oil spills represent a tangible and visible hazard associated with the development of superports that people can readily understand. Supertankers pose environmental problems considerably different in degree than those associated with smaller tankers because of their greater carrying capacity and their likely concentration at a few ports capable of handling them. The Maritime Administration, in its Environmental Impact Statement on its tanker construction program, has estimated that a massive supertanker spill, i.e., a loss of approximately 90 million gallons of crude oil, off the Coast of Maine, might form a slick that would cover 40 square miles with an emulsion  $\frac{1}{8}$  inch thick, or a slick a few microns thick which would cover almost 80,000 square miles. Such a spill is projected to expose 200 to 300 miles of the New England shoreline to heavy oil pollution, totally destroy the shellfish and lobster catch in the New England area for one or more years, and substantially damage the coastal recreational industry in the New England states. The Maritime Administration's Environmental Impact Statement on the Tanker Subsidy Program analyzes the possible impacts of a major oil spill on the commercial fisheries and coastal recreational industries: the Louisiana shrimp industry is valued at about \$100 million annually, and the loss of an oyster crop for one year would represent a loss of about \$10 million. Although the value of the recreational fishery and tourism is not known, Mar. Ad. estimates that it is probably larger than the value of the commercial fishery. After a massive spill in Machias Bay, damage to the fisheries could be as much as \$20 million with a processed value of about \$48 million. Additionally, an entire tourist season could conceivably be lost "with serious economic loss to coastal New England communities." Considering these potential impacts, and the fact that the east coast fisheries are in serious trouble from overfishing and from foreign fishing fleets, we believe that the commercial fisheries need the best possible protection from potential damage from oil pollution.

Oil spill cleanup and control technologies are still inadequate to the task. The M.I.T.-Sea Grant study on potential impacts of an oil spill on Georges Bank concludes that, "attempts to provide an oil containment and collection system against winter spills on Georges Bank are presently futile, and almost certainly will remain so." This problem raises serious questions about the ability to control oil spills at potential deep water port facilities, particularly off the northeast Atlantic coast. Site evaluation for particular proposals should carefully consider the difficulty of cleanup in certain areas.

The best medicine is prevention. Prevention requires the strictest possible standards for tanker construction, strict licensing of tanker personnel and

the most modern traffic control systems, as well as strict licensing, inspection, and enforcement procedures for offshore facilities, if and when they are necessary.

#### CONSTRUCTION IN THE OPEN OCEAN

The danger of massive oil pollution has led many environmental observers to urge that deep water ports be located far offshore so that if a major spillage were to occur there would be more time for containment and cleanup before the oil washed ashore on biologically sensitive coastal areas. Studies made by the Council on Environmental Quality indicate that, from an environmental point of view, offshore sites are preferable to estuarine locations.

The construction of such offshore sites even if limited and dispersed will have an effect on the ocean environment. The parameters and magnitude of the environmental impact of the SPM and the artificial island types of deep-water ports on the open ocean have not received attention given to their environmental impacts on the sensitive coastal environment. The impact on the open ocean must be explored.

Not the least of the possible impacts is the increased probability of accidents in inclement weather or high seas because of the supertanker's lack of maneuverability and flexibility. It is presumed that such a facility would be dedicated to one use and that additional uses such as a bulk cargo handling terminal or a marina would not be permitted. If multiple use terminals were allowed, the effects of possible pollutants would likely to become more complex. Furthermore, the possibilities of a serious collision would be increased with the additional volume and confusing pattern of traffic servicing these other facilities. Navigation patterns for commerce, fishing, and recreational vessels would have to be altered to avoid supertanker traffic.

According to the Maritime Administration's Environmental Impact Statement on the Tanker Construction Program, pipelines which are laid along the bottom are "more susceptible to damage from physical contacts and currents and have a higher chance of breaks and ruptures with consequent spills. They also may obstruct water circulation, especially in relatively shallow areas near shore." In addition they may be obstructive to some kinds of fishing operations. While the construction of buried pipelines will cause a temporary disturbance on benthos, burying pipelines is clearly preferable environmentally to pipelines on the sea floor. We believe that if and when deep water port facilities are constructed, all transfer operations should be by pipeline, and all pipelines should be buried.

Some commentators suggest that littoral drift and wave patterns would be influenced by the size and shape of the facilities. The effect on biological communities is unknown.

Environmental commentators have focused their attention on the impact of superports on the coastal zone; little has been said about unexpected and secondary impacts on the open ocean environment. The Maritime Administration's Environmental Impact Statement which spends more than 100 pages discussing oil spills has only 5 pages discussing the impact of the construction and operation of the facility on the open ocean environment. The Department of Interior's draft Environmental Impact Statement of June 1973 is disappointing in its failure to discuss these impacts. In fact, the Statement appears to assume that there will be no adverse impacts and fails to even raise the question of environmental effects on the open ocean. There is no discussion of hazards to the offshore facility from fire, storm, or pipe rupture or of the effects of everyday strains such as currents, wind and weather. The consequences of offshore construction on the open ocean environment must be evaluated before any deepwater port in the open seas is considered.

#### EFFECT ON THE COASTAL ZONE

The implications of deep water port development are most staggering in the consequences of the health and integrity of the coastal zone. The direct impact will involve an incredible commitment of resources for oil transport, pipeline, and refinery facilities in the on shore support area. An even greater secondary effect will be felt in increased industrial development and future population densities. The initial siting of these large refineries, tank farms, pipelines, and other support facilities calls for a commitment to coastal zone

planning which has not yet been made. The 1972 Coastal Zone Management Act was passed because of Congressional awareness that estuaries and marine embayments are among our most environmentally sensitive and valuable areas.

The Corps of Engineers studies on the feasibility of superports, like those of the Council on Environmental Quality, turn away from the alternative of deepening channels in existing ports such as in the Puget Sound and Maine coastal areas because of the extensive dredging, blasting, and spoil disposal problems associated with a close inshore facility.

It is generally agreed that the construction of a deepwater port by deepening existing channels is an unacceptable alternative because of the havoc it would create to estuarine resources.

If superports are located offshore and consist of a buoy system or an artificial island, substantial landside impacts will be experienced. Ultimately, these may be more significant than the environmental costs of construction and maintenance of the offshore facilities themselves, and indeed may cause effects of construction and maintenance similar to the unexpected deterioration of the Louisiana marshes caused by the support operations of offshore oil development.

One study by the Corps of Engineers recently stated:

"The location of a deep waterport terminal will tend to induce industrial concentration particularly of refineries and petrochemical complexes. In turn, this concentration of basic petroleum related industries would induce concentration of associated commercial and economic activities. The totality of new developments will result in population growth and requirements of new housing and public services \* \* \*."

What this would mean in terms of increased pollution was outlined by Colonel Richard Hunt, New Orleans district engineer for the Corps of Engineers at a recent hearing on a Louisiana location for a deepwater port. He stated that the Gulf superport would "require commitments of land resources, large amounts of water,—resulting in biological and air pollution." His study showed that the plans for such a proposed offshore superport would require the commitment of at least 36,800 acres of land for new refineries, petroleum tank farms, and related facilities in Louisiana. These facilities would need 29.5 million gallons of fresh water from the Mississippi river daily. Industrial effluents from the support facilities would total 1.3 million additional pounds a day, in addition to 27.5 million pounds of particulate matter added to Louisiana's daily air pollution count. Within a 50 mile radius of the offshore Louisiana superport, 1.9 million acres of marsh land estuary which now produce 53 million pounds of shellfish annually would be endangered.

Colonel Carroll D. Strider of the Corps' Philadelphia Office in his report on an East coast deepwater port observed that the magnitude of the water needs of the petrochemical complex which would be associated with the offshore port would pose a severe problem for the region as a whole and New Jersey in particular. Even with secondary waste water treatment methods, the effluent from the expected petrochemical complex into the mid-Atlantic would have a BOD content equivalent to the raw untreated sewage of 845,000 people. At the more advanced tertiary level of treatment, the population equivalent would be c.250,000 people. The bulk of these discharges would find their way to the northeast shore of Delaware Bay. The Corps study predicts that the entire Mid-Atlantic region would become heavily influenced by refinery, petrochemical, and associated industrial development.

Such development calls for consideration of questions involving transfer of oil from the offshore facility to the on shore complex. If it is to be done by pipelines, what will be the effect on the coastal ecology? What will be their number, size, and internal pressure and flow rate? How deep will they be buried? What are the dangers of accident? What regulations will be placed on the shore side impact? These questions have not been dealt with to date in discussions concerning superports.

We must establish our priorities. Our priorities should be the protection of splendor of the seas and the integrity of our coastlines. At the present time, legislative and administrative efforts to protect our coastal resources are lagging. The Coastal Zone Management Act enacted last year has not been funded. This has had a direct impact on the work done on coastal planning which should be proceeding forthwith if superport development is to occur offshore.

I can report to you from my own personal knowledge of the effect that the lack of funding of the Coastal Management Act has had. Last year, various academic personnel in two states that I know of were involved in working up grants for planing projects under the Coastal Zone Management Act. They are not doing that now. They have shelved their plans for coastal zone management and they are working on superport planning, because that's where the action is now, and that's where the money for grants is expected to be.

Our coastal zones are a precious national asset. Should superports be authorized to help fulfill national energy needs, it is essential that coastal states be prepared for the expected landside impact. The attention given to superports is out of focus; Congress should take no action on development of superports until the Coastal Zone Management Act has been funded and a coherent, comprehensive and effective framework for coastal zone management and protection has been established for our American shorelines.

#### CONCLUSION

In conclusion, we reiterate that offshore developments of superports should not be permitted to proceed until fundamental questions of their environmental effects are resolved.

First, an assessment must be made of the impact of offshore terminals on the open ocean. Research will have to be funded in some fields because of a critical lack of knowledge in a number of areas essential to a comprehensive evaluation. The duty of the Congress is to delay enabling legislation on deep water port permits until the direct and indirect consequences of such an undertaking are assessed.

Second, Congress must ensure that the states are prepared to protect the integrity and health of the coastal resource. The most disheartening aspect of the current discussions on deep water ports is the enthusiasm with which some state political leaders in Louisiana, Mississippi, and Alabama have sought to have deepwater port located off their shores without a commitment to coastal zone protection or environmental quality. In Alabama, the Alabama Development Office, the state agency for attracting industry, has been given responsibility for coastal zone planning. Its director has stated that representatives of environmental groups have no role in the planning process. The Governor of Mississippi at the Mobile, Alabama Corps of Engineers hearing on a Gulf superport assured the audience that the people of Mississippi were unified in their support of an offshore Mississippi site and guaranteed the Corps hearing officer that no one from Mississippi would come forward to speak against a Gulf superport. His meaning was not lost on his audience. The dismissal of environmental critics from the faculties of Mississippi universities has drawn the intervention of the AAUP and other groups interested in academic freedom.

Congress in exercising its stewardship over our ocean and coastal resources should tie any deep water port action to provisions insuring that wise coastal planning has been effected. This is especially true of location of superports in ocean waters off states where the Congressional mandate for wise coastal planning is not being taken seriously.

Third, Congressional action on superports should be drafted in terms which will allow regulation of the vessels using those facilities. Supertankers should not be allowed to call at these deep water ports unless they meet minimum standards of environmental design and operation.

Finally, an institutional framework needs to be developed. As an approach to drafting such a framework, the following principles are offered.

(1) Offshore development of deep water ports should not be permitted to proceed (a) until fundamental questions of need and environmental effects are resolved and (b) until a coordinated policy approach to development of the coastal zone is established;

(2) Any deep water port development which is undertaken should proceed cautiously and perhaps be limited to a pilot project in the first instance;

(3) Since only a limited number of deep water port facilities appear ripe for consideration within the near term, it may be appropriate to have specific legislative approval for each facility, rather than leaving this determination to an agency;

(4) There should be overall planning and coordination, through a single federal agency, of deep water port development;

(5) State and regional authorities should be involved in the planning process and any deep water port project should be subject to their approval on land use planning and environmental grounds;

(6) There should be a uniform scheme of regulation of deep water port development applicable to such development whether it occurs within the territorial sea or on the Outer Continental Shelf.

[From *Surveyor* magazine, February 1973]

#### SPECULATION ON THE MILLION TON SHIP

American oil demands in 1985 are projected to require 2,600 tankers of 47,000dwt (deadweight tons) equivalent or 500 vessels of 250,000-dwt equivalent. Only 125 million-ton tankers would be required to do the job. The efficiencies of this kind of an operation are the irresistible attraction of the million-ton ship. A lot has to come first, such as port and repair facilities, but these were the same obstacles that confronted the quarter-million-dwt ship. The answer to how soon the maritime industry will undertake the million-ton ship might be: sooner than you might expect.

#### WORLD'S LARGEST SHIP LAUNCHED IN JAPAN

TOKYO—Nov. 12, 1975 (AP)—Top officials gathered here today at the giant graving dock of Ibitsu Industries shipyard to witness the launching of the largest ship ever built—the million-ton oil carrier *Colossus Maru*.

Emperor Hirohito, 75, emerged from a two-year seclusion to break a special, outsize bottle of California champagne across the prow of the mighty ship. "This is an historic day for Japanese industry," the aging ruler said as the enormous dock slowly began to fill with water. The size of the *Colossus Maru*—1,470 feet long, 265 feet wide, and 182 feet from keel to main deck—made it impossible to launch the ship in the usual manner.

Owned by the Colossus Corporation, consortium of international investors organized to build and operate the big tanker, the \$120-million *Colossus Maru* is leased to a group of American petroleum companies for the shipment of crude oil from the Persian Gulf to refineries in the United States.

#### LIBERIAN FLAGSHIP

The Liberian-flag ship will be manned by only 32 highly trained crewmen hailing from more than a half-dozen of the world's leading maritime nations. Captain Paul C. Lindemeyer, an American with 14 years' experience in VLCCs (Very Large Crude Carriers), said of his appointment, "This is a great responsibility as well as a tremendous opportunity."

Chris Ariapoulos, the ebullient Greek shipping magnate who formed the Colossus consortium, beamed into TV cameras as he shook Captain Lindemeyer's hand. "We put Paul in charge of this boat," he said, "to get him ready for a really big command." Asked if he had still bigger ships in the planning stage, Ariapoulos winked and, waving airily toward the immense bulk of the *Colossus Maru*, said, "If there is any [oil] left over after we fill her up, we may just have to do that." (The *Colossus Maru* will carry 250 million gallons.)

#### "BREAKTHROUGH"

In contrast to Ariapoulos' banter with newsmen, President Nixon's personal representative, Eric M. Stermer, spoke of the historic implications of the occasion. "The *Colossus Maru*," Stermer said, "represents probably the greatest single breakthrough in mankind's constant struggle to stay even with the world energy crisis." Petroleum companies, Stermer noted, will be able to ship oil in the great ship for less than \$3 a barrel, about half the cost of transport in smaller tankers. "Thus, oil producers will be encouraged to investigate and exploit new sources of the fuel that feeds the world."

The new tanker's first port of call, after loading at Ra's al Khafji, Saudi Arabia, will be the new Farallon Offshore Oil Facility (FOOF), constructed earlier this year off San Francisco's Golden Gate at a cost of \$180 million in

federal funds. The *Colossus Maru* will probably arrive there sometime in mid-January, a spokesman said.

#### FAMILIES, FRIENDS SAY GOODBYE TO THE MANASSAS

ALAMEDA—January 12, 1976—It's back to action again for the *U.S.S. Manassas*, the mighty nuclear-powered aircraft carrier which departed this morning for a resumption of its peace-keeping operations in Southeast Asian waters.

It will be the third tour of duty in the Far East for the *Manassas*, which has just completed an extensive overhaul at the Mare Island Naval Shipyard.

More than 2,000 people—relatives and friends of the ship's crew—came down to wish a hearty *bon voyage* to the carrier and members of its task force, the destroyers *Sherman* and *Ruckle* and fleet oiler *North Platte*.

Navy spokesmen said the *Manassas*, under the command of Captain Mervyn L. Cruickshank, would pass under the Golden Gate Bridge at about 10 this morning, unless progress is delayed due to the heavy fog that has plagued the Bay Area over the past two days.

*(8:00 A.M. weather forecast from U.S. Weather Bureau, January 12, 1976)*

Overcast with night-and-morning patches of low fog along the coast, extending several miles inland. . . Winds SW 15-25 mph, increasing in strength late today or tomorrow. . . Chances of rain 40 percent today, increasing to 70 percent this evening and 80 percent by late tomorrow. . .

*(Radio message from Farallon Offshore Facility, January 12, 1976)*

Ship *Colossus Maru* has suffered collision damage with naval vessel *North Platte*. *Colossus Maru* reports shaft sprung, tugs attempting to hold ship against drift toward Middle Farallones.

SAN FRANCISCO, January 13, 1976—A spokesman for Standard Oil said today that there was "little probable danger" of a large-scale oil spill from the stranded supertanker *Colossus Maru*. After a collision yesterday with the Navy vessel *North Platte*, the huge ship lost all power and went aground near the Farallon Islands. She is carrying 225 million gallons of crude oil from Saudi Arabia. Standard Oil is one of five American petroleum companies which have leased the great ship.

"You have to remember that his ship was constructed with precisely such a possibility in mind," Charles Brinkerhoff, Standard Oil's public relations head, said during a barrage of questions at a press conference today. "The ship is not just one great big floating tank, you know, but a carefully structured series of individual tanks. They're each sealed and separated by steel bulkheads. The chances of more than a small part of the oil escaping are very limited."

There was, then, some chance of oil being lost? "Well, a matter of fact, we have an unconfirmed—and let me emphasize that 'unconfirmed'—report that one of the starboard tanks has ruptured slightly and may be leaking a small amount of oil."

Brinkerhoff said there was little possibility that an attempt to pump the oil off the ship into smaller tanker would be made. "In the first place, it would take days—perhaps weeks. In the second place, according to reports we've seen, the storm is going to become a real blow. Heavy seas will make transfer almost impossible."

Brinkerhoff conceded that the problems in rescuing the vessel are great. "As many as 15 tugs at a time have attempted to move the ship and failed," he said. "Our options seem limited to repairing and taking her off under her own power."

When asked if the expected storm would be likely to cause damage to the great ship, Brinkerhoff replied, "You're talking about the largest ship in the world—a million deadweight tons. Can you imagine anything that big being seriously affected by any storm you ever heard of?"

Standard Oil and the other companies leasing the ship were doing everything possible, he emphasized, to prevent any major problem with the oil. "We are

in constant communication with the local offices of the Environmental Protection Agency, in case any emergency measures need to be taken. We do not anticipate such a possibility, however."

Asked if he categorically denied the possibility of a major oil spill, Brinkerhoff snapped, "Of course not. Standard Oil is not God."

*(Radio message from Captain Paul O. Lindemeyer of the Colossus Maru, January 13, 1976, 1:27 A.M.)*

Currents and heavy seas straining *Colossus Maru* badly. Engineer reports water in engine room. May have oil leakage in several tanks. Ship may be breaking. Master three crew and operator staying on board. All others leaving.

#### CAPTAIN, REMAINING CREW RESCUED

SAN FRANCISCO, January 13, 1976—Captain Paul Lindemeyer and four others were rescued by helicopter today from the beleaguered supertanker *Colossus Maru* almost precisely 24 hours after the ship went aground near the Farallon Islands. Heavy storms conditions made the rescue operation "very tricky," Coast Guard spokesmen said. However, Lindemeyer and his crew were doing "as well as could be expected—tired, but in generally good shape."

Although visibility was severely limited by the storm, Coast Guard officials said that the million-ton tanker, carrying an estimated 240 million gallons of oil, appeared to be "going to pieces," in the words of one helicopter pilot. "It's just a mess," he said. "It's like watching a skyscraper break up during an earthquake or something. That thing is just huge, but you can see it moving in the water. You can see it just going to pieces. I've never seen anything like it."

*(Transcript of a television interview with naval architect Frank Conlin on the "Kaffeeklatsch Hour" KLM-TV, San Francisco, January 13, 1976. Jim Boyle is the interviewer.)*

BOYLE. Before we begin accepting telephone calls from our viewers, Mr. Conlin, perhaps it would be a good idea to back up a bit, so to speak, and reiterate for the viewer the present situation in regard to the ship *Colossus Maru*. So far as we know the details, at any rate.

CONLIN. Yes, that would be a good idea.

BOYLE. All right, then. At approximately 4:15 this morning, the oil tanker *Colossus Maru*, which has been grounded near the Farallon Islands since early yesterday afternoon, apparently broke in two. Now this vessel has been touted as the largest, most carefully engineered ship in the world. How on earth could it simply break in half?

CONLIN. Well, simply put, the ship's size is its very weakness. You reach a certain point when strength has nothing to do with size. No, let me put it this way—you reach the point when *lack* of strength has a great deal to do with size, depending upon the environment. You know what I mean?

BOYLE. I'm not sure I understand.

CONLIN. Okay, try to look at it this way. The blue whale is the largest mammal in the world, the largest and the most powerful. Yet its strength depends entirely upon its environment. I mean, it was created for the sea, designed in such a way that it has to be surrounded on all sides by water—by an even pressure—for it to survive. You take that blue whale out of the water and put it on land and it will simply collapse, done in by its own bulk. Its skeleton was never meant to support it in such a way. The animal's weight would crush it.

BOYLE. Are you saying that is what has happened to the *Colossus Maru*?

CONLIN. Not precisely, but close enough to that to make my point. This ship, a million tons in weight and nearly 1,500 feet in length, is sort of a man-made version of the great blue whale. It was designed to sail along on the deep blue sea, but here it is, part of it anyway, sitting on the bottom of the ocean, grounded. The pressure put on the vessel under those circumstances are just tremendous, incalculable. You combine that with the currents and the rough seas we're having, and you have the combination of forces that just sort of wore the ship in half.

**BOYLE.** What do you think is likely to happen now?

**CONLIN.** It's pretty obvious, the way I look at it anyway. If the storm keeps up, the ship will be torn to pieces.

**BOYLE.** Isn't there anything that can be done?

**CONLIN.** I can't think of much. You can't sink the pieces, since they're already grounded. You can't tow them anywhere—they're too big and too full of oil and water. You can't pump ping-pong balls into them to float them—there aren't that many ping-pong balls in the world. You could bomb them, I suppose, but all you would be doing is breaking them up sooner than later. No, nature and the law of physical properties will take care of the ship. Or what's left of it.

*(Transcript of a taped telephone interview on the "News in Depth" program of radio station KLOG, San Jose, January 14, 1976)*

*When the news of the Colossus Maru disaster came in, the KLOG newsroom immediately contacted scientists for their views on the seriousness of the situation in regard to potential oil damage. Here is a tape of a telephone interview with Dr. Howard Bostwick, professor of marine biology at the University of California, Santa Cruz. KLOG newsroom reporter Tom Sanders questions Dr. Bostwick:*

**SANDERS.** Dr. Bostwick, how bad is this likely to be?

**BOSTWICK.** I don't know. Nobody knows. It depends on how much oil escapes. And where it goes. How much oil does a tanker that size carry, anyway—200 million gallons?

**SANDERS.** We understand that it's closer to 250 million.

**BOSTWICK.** Okay, to keep it simple, let's say 200 million gallons actually escape. . . . I'm doing some quick arithmetic on the slide rule here, figuring volume and area. . . . About seven and a half gallons to the cubic feet. Assuming a layer an inch deep, that would cover, let's see, 319 million square feet, and a little more. It works out to eleven and four-tenths, call it eleven and a half, square miles, covered an inch deep in oil.

**SANDERS.** Well, then that's—

**BOSTWICK.** Wait—sorry. The oil is likely to spread more. I don't know how much more. An average thickness of, say, one-tenth of an inch means a covering of 114 square miles. Of course the oil could spread paper thin, or thinner, cover perhaps a thousand square miles. . . .

**SANDERS.** What?

**BOSTWICK.** For a thousand square miles, think of a strip of ocean. . . . Well, you have to remember that prevailing winds will be pushing the oil shoreward while the currents will be sort of stretching it in a southern direction. . . . let's say it's a strip 20 miles wide by 50 miles long, or ten miles by 100 miles, or even five miles by 200 miles—or, Lord knows, two miles wide by 500 miles long.

**SANDER.** That means it could cover the whole coast from San Francisco to Santa Barbara. Is it likely to do that?

**BOSTWICK.** Well, possibly not. You wouldn't expect the oil to form a neat, uniform strip. There would be different currents and eddies acting upon it. It would probably keep breaking up into separate patches, or "lenses," anywhere from one to 20 square miles in size. At first, anyway.

**SANDERS.** At first?

**BOSTWICK.** Yes, it tends to spread out with time. There was that oil spill at West Falmouth, Massachusetts, a few years ago. Six hundred and fifty tons, or something like that, anyway, much less than what we're talking about here, maybe as much as a million tons. Anyway, at West Falmouth, some months after the spill, the oil was covering I think seven and a half square miles.

**SANDERS.** Some months later? Didn't they clean it up?

**BOSTWICK.** Well, they did all the usual things. I'm not sure, but I think they managed to recover something like ten percent of the oil. The rest went into the fish and shellfish that were killed, or down to the bottom.

**SANDERS.** I thought oil floated on water.

**BOSTWICK.** It does, at first. But oil has what are called "volatile fractions," many of which are soluble in water. They get into the water column vertically and end up affecting the bottom fauna. We know that crude oil has many toxic fractions that can kill fish and shellfish. Of course, we don't know how the larval and other young stages of the fauna might be affected. We do know

that over several square miles of the West Falmouth region there were no shellfish at all for more than two years after the spill. And then, there are always the carcinogens.

**SANDERS.** Carcinogens?

**BOSTWICK.** Yes, cancer-producing chemicals. Many of the volatile fractions in crude oil produce cancer in mice. Maybe they will in fish, too—or even people, although you'll have to check with a cancer researcher for that. I don't know anything about extrapolating mouse experiments to people.

**SANDERS.** Dr. Bostwick, our time is about up. Can you give us any kind of firm prediction in regard to this situation?

**BOSTWICK.** Of course not. As I said before, it all depends upon how much oil escapes and where it goes. There are too many unknowns. But think of this: The West Falmouth spill involved 650 tons of oil and utterly ruined seven or eight miles of fishing ground and beaches and marshes, and caused a state ban on shellfish collection over a huge area for more than two years. Now we're talking about maybe a million tons of oil.

**SANDERS.** Then you think it's going to be very bad?

**BOSTWICK.** All right, all right. I think it's going to be so bad I can't find words for it. I can't even imagine it. Can you?

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#### STERMER, HOLMAN SURVEY OIL DAMAGE

SANTA BARBARA, January 16, 1976 (UPI)—Day-old Secretary of the Interior Eric Stermer and California Senator Ben Holman held almost simultaneous news conferences here today after each had toured the oil-covered California coast, Stermer in a four-hour helicopter journey, Holman in a two-day automobile tour.

Holman was visibly upset. "This is the greatest pollution disaster in American history," he said. "Once more, we have paid too high a price for so-called 'progress.' I have not seen one beach between San Francisco and Pismo Beach that is not blackened with oil. I have seen acres of fish belly-up in the water. I have seen dead birds stacked up behind bird rescue centers like piles of garbage. I have seen untold thousands of young people—the only grace note in this whole ghastly mess—working 15, 20, even 24 hours a day trying to clean beaches and save birds. I have seen them crying in frustration and exhaustion. "There is no way at all to assess the complete damage, or to know how long it will take to repair the damage done to those millions of dead fish and birds and other sea creatures?"

Holman said he would immediately request both the governor and the President to declare the 300-mile region between Point Concepcion a disaster area. "But that is only a minor step toward what has to be done. At the earliest opportunity, I intend to introduce legislation aimed at seeing to it that nothing like this ever happens again."

When asked if that legislation would seek to ban the use of supertankers like the *Colossus Mars* in American waters, Holman's reply was a terse "Precisely."

An hour later, Secretary Stermer held his own news conference on the steps of the Del Monte Lodge, where he will be staying tonight before traveling to the western White House in San Clemente tomorrow to make a personal report to President Nixon.

"This is, of course, a terrible tragedy," Stermer said, "and you can be sure the Administration will be doing everything in its power to help." Stermer said he also would be requesting that President Nixon declare the coast a disaster area as soon as possible.

Stermer said that the worst appeared to be over. "Officials of the Environmental Protection Agency tell me that it not likely that the oil will spread much, if any, beyond Point Concepcion. And now that we have calmer weather, cleanup operations can begin in earnest. I have every hope that the problem will be rectified very soon."

When informed of Senator Holman's proposed legislation, Stermer said, "I certainly can sympathize with the Senator's concern over all this. As I said before, it is a terrible tragedy. Yet what I think has been forgotten in the whole unfortunate situation is that we have not only lost birds and shellfish and beaches but at least 200 million gallons of oil at a time when we can ill afford it. I do not think we should lose sight of that fact."

(Excerpt from a speech given by Alan Robertson, Assistant Administrator for Air and Water Programs, U.S. Environmental Protection Agency, before the Oil Spills Prevention and Control Conference, October 12, 1967.)

And so, in conclusion, I must say that in spite of an optimum of money, time, and energy, circumstances defeated us on the California coast. Our technology was woefully inadequate to the occasion, as we fully expected it would be. The seven oillevators—or "slick-lickers"—we managed to bring to the scene were useless until the storm abated, although they have since been able to recover an estimated 20 to 25 percent of the oil—some 52 million gallons, in fact.

Similarly, any attempts to employ nontoxic detergents and dispersants were nearly useless as long as the storm continued. By the time we could bring them into play, the "boiling" action of the sea had already begun to emulsify much of the oil. Besides, there was so much of it, and it spread faster and more widely than we could either imagine or expect.

Yet, as I have noted earlier, the technological problem—however basic—was not the primary one. The greatest difficulty we faced in the wake of the *Colossus Maru* disaster was the failure of the system—or, as I might put it more accurately, the nonsystem. You gentlemen in the petroleum industry can be justly proud of the contributions in manpower, materials, and equipment your people brought to this great tragedy. Similarly, the people of California—those scores of thousands up and down the coast who gave of their time and energy—can be proud.

Yet we cannot be proud of a system that did not work. We cannot be proud that there was not then nor is there today an adequately financed, staffed, structured, *functional* oil-clean-up program capable of taking on a challenge the dimensions of the *Colossus Maru* spill. With all the energy and good intentions in the world, we found our efforts fragmented, and too often at cross-purposes. I have already cited the case of the Army Corps of Engineers' plan to dump chemical reagents on the oil outside the Golden Gate, then set it afire. One does not even like to consider what the consequences might have been—San Francisco Bay on fire? Fortunately, our office was able to persuade engineers of the folly of such a plan, but the very fact that a responsible agency of the government could even consider it points up the size of our problem.

We cannot continue in such a way—cannot and must not. The American people are looking to their government, but they are also looking to you, the leaders of your industry, for solutions. I for one have a high degree of confidence in the American genius for cooperation and technological prowess. We can solve this problem. Any nation that can split the atom and walk on the moon can certainly learn to clean up the world it must live in. It will take time, money, and careful planning on the part of all concerned—but in the end it will pay off for all of us. The future is right around the corner. We must learn to face and conquer what it holds for us.

[From the San Francisco Chronicle, Feb. 18, 1976]

#### LETTERS TO THE EDITOR

**EDITOR.**—As chairman of the Ocean Beach Volunteers, I want to thank you for your outstanding coverage of our efforts—futile as they proved to be—to save the lives of thousands of birds, sea lions, whales and other animals killed by the recent oil spill. Your special picture section on the devastation of the Monterey Peninsula, entitled "The Black Sands of Carmel," will be of great influence in the current international campaign for tanker control.

I do take exception, however, to one word that you and the other news media used repeatedly in describing the *Colossus Maru* disaster—namely, the word "accident." The collision outside the Golden Gate was not an "accident" in the usual sense, nor was it an "act of God," as one oil company official said. It was the inevitable outcome of a calculated risk—a risk taken knowingly, in pursuit of gain. The gain, in this case, was to be a cost saving to the sellers and users of a particular kind of fuel for a particular kind of vehicle engine. The risk, as usual, was to be taken by the general public, including the silent public of plants and animals and the unborn public of the future.

In saying this event was not an "accident," I do not mean to imply anything about the legal responsibility for the most destruction oil spill in history, ten

times as large as the *Torrey Canyon* catastrophe off the coast of Cornwall in 1967. The question of legal responsibility presumably will be settled by the hundreds of lawsuits that already have been filed by state, city and county governments, property owners, yacht clubs, fisheries and resorts. (Three times as many suits, I understand, as in the Santa Barbara oil spill of 1969, which resulted in an estimated \$8 billion in claims.)

The courts may award tremendous damages—or they may decide that the ship owners and oil companies have no financial liability at all. In either case, we will still be left with the fundamental question of whether the owners, refineries, and the United States government were morally justified in bringing a tanker of that size to the coast of California.

In 1973, when the Army Corps of Engineers began studying deep-draft harbor facilities for petroleum supertankers on the Atlantic, Pacific and Gulf coasts, the question of risk came up repeatedly at public hearings. Many people were appalled by the danger of an oil spill from a giant tanker. Yet, the opposition to building offshore oil transfer facilities was confused and divided. Some environmental organizations devoted all their energy to preventing petroleum transfer at certain sensitive places, such as recreation areas or bays rich in marine life. Some spoke out primarily against dredging and filling to deepen channels. A few tried to persuade the Army Engineers to study alternative sources of fuel, while still others urged that the study be broadened to cover the full environmental cost of harbor development, economic growth, and other results of a pro-tanker policy.

To all these comments, the Engineers calmly replied that they were not going to recommend any particular sites, that the investigation of substitute fuels was outside the scope of the study, that they were merely trying to learn whether there was a "need" for additional port facilities—and, if so, to list the advantages and disadvantages of various locations.

The outcome was predictable, even then. The pro-development lobby began its usual drumbeating, calling for "jobs," for "economic progress," for "positive action to meet the threat of foreign competition." Added to this was the dire threat that the entire country was about to grind to a halt for lack of fuel. Major oil companies and public utilities had been sounding this alarm for years in an effort to convince the public that the so-called "energy crunch" or fuel crisis necessitated huge government expenditures for harbors to handle such monstrosities as the million-ton tanker. The decision to build the Farallon Off-Shore Oil Facility at public expense is an example of the success of this now-famous campaign, known in the public relations profession as "The Selling of the Crunch."

In the end, all it took was a few closed gasoline stations and the prospect of rationing to panic the country into risking a supertanker spill. As any of our hundreds of volunteers, working night and day in the blue-black muck at Ocean Beach, can tell you, it was an "unacceptable risk."

Why couldn't we convince our government of that fact a few years ago?

RICHARD RWINHARDT,  
*Ocean Beach Volunteers.*

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#### POSTSCRIPT

*Interview with Captain Paul C. Lindemeyer, May 16, 1995. From John Case's book The Day the Ocean Died (New York, 1996).*

LINDEMEYER. I suppose you want to hear about the *Colossus*; they always want to hear about the *Colossus*.

CASE. Well, Captain, it *was* the only million-tonner ever built, and . . .

LINDEMEYER. And it's all in the record. You can look up the hearings.

CASE. I have, Captain, here it is all worked out on a chart—how you tried to hold your position until the task force cleared the Southeast Farallon, the precise moment of the power failure on the carrier, where the *North Platte* moved out of position, the point of impact, the drift of the *Colossus*. . . . But there is nothing of the human flavor . . . no "feel" for what was happening. For instance, when you had "programmed" your course to the pumping facility off the Southeast Farallon, just how committed to your course and speed were you? Did you have a computer like they use on the bridge now?

LINDEMAYER. Yes, we had about the same equipment, but with the *Colossus* the approach program was more . . . more *facilitable*. It took 15 miles to stop her, you know.

CASE. "Like handling an iceberg with an outboard motor" was one of the comments I've read.

LINDEMAYER. Oh, it wasn't quite so bad as all that. But then, you realize that as slow as we were going those last 30 minutes, that even with the two tugs, you just don't push a ship like that around. And it took time to see just what the current was doing to us.

CASE. Yes, yes. It seems to me that with that current setting you into dangerous water and the fact that you had almost no steering way, the ship was really out of control. . . .

LINDEMAYER. I wouldn't say that. We were getting off the program, but we still had lots of room. I wasn't half as worried as the docking master.

CASE. It was the docking master who was really maneuvering the ship at the time, as I understand it.

LINDEMAYER. Huh! If you can call it that. But I was right there—the captain is always responsible. I was in radio contact with the task force and the oil facility all the time and I had everything on my radar—except when the *North Platte* went into the shadow of the carrier. We couldn't see, you know, it got really thick where the task force was supposed to pass.

CASE. The captain of the *North Platte* testified that he lost you about the same time in the radar shadow of the *Manassas*. You have never commented. . . .

LINDEMAYER. The damn fool should have *known* where we were! A million tons of ship doesn't turn up somewhere else all of a sudden—like him.

CASE. One thing I have wondered: why didn't you ask the task force to stand clear of *you*?

LINDEMAYER. We were programmed. They knew where we were, and you don't tell the Navy what to do. Besides, if the *Manassas* hadn't slowed, or even if the *North Platte* had kept going, we would have cleared easily.

CASE. By a quarter-mile? Isn't that cutting it mighty close?

LINDEMAYER. We didn't have any options left. It looked as if we should speed up to keep us clear of shallow water, slow down to give the task force more room, turn left to get more sea room, turn right to clear the end of the task force.

CASE. But actually, none of those maneuvers would have placed the *Colossus* in a much different position at the time of the collision, would it?

LINDEMAYER. If you mean there was nothing to do by this time, you have the wrong impression, I think. You see, we could have gone aground, or risked it, in maybe 30 minutes, if we hadn't gone full ahead and had the tugs push us to port earlier when it looked certain that the task force would clear us, even if it was by only a quarter-mile. The docking master knew the water and he did the right thing, the same thing I would have done. But you are right that in the time remaining, considering what happened to the task force, this change of speed and direction didn't make much difference right then in the big picture. But as it worked out, as you know, just like in any collision, you are talking about miles at the start maybe, but at the end it may just be a matter of a few feet.

CASE. You mean that you were taking actions that would affect your general position a half-hour ahead—while a vessel like the *North Platte* could take actions that would become important in, say, five or ten minutes. As though you were working one rule book, while Captain Anderson was using another.

LINDEMAYER. That's an interesting way to put it.

CASE. Then, when you picked him up on your radar again. . . .

LINDEMAYER. We went right by the book, reversed and had the tugs try to swing us to starboard, for all the good that could do.

CASE. I'm trying to see your state of mind in those last ten minutes, Captain, before the *North Platte* swung into your stern—if this isn't prying. What did you feel when you knew the *Colossus* couldn't possibly respond effectively to any commands?

LINDEMAYER. I did the right thing. It was all I could do—and the board of inquiry agreed.

CASE. Captain Anderson was also cleared.

LINDEMAYER. They never made him an admiral.

**CASE.** What did it feel like when you knew your propeller shaft was damaged and that you had no power to hold you against your drift?

**LINDEMEYER.** I looked at those little tugs and thought about that damned scheme to tow icebergs from Antarctica to Los Angeles. Funny what goes through your mind at a time like that.

**CASE.** Did you feel the *Colossus* was doomed?

**LINDEMEYER.** After our approach at Ra's al Khafji, I *knew* it was only a matter of time before something would happen. It won't hurt anybody now to say that. Or that I had asked for a six-month leave before we got to San Francisco, figuring that I could work it to get a different ship.

**CASE.** There isn't a *hint* of this in your testimony at the time. Or later. . . .

**LINDEMEYER.** There was a lot of money involved, young man, hundreds of millions at first and then billions. *Billions*, in those suits. Billions, moving like a force of nature—like the *Colossus*.

#### AUTHOR NOTE

T. H. Watkins is associate editor of THE AMERICAN WEST and author of the Sierra Club's THE WATER HUSTLERS (with John Graves and Robert H. Boyle) and CALIFORNIA: AN ILLUSTRATED HISTORY. Harlan Soeten of the San Francisco Maritime Museum conceived the circumstances of the COLOSSUS-MARU's encounter with the NORTH PLATTE. Nicholas Rosa, a writer editor, oceanographer, and marine biologist, contributed the interview with "Dr. Howard Bostwick." Richard Reinhardt is a freelance writer who has been following the Army Corps of Engineers' current superport hearings. With certain obvious exceptions, all names used in this article are fictitious; any resemblance to persons living or dead is purely coincidental.

#### STATEMENT OF ELDON V. C. GREENBERG ON BEHALF OF THE SIERRA CLUB ENVIRONMENTAL DEFENSE FUND, NATURAL RESOURCES DEFENSE COUNCIL, NATIONAL PARKS AND CONSERVATION ASSOCIATION, AND FRIENDS OF THE EARTH

##### SUMMARY OF POSITIONS

The basic positions set forth in the testimony are as follows:

- (1) Offshore development of deepwater ports should not be permitted to proceed (a) until fundamental questions of need and environmental effects are resolved and (b) until a coordinated policy approach to development of the coastal zone is established;
- (2) Any deepwater port development which is undertaken should proceed cautiously and perhaps be limited to a pilot project in the first instance;
- (3) Since only a limited number of deepwater port facilities appear ripe for consideration within the near term, it may be appropriate to have specific legislative approval for each facility, rather than leaving this determination to an agency;
- (4) State and regional authorities should be involved in the planning process and any deepwater port project should be subject to their approval on land use planning and environmental grounds;
- (5) There should be a uniform scheme of regulation of deepwater port development applicable to such development whether it occurs within the territorial sea or on the Outer Continental Shelf;
- (6) There should be overall planning and coordination, through a single federal agency, of deepwater port development;
- (7) Financing, ownership and charges for use of deepwater port facilities should be subject to governmental regulation;
- (8) Authority to regulate vessel design and provide for vessel traffic services and port systems should be extended to deepwater port facilities constructed outside the territorial sea;
- (9) Deepwater port facilities should be located and isolated off shore and at a substantial distance from bays and estuaries; and
- (10) Transport of oil from offshore terminals must be accomplished by buried pipelines rather than small tankers and barges.

In light of these positions, we then evaluate and criticize S. 1751. This legislation, in its present form, appears designed (a) to facilitate rather than to plan for and regulate deepwater port development and (b) to limit challenges to such development. It wholly fails to create an adequate regulatory framework which would provide for an overall, systems approach to deepwater port development, taking into account all relevant economic, social, political and environmental facts.

I appreciate the invitation to appear before the Committee today to provide the advice of the Sierra Club, the Environmental Defense Fund ("EDF"), the Natural Resources Defense Council ("NRDC"), the National Parks and Conservation Association (NPCAA"), and Friends of the Earth "FOE") (all groups collectively referred to hereinafter as the "Environmental Groups") with respect to S. 1751 (the "Act").<sup>1</sup> I have acted as counsel to these groups on environmental matters in the past, and have been asked by them to coordinate the presentation to this Committee today of their views on the important issues of national environmental policy raised by the Act, a bill which would vest in the Secretary of the Interior the authority to license the construction and operation of deepwater ports on the Outer Continental Shelf.

As Ms. Heller and Professor Futtrell (with whose views we fully concur) are discussing the issues of the need for and environmental effects of deepwater port development, I will not focus on these subjects, except to note that they are difficult and unresolved. Rather, I will address my remarks to the problems of creating an appropriate institutional framework for regulating any deepwater port development which does occur in this country. In particular, in light of the energy, environmental and coastal zone-land use planning problems which attend such development, I will suggest certain general principles which we believe should govern national policy in this area and then, with these principles as a background, go on to evaluate specifically the merits and the defects of the Act.

The Environmental Groups are all national, non-profit, membership organizations deeply concerned about the preservation and protection of the marine and coastal environment. Their combined membership exceeds 250,000 persons throughout the United States and abroad, and includes a substantial number of persons who reside in coastal areas which are likely to be directly affected by offshore development, as well as scientists who have conducted and intend to continue to engage in research in coastal and estuarine areas and the marine environment.

The Environmental Groups have made substantial efforts to improve the quality of the marine and coastal environments by means of litigation, testimony, policy analysis, and educational programs. For example, in the litigation field, EDF, NRDC and NPCA recently achieved a settlement with the Commerce Department under which it agreed to prepare environmental impact statements in connection with its program to subsidize the construction of United States oil tankers and they have provided extensive comments on the program impact statement which has been prepared. And NRDC, the Sierra Club and FOE were successful in requiring the Department of the Interior to consider all reasonable alternatives, and their environmental impacts, to its offshore oil and gas lease sales.

These groups have also been actively involved in presentation of testimony on this subject. Thus, all the groups presented their views on deepwater port policy at hearings held in March of this year before the Senate Commerce Committee and just two weeks ago before the House Merchant Marine and Fisheries Committee. The Sierra Club submitted comments at congressional hearings held in 1970 regarding the development of a proposed deepwater port at Machiasport, Maine, as well as at recent hearings held around the country by the Corps of Engineers related to its current deepwater port studies.

#### I. INTRODUCTION—THE NEED FOR AN INSTITUTIONAL AND POLICY FRAMEWORK

The magnitude and complexity of the planning and regulatory problems inherent in constructing and operating deepwater ports cannot be overempha-

<sup>1</sup> Substantial assistance in preparation of this written testimony was provided by my colleague at the Center for Law and Social Policy, Robert M. Hallman, and by Edward L. Strohbehn, Jr. of NRDC and Peter Borrelli of the Sierra Club.

sized. As other speakers for the environmental community have pointed out, deepwater port development necessarily involves fundamental questions of national energy policy and land use planning. In particular, construction and operation of deepwater port facilities, with their attendant impacts on the development of shoreside refineries, petrochemical plants, and related industries, must be examined and regulated with a view to overall consistent and rational use of this nation's coastal zone, coordinating and accommodating national, regional and local interests, and giving effect to the congressional judgment, embodied in the Coastal Zone Management Act of 1972 (Pub. L. No. 92-583) that the coastal zone deserves special protection. The construction and operation of deepwater port facilities further raise important questions of jurisdictional conflicts among existing federal agencies, and of possible constraints imposed by international law and treaties, as well as issues of private versus public funding, construction, ownership and operation. Finally, development and coordination of regulations respecting port reception facilities, spill containment devices, traffic control systems, and design and construction characteristics of ships permitted to serve U.S. deepwater ports will necessarily be integral to the safe operation of such facilities.

No institutional or legal framework exists for resolving in a comprehensive way the important and complex issues raised by potential deepwater port development. Deepwater port development is presently subject to a crazy quilt of certifying authorities and overlapping jurisdictions; for example, at the federal level, numerous agencies, *e.g.*, Coast Guard, EPA, NOAA, the Federal Power Commission, the Bureau of Land Management, the Bureau of Sport Fisheries and Wildlife and the U.S. Geological Survey, and numerous statutes with different objectives and standards, *e.g.*, the Outer Continental Shelf Lands Act, the 1889 Rivers and Harbors Act, the Coastal Zone Management Act of 1972, the Federal Water Pollution Control Act, the Ports and Waterways Safety Act of 1972, the Fish and Wildlife Coordination Act and the National Environmental Policy Act of 1969, all must be dealt with in examining any deepwater port proposal. Finally, it is unclear if any federal agency has the power to authorize construction of a port facility in areas beyond the territorial sea.

Despite the substantial problems outlined above, neither the Act nor any of the other bills currently pending in Congress which would regulate deepwater port development provides for a comprehensive planning approach for treating the energy policy, land use and environmental issues at stake, and all the proposed legislation would continue or even exacerbate the existing fragmentation of authority.

The Environmental Groups do not believe that a commitment should be made to deepwater ports in this country and that design, planning, construction and operation of such facilities should proceed without full and systematic consideration of all alternatives and implications and without an adequate input from local, state and regional authorities, as well as the public. Should this country embark upon a program of extensive and novel coastal development, there must be a comprehensive systems approach to such development—the only approach which will ensure effective environmental protection—taking into account all relevant economic, social, political, and environmental facts. The Act, as well as other proposals currently before Congress, must be evaluated in the context of the need for such an overall approach.

## II. GENERAL PRINCIPLES FOR REGULATING DEEPWATER PORT DEVELOPMENT

If deepwater ports are to be developed in this country, the Environmental Groups believe that several principles should be reflected in the development of a national deepwater port policy. These are:

1. *Place Interim Moratorium on Development.* Development of deepwater ports should be subject to a moratorium until there is a sufficient informational and institutional basis for establishing a coordinated policy approach for such development within the context of an overall coastal zone management program. Because private oil companies with the sanction of some states are rapidly implementing plans for deepwater terminals, the need for such a moratorium is immediate. Absent a moratorium, these projects may proceed to completion and frustrate any effort to develop a sound, coordinated

program for resolving the fundamental issues of environmental, energy and land use policy at stake.

2. *Ensure Limited Initial Development.* Because oil import projections are uncertain, foreign transshipment facilities are available, and the environmental risks associated with deepwater port development are serious, responsible policy dictates limited development of such facilities. Possibly, only a single pilot project should be authorized initially, with future port authorization to be based on the results of the pilot project. In any event, it seems unwise at this time to permit construction of more than one port in any one sector of the country, although, at some future date, it is conceivable (as was pointed out in the President's Energy Message of April 18, and in the Department of Interior's Draft Environmental Impact Statement on the Act [at p. IV-88]) that construction of dispersed, smaller deepwater ports may be preferable to construction of one massive port to serve an entire coastal region.

3. *Consider Specific Legislative Approval.* Not only should the number of deepwater ports initially authorized be limited as a matter of prudent policy, but all of the government studies of which we are aware support the view that, even assuming a substantial growth in reliance on oil imports, only a limited number of deepwater port facilities may be required. The Department of the Interior's Draft Environmental Impact Statement on the Act states, for example, at p. IV-1, "Projections of port facility needs . . . indicate that no more than 15 berths (a port may include several berths) will be sufficient to meet the requirements for 1985. Thus, the actual number of ports may not exceed one or two in each coastal region, depending on the port type and location suggested." In such circumstances, specific legislative approval of each project, such as that proposed in S. 836,<sup>2</sup> may be appropriate at least as regards basic commitments to and locations for development.

4. *Provide for State Approval.* There must be adequate opportunity for regional, state and local interests to participate effectively in any decision to site, construct, and operate a deepwater port facility. As this Committee well knows, construction and operation of deepwater port facilities within or immediately adjacent to the territorial waters of one or several coastal states may not only pose direct and substantial threats to the coastal and marine resources of such states, but may also induce substantial secondary impacts on land use, water resources, and public services, as well as increase industrial concentration in regions which they serve. State and local governments have traditionally had the authority to regulate these kinds of impacts and, in so doing, have developed substantial resources and experience which have been recognized in federal legislation concerned with air and water pollution. In particular, the critical role of states and regional interests and of coordinated efforts in planning, managing and regulating development of this country's coastal zone is recognized in the Coastal Zone Management Act of 1972 (Pub. L. No. 92-583) and must be accommodated fully in any deepwater port regulatory scheme.

We believe that it is essential that any state adjacent to deepwater port development have the authority to disapprove such development, whether or not the facility is to be located within its territorial waters, (a) if it would be inconsistent with an established state land use or coastal zone management plan or policy and/or (bb) if it is likely to result in significant adverse environmental effects within the state's jurisdiction. The decision to approve or disapprove should be evidenced by specific findings and conclusions and subject to judicial review.

Additionally, as a necessary corollary of effective state participation, power should be vested in states to prescribe stricter environmental or safety standards for facilities (as well as transshipment modes, i.e., pipelines or vessels) within their jurisdiction than may be required by federal laws or regulations.

5. *Establish Uniform Regulatory Scheme.* There should be a uniform scheme of regulation for deepwater port development which applies regardless of whether the port would be located within the territorial sea or above or upon the Outer Continental Shelf, subject, of course, to limitations imposed by in-

<sup>2</sup> In relevant part, S. 836, a bill to amend the Federal Water Pollution Control Act, would provide that, "no Federal department or agency shall construct, license, issue a permit for construction or approve in any way the construction of any facility . . . until [inter alia] . . . Congress has enacted law approving such construction. . . ."

ternational law.<sup>3</sup> The issues involved in planning and overseeing deepwater port development simply do not divide along such arbitrary lines, and it would therefore not be advisable to allow creation of a system (such as that possible under the Act) where one agency with one set of standards would license development of deepwater port facilities on the Outer Continental Shelf and another agency with another set of standards would license their development within the territorial sea.

6. *Create Single Coordinating Agency.* A single federal agency should have primary responsibility for coordinating and overseeing construction and operation of deepwater port facilities. This agency would be responsible for evaluating all phases of a proposed petroleum delivery system—vessel transport, site selection, construction mode, pipeline design, landside support facilities, etc.—in terms of environmental and socio-economic factors, taking into account regional, state and local interests and other current and proposed uses of the coastal zone. The agency would coordinate appropriate environmental reviews and appraisals provided by other bodies with expertise and authority in discrete areas and would be required to consult, as appropriate, with such bodies. Also, the agency mandate should provide that no project should be approved as environmentally sound where it is likely to result in significant adverse environmental effects—which include landside economic development as well as marine pollution and damage to coastal ecosystems—and reasonable alternatives are available which would reduce such effects.

7. *Provide for Economic Regulation.* If only one or two deepwater port facilities are constructed, they will constitute a scarce and valuable resource which will require substantial economic regulation by the federal government. Financing, ownership and charges for use of deepwater port facilities should thus be covered in any regulatory framework, in particular because of the potential for monopoly profit, and perhaps some share of the revenues should be provided to coastal states to assist in dealing with adverse environmental effects. In any event, such facilities should not be promoted through the availability of substantial federal subsidies.

8. *Set Standards for Delivery System.* Present federal authority to regulate vessel design, to provide for vessel traffic services and systems, and to regulate the design, construction and operation of facilities used for bulk transfer of oil to and from vessels should be expanded to cover vessels and facilities used in connection with U.S. deepwater ports located in the contiguous zone or on the Outer Continental Shelf. Indeed, to the extent that deepwater ports are built, thereby encouraging supertanker traffic in or near U.S. navigable waters, it may be that special standards of design and construction should be required of such vessels as a condition to their use of United States facilities. Similarly, special standards for traffic control systems, oil spill containment devices, off-loading equipment and pipeline connections might be required of such facilities. At an absolute minimum, a specific requirement for a positive, mandatory vessel traffic control system, such as that recently proposed by Senator Gravel for the Alaskan trade, coupled with autocollision avoidance radar plotting devices aboard ship, appears a necessity to reduce the risk of accident at such facilities.

9. *Locate and Isolate Facilities Far Offshore.* Deepwater port facilities should be located offshore at a substantial distance from bays and estuaries, should be dedicated solely to the petroleum trade, and should be isolated from other vessel traffic. This policy is extremely important for minimizing disturbance of the estuarine and coastal marine resources which are the most vulnerable to damage from dredging, spoil disposal and oil pollution. It would avoid dredging and construction activity in ecologically sensitive estuarine regions. By restricting supertanker traffic to offshore areas, the risks of groundings and collisions generally associated with operations within narrow and shallow harbor approaches will be reduced for such vessels. By isolating supertankers from other vessel traffic, the risk of collisions and groundings is even further reduced. Finally, should an oil spill from a supertanker occur,

<sup>3</sup> Under existing principles of international law, such a scheme might not be directly applicable to ports constructed and operated on the Outer Continental Shelf by foreign nationals, but regulation of such activities might be achieved through rules governing transport into the U.S. by pipeline or feeder vessel. The same considerations apply to setting standards for a delivery system. See point 8, *infra*.

it would be located a substantial distance offshore which would provide more time for containment and cleanup before becoming a threat to the delicate coastal areas.

10. *Transport Oil to Shore by Pipeline.* Oil should be transported from deepwater port facilities to shore by buried pipelines (routed around significant marine breeding grounds) rather than transshipped in smaller tankers and barges. Although pipelines are not free from environmental risks and substantial efforts are needed to improve pipeline safety technology, this approach would appear to minimize vessel traffic congestion and spill probabilities incident to tanker accidents and ship loading and unloading activities. The requirement and the requirements of isolating deepwater ports well offshore and establishing special standards for associated delivery systems are of such importance that they should be expressly set forth in authorizing legislation, rather than left to agency discretion.

### III. ANALYSIS OF S. 1751

When analyzed in light of the general principles set forth above, the Act falls far short of creating an adequate regulatory scheme for deepwater port development. In applying only to deepwater port facilities on the Outer Continental Shelf (Section 102(b)), it creates the risk that there will not be a uniform scheme or regulation of deepwater port development; by specifically excluding examination of economic effects of deepwater port facilities (Section 103(c)), it provides for no effective limitation on the number of ports to be constructed and effectively precludes any planning for development; by providing only for consultation with states, rather than specific state approval (Section 103(e)), it does not adequately recognize state, local, and regional interests in deepwater port development; in making no specific provision for review of secondary impacts of deepwater port development (section 103(b)(3)), it ignores what may be the perhaps most significant effects of deepwater port development in any given region. Perhaps most importantly, the Act in no way provides for an overall, systems approach to particular projects or to deepwater port development in general, taking into account all relevant economic, social, political and environmental facts.

A close reading of the Act indicates that this proposal is essentially designed (a) to encourage rather than to plan for and regulate deepwater port development and (b) to limit challenges to such development. The Act is basically a developmental statute. The relative unimportance of environmental, economic and social considerations in the regulatory scheme is underscored in particular by the findings in Section 101(a) which declare deepwater port development to be a virtually unalloyed blessing that must be facilitated by the federal government, but which express no recognition that such development may pose severe problems which require stringent federal regulation. At the same time, the licensing and review procedure established in Sections 105 and 106 make substantial inroads into the general rules of procedure established under the Administrative Procedure Act and seem intended to limit evaluation (and review) of the merits of a particular project rather than to provide for the fullest possible assessment of its total costs and benefits of the Act.

While the Act does embody several concepts for which we would express support—

(1) Vesting primary responsibility for coordinating and overseeing construction and operating of deepwater port facilities in a single agency (Section 104(c));

(2) Extension of existing state and federal laws to offshore facilities, including a recognition that the National Environmental Policy Act of 1969 applies to such facilities (Sections 104(d), 111);

(3) Provision for prescription by state and local government of stricter safety or environmental standards for facilities within their jurisdictions than may be required by federal laws or regulations (section 112); and

(4) Provision for some economic regulation of offshore terminals (Sections 103(f), 107(5))—

it would require drastic revision, including a complete shift of emphasis, before it could be acceptable to the Environmental Groups. As outlined in detail below, there are numerous areas in which such revisions would appear necessary.

(1) *Statutory Purpose*

The findings contained in Section 101(a), such as the finding that development of deepwater port facilities fulfills the "national interest in economic use of resources, environmental protection, transportation safety, competitive advantage in world trade, and security in international relations" (Section 101(a)(1)) set the tone of the legislation: deepwater port facilities are good and must be encouraged. As others have pointed out today, these conclusions are not justified. Moreover, there is neither a recognition of the environmental dangers which deepwater port development poses and of the pressing need to regulate such development in order to protect the environment nor any expression of a commitment to utilize all efforts to achieve such protection.<sup>4</sup> Environmental protection, rather than promotion of development, should constitute the core of any acceptable deepwater port legislation, and, if a statute is to be interpreted and implemented with a view to environmental protection, such purposes must be explicitly made part of the regulatory agency's mandates.

(2) *Licensing Agency*

We have reservations about placing authority for regulating offshore port facilities within the Department of the Interior.<sup>5</sup> A broader based environmental agency, with more experience in the port development and regulation area, would better appear fitted to the task of overseeing the construction and operation of such projects. While the Department of the Interior may have expertise concerning the regulation of offshore drilling platforms under the Outer Continental Shelf Lands Act, 43 U.S.C. §§ 1331 *et seq.*, it has no demonstrated expertise with respect to design and construction of port facilities or vessels. Intelligent evaluation of the effects of any particular port facility proposal requires understanding and appreciation of the engineering and operational characteristics of the proposed facility and an ability to project the likely results of any variations in these factors. It may well be that an agency such as the Coast Guard, which has been more intimately involved in port development and design, would be better suited to regulate deepwater port development.

(3) *Geographic Scope of Application*

Section 102(b) defines "deepwater port facility" to include only facilities constructed "beyond three nautical miles" from the coast to the United States.<sup>6</sup> As noted above, a sensible jurisdictional regulatory scheme (such as that suggested in Section 303(b) of S. 80) should provide for uniform environmental regulation of offshore facilities regardless of whether they are located within or beyond the territorial sea of the United States. The approach taken in the Act merely opens up the possibility that there may be inconsistent regimes for licensing deepwater terminals.

(4) *Planning Function*

The grounds for issuance of a license specified in Section 103(b) make it clear that the Department of the Interior is not authorized to take an overall systems approach to the licensing of deepwater port development. The bases for granting or denying licenses are limited in the extreme—financial responsibility and willingness to comply with applicable laws, regulations and conditions (Section 103(b)(1)), non-interference with navigation (Section 103(b)(2)), and minimization or prevention of adverse significant environmental effects (Section 103(b)(3)). We believe that provision should specifically be made in the statute for the Secretary to examine a proposed facility in light of overall coastal zone uses within the region in which the facility is planned and to consider those uses in relation to uses of the United

<sup>4</sup> By contrast, see Sections 302(a)(2), 302(a)(3) and 302(b) of S. 80.

<sup>5</sup> These reservations are heightened by what Representative Reuss of Wisconsin has called the Department of the Interior's "great reluctance and ineptness in enforcing its laws and regulations [under the Outer Continental Shelf Lands Act] against the oil industry, even though potential for disaster is significant," as documented in the Report, dated June 29, 1973, from the United States General Accounting Office to the Conservation and Natural Resources Subcommittee on Government Operations of the House of Representatives.

<sup>6</sup> Parenthetically, it should be noted that the exclusion of "pipelines" from the definition of "deepwater port facility" is open to question. As stated above, we believe that all elements of the delivery system should be evaluated in a single package in assessing a particular port's impact.

States' coastal zone as a whole. Such review would necessarily focus upon both short-term and long-term uses of the coastal zone in light of present and projected energy demands. Only if this long-term planning function is carried out by the coordinating federal agency can there be some assurance that fundamental social or environmental values will not be sacrificed for the sake of short-term or geographically limited economic benefits.

In particular, if this planning function is to be adequately carried out, a provision such as Section 103(c), which provides that, "the Secretary shall not limit the number of licenses or deny licenses on grounds of alleged economic effects of deepwater port facilities . . ." has no place in the regulatory scheme. Economic effects are critical to the decision as to when and where to develop deepwater terminals. As noted above, only one or two such terminals may make economic sense for this country even at projected 1985 import levels. To allow a potentially unlimited number of such facilities to be licensed without considering the economic need therefor simply makes no sense in light of the serious environmental risks which such facilities pose.

#### (5) Environmental Standards

The environmental protection standards established under the Act are limited at best. Indeed, by permitting licenses to be granted if "adverse significant environmental effects" (otherwise an acceptable standard) are "minimize[d]" (Section 103(d)(3)), there is no assurance that significant harm will not occur. If construction or operation of a facility will result in adverse, significant environmental effects, minimized or not, it simply should not be licensed, especially if other alternative sites or types of facility are feasible.

Additionally, while the six specific effects which the Secretary must consider are not inappropriate themselves, significantly they neither include the need for siting the structure in the contemplated location nor the effect of the project on human health and welfare. Further, any evaluation should include a wide range of alternative port development possibilities and related impacts, and considerations should not be limited to the six effects set forth in the statute but should include any other considerations which the Secretary may deem appropriate or necessary. Finally, the Secretary should be required to establish specific, substantive environmental criteria for reviewing and evaluating terminal proposals under Section 103(b)(3).<sup>7</sup>

#### (6) Evaluation of Landside Impacts

As is underscored in the Department of the Interior's Draft Environmental Impact Statement on the Act, at p. IV-85, "one of the most important elements in the analysis of onshore facilities related to a deepwater port complex is the potential development of refinery facilities and related industries. This could have a more significant environmental impact than any other component of a deepwater port system over a long period of time." Similarly, the Corps of Engineers stated in the Summary of its Atlantic Coast Deepwater port Facilities Study, dated January 8, 1973,

"The location of a deepwater port terminal will tend to induce industrial concentration, particularly of refineries and petrochemical complexes. In turn, this concentration of basic petroleum related industries would induce concentration of associated commercial and economic activities. The totality of new development will result in population growth and the requirement of new housing and public services, such as sewage treatment, transportation, schools, recreational facilities, etc. Each of the activities induced by port related economic growth will result in a range of environmental impacts."

In spite of the significance of the secondary impacts of port development and their critical importance for coastal zone management, the Act nowhere provides for their review and assessment by the licensing agency. It seems clear that the criteria listed in Section 103(b)(3) must, therefore, be expanded to comprehend indirect and secondary effects of offshore port development, e.g., land-side industrial development, in a fashion similar to that followed in Section 2 of S. 1316.

<sup>7</sup>In connection with the establishment of criteria, the Act should make explicit that the rules and regulations referred to in Section 104(a) include criteria for environmental certification and that these criteria should be established in consultation with federal, state, and local officials and interested members of the general public in the context of a formal rulemaking proceeding pursuant to the Administrative Procedure Act.

(7) *Provision for State Participation*

The Act provides insufficient protection for legitimate state and local interests. As noted above, we believe that deepwater port legislation should provide for state participation in the decision-making process relating to the siting, construction and operation of deepwater port facilities and that such decisions should be subject to state approval in the manner set forth above at page 10, whether or not those facilities are to be built within the traditional "jurisdiction" of the states. The "consultation" which Section 103(e) provides for is clearly not the equivalent of the state power of approval or disapproval as is expressed in a number of other deepwater port proposals, *c.g.*, S. 836 and S. 1316.<sup>9</sup>

(8) *Timing of License Applications*

Neither Section 103(a) nor Section 105 which establish licensing procedures make it clear whether there will be a single, pre-construction license procedure or whether there will be two separate licensing procedures, one prior to construction and one prior to operation. Substantial time may elapse and circumstances change between any pre-construction licensing procedure and the time that the facility itself may enter into operation. We believe it essential that provision be made in the statute for review of operational effects of deepwater terminals shortly before they are scheduled to become operational. It might be appropriate to have a two step process—an initial license to be granted for construction and then a second license to be granted for operation. Further, provision should be made for continuing regulation and oversight of operation of the facilities in order to insure that such operation is carried out in an environmentally acceptable manner, as well as to insure that new means for improving environmental protection are promptly incorporated as they become available.

(9) *Conditions to Licenses*

Substantial economic and environmental regulation of deepwater port facilities achieved, in part, through conditions to licenses,<sup>9</sup> should be integral to the licensing scheme. Thus, conditions to the effect that "non-discriminatory access at reasonable rates" (Section 107(5)) be included in the license unnecessary, and the Secretary should be mandated to impose such conditions rather than merely being given the authority to do so. With respect to measures which the Secretary "may prescribe to prevent or minimize the pollution of the surrounding waters," (Section 107(3)), we believe that the Secretary should be *required* to establish comprehensive conditions, based upon regulations elaborated in the context of a formal rule-making proceeding under the Administrative Procedure Act, which go to the safety of the entire delivery system and which include such matters as vessel traffic control, terminal design, oil spill containment devices, storage facilities, ship-terminal interface and ship design and construction standards.

(10) *Licensing Procedure*

The licensing procedures set forth in Section 105 appear designed to facilitate the grant of licenses rather than to ensure that projects are fully assessed. No specific burden is placed upon the applicant to demonstrate that the proposed facility will comply with the standards established by the Secretary, especially those standards relating to environmental protection. Further, because no specific time for filing is established, the possibility exists that the entire licensing procedure may be carried out in a relatively hasty manner.<sup>10</sup> Even more significantly, the Act fails to provide for mandatory public hearings. While the Secretary may order such hearings held if "substantial objections" are raised by any "interested person" (Section 105(b)),

<sup>9</sup> A further indication of the Act's failure adequately to recognize state interests is found in Section 104(d), which provides that, "in carrying out all of his functions under this Act, the Secretary shall consult with all interested or affected federal agencies," but which establishes no requirement that the Secretary consult with state or local agencies with jurisdiction by law or special expertise with respect to the environmental effects of the proposed facility.

<sup>10</sup> To the extent that one license condition may involve payment of fees to the federal government (Section 107(a)), we would suggest that such fees be shared with states which may be affected by construction or operation of the terminal.

<sup>11</sup> A better approach is that suggested in Section 307(h) of S. 80, which would require submission of plans for the facility at least two years prior to the expected date of the beginning of construction.

it seems obvious from past practice that once a decision is made to avoid public hearings, it is unlikely to be altered upon reconsideration. The use of the word "substantial" merely serves to underscore the manner in which the decision not to hold hearings, even in the face of objections, will be justified.

The scope of any hearings which are held is confused at best. The Act contemplates two sorts of hearings—first, a general hearing if "substantial objections" are made (Section 105(c)) and, second, pursuant to Section 105(d), a "supplemental" "evidentiary" hearing if, based on the general hearing, the Secretary determines that there "exist one or more specific and material factual issues . . ." to be resolved. No procedures are established for the first hearing, but it is specifically exempted from the provisions of the Administrative Procedure Act relating to adjudicatory hearings (Section 105(f)). As to the second hearing, its procedures, which are defined, are particularly troubling. The specific statutory grant of authority to hearing officers to "preclude repetitious and cumulative testimony, to require that direct testimony be submitted in advance in written form, and to permit cross-examination only to the extent necessary and appropriate in view of the nature of the issues" (Section 105(d)), coupled with the general exemption of such hearings from the provisions of the Administrative Procedure Act relating to adjudicatory hearings (Section 105(f)), constitute an unwarranted limitation upon the hearing procedure. We see no justification for not adopting the approach presently embodied in S. 80 and S. 1316 and requiring hearings to be held in accordance with Sections 554, 556 and 557 of the Administrative Procedure Act, with the full panoply of rights provided therein, with respect to each application for a construction or operating license.

#### *(11) Access to Information*

We do not believe that adequate provision is made in Section 105 or elsewhere in the Act for access to data supporting applications. Section 105(b) leaves open the possibility that applications and supporting data may be available for examination in only one location and may not be available for reproduction. A better approach would appear to be that taken in Section 305 of S. 80, which provides that "copies of any communications, documents, reports, or information received or sent by any applicant shall be made available to the public upon identifiable request, and at reasonable cost . . ." Such a provision could even be further improved by the addition of language to the effect that copies of communications, documents, reports or information received or sent by consulting agencies or interested parties submitting comments should also be made available for public inspection.

#### *(12) Application of NEPA*

While, as we noted above, we applaud the recognition in the Act that NEPA applies to the licensing procedure,<sup>11</sup> the reference in Section 105(e) to the Secretary's decision "including" or being "preceded" by an environmental impact statement is confusing. NEPA requires that a draft environmental impact statement be prepared and circulated for comment as early as possible in the decision-making process, i.e., long prior to the Secretary's decision and certainly prior to any hearings on the matter. Thus, the draft impact statement should be released prior to a mandatory adjudicatory hearing on the license application, which hearing could and should be combined with a hearing under NEPA. As to the final environmental impact statement, this must be issued substantially prior to the secretary's decision in order to allow time for public comment and the submission of views to the Secretary with respect to appropriate final action to be taken thereon. In sum, the entire NEPA process must be complete before the Secretary acts.

#### *(13) Judicial Review*

The Act unjustifiably limits judicial review. Section 105(f), by excluding both general and supplemental licensing hearings from the provisions of 5 U.S.C. § 706(2) (E), deprives a reviewing court of the power to make a determination that an agency decision is "unsupported by substantial evidence."

<sup>11</sup> There does appear to be an inconsistency, however, between Section 104(d) and Section 105(e). The former states that an environmental impact statement "shall be prepared in connection with each license," while the latter merely refers to environmental impact statements being prepared "where required."

Since "specific and material factual issues" are explicitly made subject of special evidentiary hearings under the Act, the "substantial evidence" test should be clearly relevant in review proceedings. The apparent attempt to substitute a hybrid factual review procedure which would permit petitioners to apply to the court "for leave to adduce additional evidence" under limited circumstances (Section 106(b)), is simply unsatisfactory when the broad provisions of the Administrative Procedure Act are available.

Section 106, by only allowing persons "adversely affected" by an order to seek review may limit the class of persons who can invoke the judicial process. Choice of the word "aggrieved" (used in Section 108 to define those who may seek review of penalty assessment actions) would appear to allow review by a broader class. In any event, there is no sound reason to deviate from the general Administrative Procedure Act formulation which allows review by persons "suffering a legal wrong because of agency action, or adversely affected or aggrieved by agency action. . . ." 5 U.S.C. § 702 (emphasis added).

Further, the limitation of the forum in which review can be sought to the "United States Court of Appeals for the Circuit nearest to which the facility is sought to be located," is unwarranted. In light of the fact that licensees aggrieved by enforcement actions can sue under Section 108(b) in the District of Columbia, cutting off parties seeking judicial review of the licensing proceeding itself from such forum appears wholly untenable. Especially if national environmental organizations are involved in licensing proceedings with respect to deepwater ports, the limitation on forums in which review can be sought may impede their ability to seek such review. Generally speaking, a judgment has been made by Congress that judicial review of agency action can be sought in the District of Columbia, see, *e.g.*, 28 U.S.C. § 1301(e), 28 U.S.C. § 2343, and we see no reason for deviating from that judgment in this legislation.

Finally, the specific procedure established under Section 106(a) with respect to the record on review represents an equally unwarranted effort to limit the proceedings. 28 U.S.C. § 2112(b) establishes a general rule that the record "shall consist of the order sought to be reviewed or enforced, the findings or report upon which it is based, and the pleadings, evidence and proceedings before the agency, board, commission or officer concerned. . . ." We see no reason for arbitrarily narrowing the record in advance by legislation.

#### (14) Enforcement

The enforcement provisions with respect to civil penalties, criminal penalties and revocation or suspension of licenses (Sections 108, 109 and 110, respectively) need substantial improvement. In particular, Section 108 should be expanded to provide for mandatory rather than merely permissive assessment of civil penalties by the Secretary for violations of the Act. Similarly, action to revoke or suspend a license for non-compliance with provisions of the law or rules, regulations, restrictions or conditions imposed thereunder (Section 110) should be mandatory. Further, provision should be made, with respect to revocation or suspension of a license, for citizen enforcement (including enforcement against the Secretary) in the event that the Secretary fails in a timely manner to enforce the statute. Finally, we would suggest that this legislation, like other recent pollution control laws, provide for the award by the court of litigation expenses, including reasonable attorneys fees, where the interest of justice requires. *E.g.*, Federal Water Pollution Control Act, Section 505(d).

#### CONCLUSION

In conclusion, I re-emphasize the need to proceed with the utmost caution in authorizing the development of deepwater port facilities and to avoid any commitments to such facilities pending development of adequate information and institutional capacity to resolve the complex issues of environmental, energy and land use policy which are at stake. Development of offshore port facilities, which represents a major new endeavor in the marine environment and which may pose unprecedented threats and challenges to the integrity of our coastal waters and lands, should be allowed to proceed only in the context of a comprehensive, multi-interest planning and regulatory framework for

management of the coastal zone. The Act in its present form is patently inadequate to accomplish this task.

Senator JOHNSTON. Our final witness is Mr. Robert Taggart, president of Sea Transfer System of Fairfax, Va.

Mr. Taggart, we are pleased to have you.

**STATEMENT OF ROBERT TAGGART, PRESIDENT, SEA TRANSFER SYSTEMS, INC.; ACCOMPANIED BY JOHN N. BEALL, GENERAL COUNSEL**

Mr. TAGGART. Senator Johnston, I am Robert Taggart, a practicing naval architect, and president of Sea Transfer Systems, Inc.

With me is Mr. John M. Beall, our general counsel.

This organization is devoted to the application of advanced marine technology to transportation systems involved in the importation of crude oil into the United States. We are concerned with the evolution of transportation systems that are both economically practical and ecologically acceptable.

As these committees are well aware, the only economical means of transporting foreign crude oil across the intervening ocean to U.S. shores is to employ very large crude carriers, VLCC's.

The problem at hand is how to move this energy fuel from offshore to refineries and thence to the ultimate consumer without losing the economic advantage of this inexpensive form of ocean transportation. This must be done without endangering the ocean, coastal, or onshore environment.

Up to the present the techniques proposed for effecting the transfer of crude oil from VLCC's to shore refineries fall into three general categories.

My purpose in being here today is to make this committee cognizant of a fourth technique that heretofore has not been considered and which I firmly believe has many economic and ecologic advantages over those currently in evidence.

Let me outline briefly the three alternative types of crude oil transportation systems that have been considered up to now.

The most obvious alternative is to dredge existing harbors and their approaches to a depth sufficient to accommodate deep-draft tankers. This would permit these large vessels to move to within hose transfer range of existing shore storage facilities. The time and cost of the required dredging operations is, in most cases, exorbitant.

A second alternative is to construct offshore transfer stations in waters deep enough for supertanker operations where large vessels can tie up to discharge their cargo through pipeline to shore demand points.

Under this alternative are included fixed superports with storage and service facilities as well as single point moors connected by flexible hose to the transfer pipeline.

A third alternative is to develop transfer stations that are located on or near the shores of islands, outside the continental

limits of the United States where deep water is available close to shore.

From these stations the crude oil will be transported by feeder tankers to east and gulf coast ports of the United States. This type of system, serving northern European ports, has been in operation for a few years in Bantry Bay, Ireland.

All of these alternatives involve the maneuvering of supertankers in close proximity to the shore, to fixed structures, or to floating structures that are connected to the bottom.

These maneuvers will take place at very low speeds, approaching zero, wherein these mammoth vessels are virtually incapable of controlling their own movements.

This is a point that has been glossed over lightly by the proponents of superports and offshore terminals. However, lack of control of supertankers at low speeds is a potential hazard that cannot be overlooked.

It is difficult to imagine the tremendous forces that are associated with movements of large ships at speeds that are barely perceptible and the havoc they can wreak.

For example, a 300,000-ton tanker striking a fixed object at a speed of one-tenth of a knot will suffer a hull collapse in the area of contact.

This crunch velocity is almost indiscernible. A 1,100-foot ship with its bow swinging at this speed would take 6 hours to make a complete revolution or about twice the speed of an hour hand on a clock. And yet in fact at this speed is sufficient to rupture 2-inch-thick plating and its supporting structure.

Rupture of a tanker hull is of concern relative to tank penetration and consequent spillage of cargo oil. As recently as June 24 such a casualty occurred to the 200,000-ton *Conoco Britannia* at the Tetney monobuoy near Grimsby, England. The cleanup of the 6-inch deep, 1½-mile oil slick is still going on.

But also of concern is what can happen to fixed or floating structures that may be in the path of an uncontrolled supertanker.

Senator JOHNSTON. Let me interrupt you there. You had a 200,000-ton tanker. Is that a double bottom?

Mr. TAGGART. No, sir. I believe there are very few tankers in operation today that have double bottoms.

Senator JOHNSTON. 200,000 ton—that would be classified as a supertanker, wouldn't it?

Mr. TAGGART. Yes, sir.

Senator JOHNSTON. How many supertankers are in existence?

Mr. TAGGART. I am not aware of what the number is.

Do you have a figure on that? It is a couple hundred at least.

Senator JOHNSTON. And no double bottoms?

Mr. TAGGART. I doubt very much if there are any.

Senator JOHNSTON. You had 1½ miles of 6 inch deep oil. Was this compartmentalized?

Mr. TAGGART. Yes, sir. These tankers are compartmentalized some—to some extent. They have transverse bulkheads. On one ship

there might be transverse bulkheads between the cargo oil tanks, having perhaps six total tanks.

I am not sure of the details of this particular bottoming. It was a grounding condition and probably not more than one or two tanks were penetrated.

Senator JOHNSTON. I see. Excuse me for interrupting you. Go ahead, Mr. Taggart.

Mr. TAGGART. Surely.

A 35 knot beam wind, acting on the abovewater body of a tanker in ballast, has enough force to move the tanker broadside; in about 15 minutes it can build up to an athwartships speed of 1 knot.

It would take four 2,000-horsepower tugs to check the movement and the ship would travel about 800 feet before it could be stopped.

In such a situation a single point moor or a superport in the path of the vessel could be wiped out with disastrous results.

The fact that such casualties occur infrequently or at least have not been widely reported may be due to location, excellent tug support, and luck.

Supertanker loading areas and the existing island transfer stations are located in well protected waters with ample room for maneuvering error.

Also, tug combinations operated by well-trained and carefully coordinated crews, can do much to maintain control over supertanker movements.

Yet the probability of such casualties, particularly in the coastal waters of the United States, remains unacceptably high.

Senator JOHNSTON. You mean with superports?

Mr. TAGGART. Yes, sir. One answer to this dilemma is to improve significantly the ability of supertankers to control their own movements during low speed maneuvering, mooring and docking.

It is perfectly feasible to install maneuvering propulsion devices, sensors, and control systems that will reduce casualty probability to an acceptable level.

A different approach is to effect the transfer of crude oil from supertankers to feeder tankers at sea where the large vessels can maintain the headway necessary for control and have adequate maneuvering room to avoid collisions. I believe this is the most realistic solution to the overall problem.

Senator JOHNSTON. You, by the way, heard the environmentalists say that was something they wanted to avoid?

Mr. TAGGART. The feeder tanker approach, yes, Right. But I am not sure that they can.

The technique is covered by a pending patent for a cargo oil sea transfer system which involves the apparatus and means for rapidly discharging supertankers into a group of specially configured feeder tankers in the open ocean, well away from shore. The complete process is detailed in an article entitled "Discharging Supertankers Without Hazard to the Environment."

(The article follows:)

## DISCHARGING SUPERTANKERS WITHOUT HAZARD TO THE ENVIRONMENT

by Robert Taggart

The trend toward tankers of continually increasing size for the transport of energy fuel is creating critical problems in world port development. For cargo oil transport across the oceans, these mammoth vessels are the only economical answer to meeting the expanding worldwide demand for more and more fuel. But the economical transfer of oil from supertankers to shore demand points poses problems that are, as yet, far from being solved.

Two alternative solutions are being considered and practiced to some degree. One solution is to dredge approaches and harbors to a sufficient depth to bring supertankers in close to shore transfer and storage facilities. The other is to build offshore terminals in deep water where the cargo can be offloaded; this requires the distribution of cargo to shore demand points either by pipeline or by the use of smaller feeder tankers.

The first solution is feasible for only a few ports in the United States and will be extremely costly. Because these ports are remote from most of the major demand points, extensive distribution systems will be needed to transfer the cargo from the off-loading stations to processing facilities and thence to the ultimate user. Offshore terminals, on the other hand, appear to have several advantages. If these terminals can be located within pipeline range of major refineries, the offloading and transfer operation could be reasonably economical.

Both of these solutions have a common major drawback. When a very large vessel is underway at low speeds it is virtually uncontrollable. Either when entering a port or tying up to an offshore terminal there is an unacceptably high probability of collision either with fixed objects or with other vessels. When such a casualty occurs, the amount of damage due to vessel momentum, even at near zero speed, can be staggering.

The cost of vessel casualties has become an accepted factor in ship operating economics. It includes the cost of repairs to the ship, repairs to struck objects, and the loss of ship time while repairs are being effected. However, in the case of supertankers, these costs will be relatively higher and will be incurred more frequently. Whether the risk will continue to be acceptable to operators is a moot point. It is probable that this factor will weigh many operating decisions in favor of the offshore terminal over the use of inshore ports since the risk of casualties in the former case is somewhat less.

The foregoing are economic decisions which are generally under the control of the tanker operator. What he cannot control is the public reaction to the possible effect of major tanker casualties on the environment. Any collision in which a loaded supertanker is involved has the potential of an oil spill; this is intolerable and the potential exists in both inshore and offshore operations. Unless the probability of such casualties is reduced to near zero the public simply will not permit supertankers to operate in any area where the shore environment is threatened.

In most cases it is both economically and practically infeasible to locate a pipeline-connected terminal far enough offshore to get beyond the range of an oil spill threat to the shore environment. If remote offshore terminals are employed, they will require a feeder tanker system to shuttle the oil from terminal to the near ports. Furthermore, the design of these terminals is complicated by the lack of protection from the ocean environment and the problems of mooring tankers to them in heavy weather.

There are two alternatives that can be considered in providing a means of transferring cargo oil from supertankers to the shore demand points which may be tolerated by the public. One alternative is to improve the maneuvering control of supertankers to the point where the probability of casualties is reduced to an acceptable minimum. The other alternative is to effect the transfer of cargo from supertankers to shuttle tankers at sea. The following discussion of a recent invention pertains to the latter alternative.

This invention, labeled a Cargo Oil Sea Transfer System,<sup>\*</sup> involves a complete system for transferring large quantities of liquid cargo between two tankers underway at sea. Fundamental to the system

\*Patent Pending



system. Radar transponders are mounted above the outboard struts to permit automatic alignment of the shuttle tanker bow with the probe.

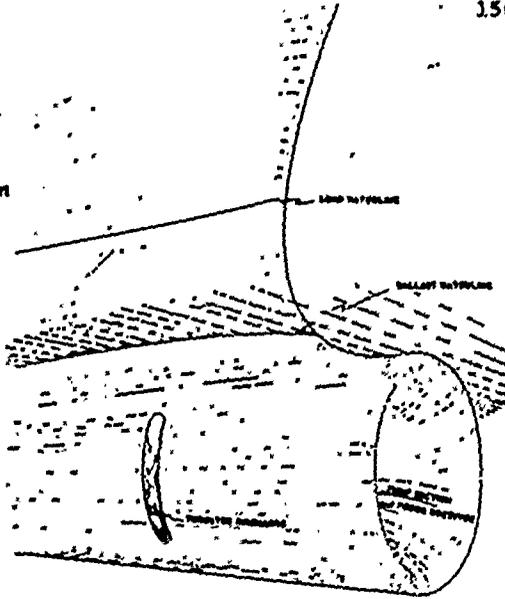
The float struts must be designed so that when the assembly is streamed astern of the transport tanker, it will trail directly astern and have dynamic stability of route. Furthermore, the vertical center of resistance must be such that no trimming moment is applied to the assembly.

Figure 3 illustrates the underwater configuration of the bow of the shuttle tanker. This is essentially an inverted bulb with a gradually tapering throat for receiving the probe cylinder. At the after end of this throat is a large centrifugal pump which normally runs continuously when the shuttle tanker is underway. For straight ahead operation the pump discharge is equally divided between port and starboard discharge ducts. The design of the inverted bulb section is such that a forward thrust will develop as the flow is accelerated through the throat of the bulb. Thus, the propulsive efficiency loss due to this configuration will be minimal.

Provision is made for altering the port and starboard proportions of pump discharge so that close maneuvering control can be exercised. This proportioning can be controlled automatically in response to radar signals received from the transponders on the probe and float assembly. Thus, as the shuttle tanker pulls up astern of the transport tanker its bow can be controlled so as to home in on the probe cylinder. By radio signals from the shuttle tanker the depth of the probe can be adjusted to match that of the bulb throat. The entry of the probe cylinder into the throat will be aided further by the pump section. As clearance between the probe and the throat is reduced, the flow velocity will increase and the accompanying pressure reduction will force the probe tightly into the receiver.

The internal arrangements of the inverted bulb and the probe cylinder are shown in Figure 4. As the probe cylinder moves into the receiver, the shoulder is stopped by an inflated flexible toroidal ring. At this point an inflatable seal is pressurized and locks into a matching groove in the probe cylinder.

On a signal from the shuttle tanker that the probe is locked in position, the transport tanker pumps are started to apply pressure to the hose. This in turn



SECTION OF THE TRANSPORT SYSTEM  
BOW OF SHUTTLE TANKER

FIGURE 3

SECTION OF THE TRANSPORT SYSTEM  
DETAIL OF THE PROBE AND HOSE  
SECTION OF SHUTTLE TANKER RECEIVER

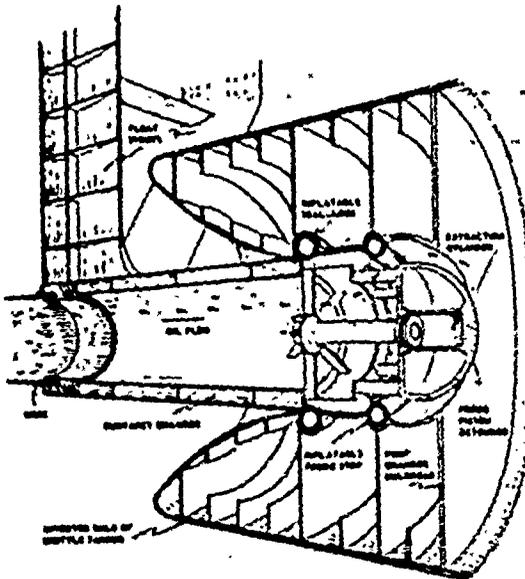


FIGURE 4

pressurize the probe extraction cylinder through the hollow piston. The increased pressure in the extraction cylinder coupled with the reduced pressure in the receiver pump chamber causes the probe piston to extend, and oil flows into the pump chamber.

Figure 5 shows the internal arrangement of the centrifugal pump section and discharge passages. Minged guide vanes are installed in the upper and lower regions of the pump casing. When the pump is functioning as a bow thruster, these guide vanes are adjusted by the discharge control cylinders to alter the port and starboard flow discharge.

When the probe cylinder is secured in position both port and starboard discharge openings are sealed off and the flow circulates around the pump casing. Two additional discharge openings are provided which are connected to cargo oil transfer pipes running the length of the shuttle tanker. These lines are closed off with valves when the pump is functioning as a bow thruster. But when the guide vanes are in the closed position, the oil discharge valves are opened and the centrifugal pump serves as a cargo oil transfer booster pump.

The section of the centrifugal pump plus the toroidal seal seated in the probe cylinder periphery should be sufficient to hold the probe in place throughout the oil transfer operation. The transport tanker and shuttle tanker propellers can be operated so as to maintain a tension in the hose; therefore, the bow thruster action will not be required for maneuvering during the cargo transfer.

After completion of the transfer, the centrifugal pump can be shut down, the oil discharge valves closed, and the transport tanker pumps can be rigged to apply suction to the forward end of the hose. Through the center of the shuttle tanker bow pump rater, sea water can be pumped into the pump chamber. The pressure difference thus created will force the probe piston to retract into the probe cylinder.

By operating additional valves on the pump side of the oil discharge lines, the remaining oil-water mixture in the pump casing can then be forced into settling tanks in the bow of the shuttle tanker. Thus, the pump chamber will be flushed of residual cargo oil. At this point the seal-lock toroid can be deflated and the lesser speed of the shuttle tanker will cause the probe cylinder to be withdrawn from the inverted bulb. The hose can then be retracted by the transport tanker and the probe and float assembly stowed in the stern. This completes the cargo oil transfer operation at sea.

There remains the element of transferring the cargo from the shuttle tanker to a receiving station on shore. During this phase of the operation, the shuttle tanker will be required to enter a port and moor or dock with minimum risk of casualty. The powerful bow thruster is an important factor minimizing this risk. This thrust unit has the capability of providing an ahead thrust and an astern thrust as well as thrust to port and starboard. It provides the vessel with the maneuvering power necessary to control its movements in restricted waters with a high degree of precision and thus the probability of casualties is greatly reduced.

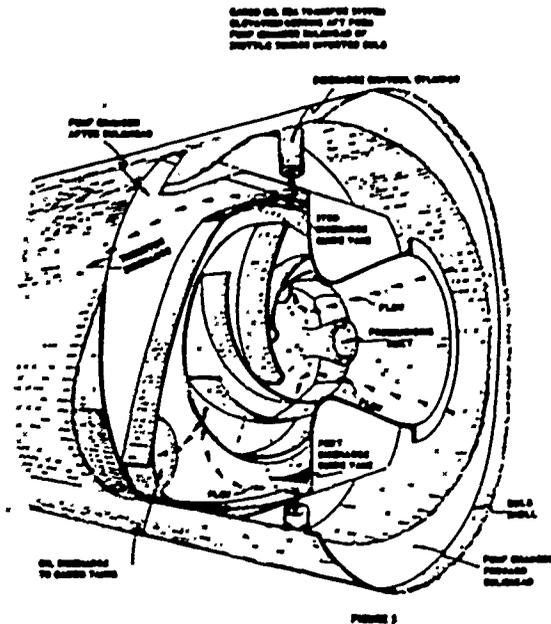


FIGURE 5

Oil can be pumped ashore from the shuttle tanker holds by conventional means. However, the transfer could be effected more rapidly and efficiently by installing special facilities at the receiving terminal. An underwater probe somewhat similar to that trailed by the transport could be fitted to a pier or other terminal structure together with the navigating and control aids required for the shuttle tanker to mate with the probe. With this system, the centrifugal pump at the bow of the shuttle tanker could be operated in reverse to pump the cargo ashore. The shuttle tanker would then return to sea to receive cargo from the same or another transport tanker.

The shuttle tankers will operate over relatively short distances where propulsive efficiency is not a major economic factor. Also they can remain in port when excessive weather conditions prohibit transfer operations at sea. With these considerations as design parameters, it should not be necessary to require that the cargo oil tanks of the shuttle tankers be ballasted with sea water when they are leaving port to mate with a transport. This avoids the problems associated with pumping out oily ballast at sea. However, it does require that these ships be designed with sufficient bow submergence in the light condition for the bow thrusters to be effective.

In the cargo oil sea transfer system discharge operations, it is anticipated that the transport will be continuously underway off the coast of the receiving nation until its cargo is completely discharged into shuttle tankers. When underway, a very large vessel has quite adequate maneuvering control, has ample dynamic stability of route, and its motions in a seaway are minimal. It is an ideal platform for smaller vessels to home in on and to trail behind while liquid cargo is being transferred. One supertanker could efficiently service a number of ports during its coastal transit.

The foregoing discussion relates primarily to the receiving end of the total movement of cargo oil from source of supply to demand points. If conditions at the supply end so dictate, a similar system of shuttle tankers can be used to load the transport at the source.

In order to be relatively efficient in the transport of energy fuel between widely spaced supply and demand points, a total system of this nature would necessarily comprise a number of transports fitted with center tunnels, hoses, and float-probes. Since the transit time of the transport is considerably greater than that of the shuttle tankers, a few shuttle tankers could service several supertankers. Each total system would therefore require a careful analysis of the characteristics of the supply and demand areas and the interconnecting routes to arrive at an efficient numerical balance of system elements. However, once a Cargo Oil Sea Transfer System is placed in operation, it will have a great deal more flexibility than a system that depends upon fixed facility installations. The major investment is in the ships themselves rather than in shore facilities that cannot be relocated to meet changing conditions in world import and export markets.

It appears that the Cargo Oil Sea Transfer System has the potential of satisfying the inexorable expansion in the worldwide movement of energy fuel while at the same time avoiding the environmental hazards of operating uncontrollable supertankers in inshore and near shore waters.

Mr. TAGGART. In the interest of brevity I will give only a general description of the basic elements of the system since copies of this article have been provided for the committee records.

Stowed in a longitudinal, cylindrical tunnel in the supertanker is a large diameter hose fitted at the forward end with a sliding seal arrangement and, at the after end, with a float and probe assembly.

When cargo oil transfer is to be effected the float and probe are launched from the stern of the tanker and the hose is allowed to trail astern.

Buoyancy and dynamic stability are controlled so that the probe will ride in a steady horizontal attitude at a selected depth below the surface while the tanker is underway at normal sea speed.

The feeder tanker into which cargo is to be discharged pulls up astern of the supertanker with its bow directly in line with the probe.

The feeder tanker is fitted with a specially designed bow thruster that takes suction through an inverted tube in the stem.

Extremely close control of heading can be maintained and, as the feeder tanker closes on the probe, the thruster suction pulls the probe into a locked position in the throat of the bulb.

The feeder tanker then reduces propeller speed slightly so that in effect, it is partially towed by the supertanker.

In discharging cargo from one ship to the other the supertanker cargo oil pumps are supplemented by the feeder tanker bow thruster which converts into a booster pump to distribute the oil to its cargo tanks.

With this combination it is estimated that a quantity of about 20,000 tons per hour of crude oil can be transferred.

When the transfer is completed the probe end is closed, residual oil in the bow chamber is flushed with sea water into a settling tank and the probe is unlatched and extracted.

By this means it is expected that a 300,000 deadweight ton supertanker could discharge its complete cargo into four 75,000 ton feeder tankers within a 24 hour period.

The transfer can be effected well away from normal shipping lanes and rendezvous points can be selected to take best advantage of wind and sea conditions.

Thus, the turnaround time for the supertanker would approach zero at the discharge end of its run for maximum economy of operation.

With such a system in operation the feeder tankers can serve one or more ports along the east, west or gulf coasts.

As a part of the system these feeder tankers will have a high degree of maneuvering capability and will be fitted with sensors and control systems that permit them to operate much more safely in restricted waters than is the case with conventional tankers.

This system has the economic advantage of more rapid turnaround of the supertankers. Its ecological advantage is that supertankers operate only under conditions where they can maintain full control and the cargo is brought ashore by vessels that have a low probability of casualty.

Obviously this system is not a panacea for all of the problems associated with increased importation of foreign crude oil into the United States. However, it is an attractive alternative to the other transportation systems being considered by these committees in that it requires no new legislation or government funding to put the system into operation.

Senator JOHNSTON. Thank you very much, Mr. Taggart. Of course you understand the basic assumption of the supertanker is that it is going to be much more environmentally acceptable because it reduces the collision probabilities of large numbers of conventional-size tankers operating in and out of conventional ports.

Mr. TAGGART. Yes, sir.

Senator JOHNSTON. That's the conventional wisdom of all of these studies.

Now, those collisions don't take place in open sea; they take place as you enter harbors or in the proximity of a harbor.

Mr. TAGGART. Correct.

Senator JOHNSTON. Your proposal would not reduce that, the number of smaller tankers, at all, would it?

Mr. TAGGART. No, sir. The number of smaller tankers would be-- well, you have so much oil to bring in, and we are bringing it in with feeder tankers.

Now, these feeder tankers, as a part of the system, do have a much higher maneuvering capability than conventional tankers do.

Senator JOHNSTON. Do you question the basic premise on which all of these reports are developed?

Mr. TAGGART. To some extent. Certainly if you take the maneuvering room required for one supertanker, and the maneuvering room, say, for four equivalent small tankers, you would need more for the four small tankers than for the one supertanker.

However, you still need a lot of maneuvering room for this ship. I think where the discrepancy has been in the thinking is that we just assume that as long as you have a single point moor a few miles offshore that these things are just going to cruise up to it and get rid of their cargo and go away. But I'm not sure this is actually true. It is very easily possible for the large ships to get out of hand and once they do the casualty could be tremendous.

Essentially this is what happened at Grimsby, England, that the wind caught the ship, it broke loose from the moor, and went broadside ashore and went aground. This is a situation where the ship had no capability of its own to get itself out of that situation.

So that we tend to think as long as we keep these things at sea they are going to be all right. But this is not necessarily the case. If we keep them at sea under conditions where they have their complete maneuvering capability, that is underway speed, yes, I think we are in a safe situation. But if we bring them to a stop at some point offshore, we are going to have trouble; either we are going to have to provide maneuvering capability on the ships themselves, provide very well coordinated and specialized tug service to hold them in position, or we are going to have to make the moors in some configuration such that they can hold them.

I don't think this has been given full consideration.

Senator JOHNSTON. You don't really need a superport with your proposal, do you?

Mr. TAGGART. No, sir.

Senator JOHNSTON. As a matter of fact, they wouldn't be needed at all, would they?

Mr. TAGGART. No. That would be basically the advantage of it, that it could distribute the cargo to existing terminal facilities although you probably would have to increase refinery capacity. However, from one supertanker you could distribute the cargo to Bayonne, Philadelphia, or to various points along the east coast.

Senator JOHNSTON. Well, we don't need any government action to implement your plan?

Mr. TAGGART. No, sir.

Senator JOHNSTON. I'm sure you have presented your plan to oil companies. What is their reaction to it?

Mr. TAGGART. Somewhat negative, although several of them are still considering it. The majority of the oil companies, it is our impression, have already decided on their course of action.

Senator JOHNSTON. To build superports?

Mr. TAGGART. Yes, in some cases. But, Burmah oil is going for the island transfer type scheme, running feeder tankers in from Grand Bahama. Texaco is building facilities in Trinidad for this. The people at Exxon we talked to are apparently figuring there are going to be superports along the east coast.

So that they all have these selected plans in mind, and expect them to go.

Senator JOHNSTON. What is the objection to your proposal?

Mr. TAGGART. Essentially that it would be investing a good deal of money in the tankers themselves, additional funds in the tankers. They would rather see that invested in a single terminal facility where it could be utilized by a number of ships.

This seems to be the general contention. The oil companies are quite insistent on not getting involved in a dedicated trade for a given ship. In other words, their feeling is that oil traffic changes: One year you may be delivering from the Persian Gulf to Japan. The next year it may be to the United States, and so on. They don't like to get involved in a system where a ship is not flexible and can't be moved into another trade. This is one reason why they don't want to tie up too much additional money in a given ship.

Senator JOHNSTON. Mr. Taggart, we appreciate your testimony very much. It is another one of those alternatives that this committee must consider. As you know, there is less than unanimous feeling that we ought to have superports, not only on this committee but in the public as well.

So your proposal will get very careful consideration from us.

Thank you very much.

The committee will be adjourned.

[Whereupon, at 4:05 p.m., the committee was adjourned.]



# DEEPWATER PORT ACT OF 1973

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TUESDAY, OCTOBER 2, 1973

U.S. SENATE,  
COMMITTEES ON COMMERCE,  
PUBLIC WORKS, AND  
INTERIOR AND INSULAR AFFAIRS,  
SPECIAL JOINT SUBCOMMITTEE ON  
DEEPWATER PORT LEGISLATION,  
*Washington, D.C.*

The subcommittee met at 10:10 a.m. in room 5110, Dirksen Senate Office Building, Hon. J. Bennett Johnston, presiding.

## OPENING STATEMENT BY SENATOR JOHNSTON

Senator JOHNSTON. The meeting will come to order.

Before we begin our hearings this morning, we would like to acknowledge the presence of a very distinguished delegation from our neighbors to the North, from Canada. We are very pleased to have the Members of the Canadian Parliament here, the Canadian Senate. We have worked very closely with them on any number of issues. Recently I had an opportunity to work closely with the Members of the Canadian Parliament at an International Parliamentary Conference in White Sulphur Springs. We had a very pleasant meeting there.

So if you will, I would like for Senator Van Hoggan, Members of Parliament Barney Danson, M.P. Jack Ellis, M.P. Don Mazonkowski, and M.P. Madame Morin, to stand.

Thank you very much for honoring us with your presence today.

Senator VAN HOGGEN. Thank you, Mr. Chairman.

Senator JOHNSTON. This morning we continue hearings on legislation to authorize the construction of deepwater ports off the coast of the United States.

As in the case of the July hearings on this subject, the hearings being conducted this morning and tomorrow morning are before a special joint subcommittee of the Committees on Interior and Insular Affairs, Commerce, and Public Works.

In beginning this second series of hearings on deepwater ports, I hardly need to reemphasize the urgency of the task before us. In the 2 months since we previously met with respect to this matter, our energy situation has deteriorated rather than improved. It is thus essential that we move promptly to provide the legal framework for the construction of deepwater ports.

This is not to say that we should ignore the grave environmental aspects of this subject. Indeed I believe this should be one of the most important considerations of any licensing system for deep-water ports.

But we must move forward quickly to meet the energy needs of this Nation. And the legislation we consider today is an important component in any plan to solve the energy dilemma I believe we now face.

During these hearings, we will be considering certain additional matters relating to the construction of deepwater ports that were not covered in our prior hearings. Among those issues are questions dealing with the siting of refineries, technical considerations having to do with pipeline usage that in turn have antitrust and other implications, questions relating to international law and possible antitrust implications of proposed methods of operation of deep-water ports and the refineries they produce.

We begin the hearings this morning with Prof. John Norton Moore, who is Chairman of the National Task Force on Law of the Sea.

Before I ask Professor Moore to proceed, I would like to ask if my colleague, Senator Stevens, has anything he would like to say.

Senator STEVENS. Mr. Chairman, I join with you in welcoming our Canadian friends, our neighbors to the South. We are happy to have them here.

I am most pleased to be here. I wanted to be here when Professor Moore made his statement. I hope you will excuse me; I have to go to another committee, but I do want you to know, Mr. Chairman, I think John Moore is one of the very brilliant young men in the area of maritime law and specifically the law of the sea.

I think his statement made in Geneva concerning zone-locked States and the problems that are involved—I do not remember the exact title of your speech—was one of the most brilliant things I have read. I am delighted that the United States has a man of Professor Moore's age to live through the law of the sea negotiations and I hope you do live through them.

Thank you.

Senator JOHNSON. Senator Scott?

Senator SCOTT. Mr. Chairman, I have nothing to say. I came here to listen to the hearing.

Senator JOHNSON. Professor Moore, we would be pleased to hear from you.

**STATEMENT OF PROF. JOHN NORTON MOORE, CHAIRMAN,  
NATIONAL SECURITY COUNCIL INTERAGENCY TASK FORCE ON  
THE LAW OF THE SEA; ACCOMPANIED BY MYRON H. NORD-  
QUIST, SPECIAL ASSISTANT TO THE CHAIRMAN; AND MARY  
BETH WEST, ATTORNEY-ADVISED, OCEAN AFFAIRS SECTION,  
OFFICE OF THE LEGAL ADVISER, DEPARTMENT OF STATE**

Professor MOORE. Thank you, Mr. Chairman. It is a pleasure to meet with this special joint subcommittee on the important question of the international legal aspects of deepwater port facilities.

I would like to thank you and Senator Stevens in particular for the very kind comments on the work of the delegation last summer. I might also add that it is a particular honor for our delegation to have distinguished Senators like Senator Stevens to serve on the United States delegation to the UN Seabed Committee. Senator Stevens and the other congressional members of the delegation have been most helpful to the work of the delegation. It is also a pleasure to appear before the Senator from my home State, Virginia, as well as to welcome the Members of the Canadian Parliament who are in the audience this morning.

I am accompanied this morning by Mary Beth West of the Office of the Legal Adviser, and by Myron Nordquist, the Special Assistant to the Chairman of the National Security Council Interagency Task Force on the Law of the Sea.

Mr. Chairman, thank you for the opportunity to appear before this special joint subcommittee on behalf of the Department of State to discuss some of the international law issues which may arise in connection with the proposed construction and operation of deepwater port facilities located beyond territorial waters.

As this subcommittee is aware, the subject of deepwater port facilities touches upon many political, economic and environmental as well as legal considerations. None of these considerations is more important, however, than full compliance with our international legal obligations.

Pursuant to the Presidential message on energy, the administration transmitted proposed legislation to the Congress entitled the "Deepwater Port Facilities Act of 1973." This proposed legislation is now before this subcommittee as S. 1751. The transmittal letter, signed by the Acting Secretary of the Interior, contains a paragraph which indicates the importance which the administration attaches to our international legal obligations in constructing and operating such facilities. The paragraph reads:

The construction and operation of proposed deepwater port facilities will not unreasonably interfere with international navigation or other reasonable uses of the high seas. Such construction and operation and the regulation of related activities will constitute a reasonable exercise, fully consonant with the principle of freedom of the high seas and will be consistent with the international obligations of the United States.

S. 1751 provides, in its first section, that the construction and operation of such facilities by licensed U.S. citizens would be a reasonable use of the high seas in accordance with international law.

The bill also states the corollary that nothing in the act shall be deemed to affect the legal status of the high seas, the superjacent airspace, or the seabed and subsoil, including the Continental Shelf.

Other provisions throughout the bill are designed to implement the fundamental approach that the construction and regulation of deepwater port facilities is a reasonable use of the high seas.

The rationale for this position is found in the convention on the high seas which represented a codification of existing rules of international law. Article 2 reads:

The high seas being open to all nations, no State may validly purport to subject any part of them to its sovereignty. Freedom of the high seas is

exercised under the conditions laid down by these articles and by the other rules of international law. It comprises, *inter alia*, both for coastal and noncoastal States:

- (1) Freedom of navigation;
- (2) Freedom of fishing;
- (3) Freedom to lay submarine cables and pipelines;
- (4) Freedom to fly over the high seas.

These freedoms, and others which are recognized by the general principles of international law, shall be exercised by all States with reasonable regard to the interests of other States in their exercise of the freedom of the high seas.

Consequently, the freedom to undertake new high seas uses based on "general principles" would have to be exercised with reasonable regard for other high seas users, and in conformity with the High Seas Convention and any other applicable rules of international law.

The question of reasonableness is determined by looking at all relevant features in content. It would be necessary, for example, to ensure that deepwater port facilities did not unreasonably interfere with high seas freedoms including navigation, fishing, laying submarine cables and pipelines, overflight and scientific research.

In fact, a properly located facility could be said to enhance navigation as it would reduce the chances of vessel collision and pollution of the marine environment in heavily congested coastal areas. Such a facility could also serve as a port of refuge, a meteorological station and a site for navigational aids.

It is essential to keep in mind that the United States could not and has not claimed sovereignty to a high seas area in which a deepwater port facility may be located. To do so would be a territorial appropriation of a high seas area and is specifically prohibited by international law.

Instead, under S. 1751 the United States would be exercising only the international legal right to make a reasonable and permissible use of the high seas.

As further evidence of the nonterritorial character of this approach, the bill provides that licenses for deepwater port facilities may not exceed a term of 30 years with the possibility of renewal for an at least equally restricted period.

With respect to operation of deepwater port facilities, there is a distinction to be made between foreign flag vessels using the facility and those merely navigating in the vicinity of such facilities.

For the former category another basis for regulation, in addition to protection of the licensing State's exercise of its reasonable use rights, is the authority of the licensing State to condition use of the facility on compliance with reasonable regulations, including acceptance of its general jurisdiction for such purposes. In the absence of accepting such conditions, use of the facility could be denied.

For the second category—vessels not using the facility—the coastal—the coastal State would be entitled to take measures necessary to protect its reasonable use of the high seas.

Certainly with respect to navigational safety around the deepwater port facility the most effective way to achieve uniform international rules would be to seek appropriate traffic regulations through IMCO, which has considerable experience and expertise in such matters.

Senator JOHNSTON. Excuse me. What is IMCO?

Professor MOORE. IMCO is the Intergovernmental Maritime Consultative Organization, a specialized agency of the United Nations. It will be sponsoring a plenipotentiary conference later this month to be called the 1973 Conference on the Prevention of Marine Pollution.

Senator JOHNSTON. Thank you.

Professor MOORE. Accordingly, section 114 of the bill charges the Secretary of State, in consultation with appropriate Federal agencies, to seek appropriate international measures regarding navigation in the vicinity of deepwater port facilities.

Mr. Chairman, the Third United Nations Conference on the Law of the Sea is scheduled to begin with an organizational session this November and December in New York. This Conference, which will be among the most important multilateral conferences in the history of the United Nations, will consider a wide variety of issues concerning the legal regime of the oceans.

Among these issues will be the question of "artificial islands and installations" and the compulsory settlement of disputes concerning competing uses of the oceans.

During the July-August session of the U.N. Seabed Committee, the preparatory committee for this U.N. conference, the United States introduced draft articles affecting both of these issues. Since both concern the legal regime for deepwater port facilities, with your permission, Mr. Chairman, a copy of these draft articles and other materials presented by the United States will be submitted for the record.

Senator JOHNSTON. These will be included in the record without objection.

Professor MOORE. Thank you.

Under the draft articles on the coastal seabed economic area submitted by the United States, coastal nations would have the exclusive right to authorize and regulate the construction, operation, and use of offshore installations affecting their economic interests in the coastal seabed economic area. This is to assure that the coastal state will have all necessary jurisdiction over new uses of ocean space such as powerplants, airports, and the like, as well as over deepwater port facilities.

Under the draft articles on the settlement of disputes submitted by the United States, disputes concerning the interpretation or application of the comprehensive Law of the Sea Convention would be generally subject to compulsory dispute settlement procedures. The general availability of these dispute settlement procedures would encourage an orderly development of the law relating to deepwater port facilities and other installations affecting coastal state economic interests.

Mr. Chairman, these draft articles on the coastal seabed economic area and settlement of disputes would strengthen and clarify the present international law concerning the construction and operation of deepwater port facilities. They will do so in a manner which we believe will be strongly in the international community interest.

Even in the absence of new law, however, there is a sound basis

in existing international law for the construction and operation of deepwater port facilities in a manner which reasonably accommodates the high seas freedoms of others.

It is our view that the most appropriate legal basis under existing international law for such construction and operation of deepwater port facilities is that such facilities would be a reasonable use under Article 2 of the Convention on the High Seas.

Article 9 of the Convention on the Territorial Sea and the Contiguous Zone, though supportive of the concept of deepwater port facilities in its underlying policy rationale, cuts too broadly for the more limited needs of deepwater port facilities.

The "roadstead" principle embodied in this article is supportive in recognizing a basis for coastal state jurisdiction beyond the territorial sea over facilities used for the loading and unloading of ships. It is unnecessarily and undesirably broad, however, in that such roadsteads become part of the territorial sea of the coastal state.

A territorial sea jurisdictional basis may permit greater interference with navigational and other high seas uses than is necessary or warranted by deepwater port facilities. Accordingly, we feel that the more narrowly defined reasonable use principle is a more appropriate international legal basis for deepwater port facilities.

The bulk of S. 1751 is capable of standing alone rather than as an amendment to any existing legislation. The bill however, would specifically amend the Outer Continental Shelf Lands Act in two places in order to make existing domestic law consistent with the new act.

Mr. Chairman, the construction and operation of deepwater port facilities raises complex issues of international law. My discussion this morning has dealt with only the broadest parameters of the subject. I believe that the subcommittee can be confident, however, that the construction and operation of deepwater port facilities would be a lawful use of the high seas under existing international law.

Moreover, it seems likely that the Third United Nations Conference on the Law of the Sea will further recognize and clarify the international community interest in such uses.

Thank you for the opportunity to discuss some of the international law aspects of deepwater port facilities. This subject is an extremely important one which warrants prompt action by the Congress.

Senator JOHNSTON. Thank you, very much. Professor Moore, for an excellent statement which has been very instructive to the committee.

I would like you to expand a little bit on some of these basic terms, being uninstructed in the International Law of the Sea.

Tell us what coastal seabed, high seas, territorial waters, et cetera, what these terms mean as applied to the International Law of the Sea.

Professor MOORE. I would be happy to, Mr. Chairman.

In international law, there is a belt of water adjacent to a coastal state which is called the territorial sea. This territorial sea which,

under the United States view, extends to three miles, is basically subject to the jurisdiction of the coastal state with a few exceptions, most particularly the exception for innocent passage through the territorial sea; an exception which protects the navigational interests of the international community in that area.

The area beyond the territorial sea is high seas. The concept of coastal seabed economic area is a new concept which is part of the evolving law that is being made during the preparatory work and the negotiations for the Third United Nations Conference on the Law of the Sea.

The United States has introduced draft articles indicating that there would be broad coastal state resource management jurisdiction and jurisdiction over economic uses in an area adjacent to the territorial sea.

Senator JOHNSON. How far would that go?

Professor MOORE. We have not, Mr. Chairman, yet delimited the outer boundary of the coastal seabed economic area. In the negotiations, however, a number of nations have indicated a desire for at least 200 miles and many others have favored a solution of 200 miles or the outer edge of the continental margin whichever is farther seaward.

Senator JOHNSON. Is that like the Peruvian fishermen?

Professor MOORE. The traditional Peruvian claim has been a 200-mile territorial sea.

Senator JOHNSON. A territorial sea, not an economic zone?

Professor MOORE. That is correct. The difference would be whether the claim is for full territorial sea rights, or whether it is simply for limited functional purpose rights over particular economic or resource management uses.

Senator JOHNSON. Under the economic and resource management use concept that you are talking about, would that include the right to control fishing?

Professor MOORE. Under the United States proposed draft articles on fisheries, there would be coastal state resource management jurisdiction over all coastal species throughout their range, as well as over anadromous species, which are those that spawn in fresh water and swim for great distances into the high seas.

Our approach on highly migratory species, such as tuna, is that they should be regulated by an international agency.

Senator JOHNSON. This is quite revealing to me, that beyond the 3 miles under international law, we really have no right to control navigation, except insofar as necessary to make a reasonable and permissible use of the high seas, and that our right to control navigation beyond 3 miles, in your view, would have to be submitted through IMCO in order to have it recognized internationally.

Am I correct in that?

Professor MOORE. The doctrine of the reasonable use of the high seas beyond the territorial sea is a longstanding one in international law. Basically it provides that we should allow reasonable uses among competing nations and competing uses.

Senator JOHNSON. Certainly you would not be able to fish or to

lay cables and pipelines out by a superport. I can see them dragging with their oyster nets and pulling up this big pipeline. It does not quite lend itself to fishing out in that area.

And the danger of a collision out there; if you had one, would be so immense that you would virtually, it seems to me, have to restrict all traffic other than which is directly related to the support within certain navigational zones to absolutely ensure that you have no collision.

Do you think you can do all of that within a large zone within the context of a reasonable use of the sea?

Professor Moore. Well, I believe that the reasonable use concept would enable the construction and operation and use of deepwater port facilities as long as it was done in a fashion which did not unreasonably interfere with the high seas uses of other nations: for example, fishing. It would be partly a question of where the deepwater port facilities were sited.

Thus, one of the conditions to be taken into account by the Secretary of the Interior in the siting of deepwater port facilities is the reasonableness of the use: Does it constitute a reasonable use of the high seas in the particular location. It is not all locations on the high seas that are equally good for international fishing.

In addition to that, it would really be only a small area of the high seas that we would be talking about, compared to the vast areas beyond the territorial sea.

With respect to the safety aspects, we feel that the most appropriate way to deal with the problems of safety would be to seek international agreement, through the Intergovernmental Maritime Consultative Organization. As to the specifics of safety, marine pollution, protection in the area, we have indicated in our coastal seabed economic area articles that these are the kinds of uses and regulations that we think most appropriately could be agreed internationally.

Senator Jouxson. I think my time is about up.

Let me just ask one final question: You see no difficulty in international law with respect to a superport, its operation and control for navigation, environmental, and other purposes, by the United States? You see no real problem there?

Professor Moore. No, Mr. Chairman, I do not, as long as the siting and operation are reasonable in relation to other high seas uses, and they certainly can easily be so.

Senator Jouxson. Being reasonable men, we hope to achieve those ends?

Senator Stevens.

Senator Stevens. I just have one question, Professor Moore.

Taking into account the fact, as the chairman mentioned, we would have to have some regulation of other uses in the zone around a superport, why is it that you desire to have us put the legal basis for our action on article 2, rather than article 9, when article 9 would, in fact, give us a concept of U.S. jurisdiction within the area of any zone we established for the deepsea port?

You want us to leave it under article 2, and my question is what is the basis for your assertion of regulatory jurisdiction in the area around a superport, unless you do use article 9?

Professor MOORE. As a generalized response—then I will try to be more specific—it is simply that it would be preferable to choose a legal theory which, though fully able to support the kinds of regulatory authority we need, would not then be broader than necessary in terms of the potential for interference with other uses, for example, other kinds of navigational uses.

With respect to the choice of legal theory between Article 2 of the High Seas Convention—the reasonable use principle—and Article 9 of the Territorial Seas and Contiguous Zone—the roadstead principle—the reasonable use principle contains all of the jurisdictional authority necessary. First it permits construction of the deepwater port facility, as long as that construction and siting is done with reasonable regard to the interests of others in their use of the high seas. Secondly, it permits regulation of the interaction of the facility with other uses in the area to the extent necessary to protect that reasonable use by the United States.

Senator STEVENS. As I understand it, the stopping distance on one of these supertankers is somewhere in excess of 20 miles. Are you going to be able to assert jurisdiction for the complete exclusion of other tankers from an area 20 miles around a superport under your article 2 theory, as a reasonable use of the sea, completely excluding all other tankers?

Professor MOORE. With respect to the regulation of navigation in the vicinity, I think the concept of reasonable use does carry within it sufficient jurisdictional basis to take the necessary measures to insure that there would not be an accident, for example, relating to the deepwater port facility, or that the deepwater port facility would not itself constitute a hazard to navigation.

In the longrun the best way to deal with the problem of reasonable safety zones around these facilities—because of the kinds of complexities and the breadth of the stopping distance, for example, of these large tankers—would be through international agreement within the framework of the Intergovernmental Maritime Consultative Organizations. We have indicated internationally that we feel that is the best way to approach the problem.

Senator STEVENS. Thank you, very much, Mr. Chairman.

Senator JOHNSTON. Senator Gravel?

Senator GRAVEL. No questions.

Senator JOHNSTON. Senator Scott?

Senator SCOTT. Thank you, Mr. Chairman.

I am glad to learn that our witness is a professor from the university; our law school dean just refers to it as "the" and we are glad to have him before our committee.

I am concerned about our sovereignty over this deepwater port. As I understood your testimony, you feel if we go beyond the 3-mile limit, then we are subject to international law whereby we might have some difficulties with other nations.

It is your statement that we have full sovereign rights out to the 3-mile limit, but when we get beyond the 3-mile limit—I am not interested in the sections or paragraphs of these various treaty agreements, but I am interested in us having control of this deepwater port in the event that is established.

I had no reservation at all until I heard your testimony, and now I do have some reservations, because I feel that this Nation must have complete control over the facilities that are constructed.

It is your testimony that we would have full sovereign rights within the 3-mile zone?

Professor MOORE. Senator, I am completely confident that the reasonable use doctrine is a basis for adequate jurisdiction—all of the jurisdiction that the United States would in fact need to construct, operate, and use deepwater port facilities beyond the territorial sea in a reasonable manner.

Senator SCOTT. With all due respect, I am not satisfied with your complete confidence.

In other words, as I understand it, you are expressing an opinion. In your opinion you have no doubt that we could do that. But you are saying if we use it in a reasonable way. Who is going to determine whether we are using it in a reasonable way? We may have some other nations involved in a reasonable use. I am concerned about this.

You know, we did not think we were going to lose any oil from the Middle East. But now it looks like it is possible we might have our source of supply limited from the Middle East.

I am one that likes to depend on the United States to be able to be self-sufficient and meet its own needs.

Let us go back: Is it your testimony that within the 3-mile limit that this is territorial water over which we have complete sovereignty, recognized by all of the nations of the world? Is there any nation that does not recognize the 3-mile limit?

Professor MOORE. No; to my knowledge, all of the nations of the world recognize at least a 3-mile territorial sea.

I might add, however, that even within the territorial sea, the jurisdiction of the coastal State is subject to certain internationally agreed restrictions. For example, innocent passage in the territorial sea. So, it really is a matter of degree as to whether we are talking about the territorial sea out to 3 miles or reasonable use of the high seas beyond that point.

Senator SCOTT. Would it be considered an act of war in the event that we established a deepwater port within the territorial limits and some other nation came in and destroyed or in any way interfered with our deep seaport within our territorial waters? That would be generally recognized as an act of war, would it not?

Professor MOORE. I think the international legal effect of any kind of hypothetical deliberate attack on a deepwater port facility would be the same whether it was under the jurisdiction of the United States beyond the territorial sea or located within our territorial sea.

Senator SCOTT. Are you saying that the United States would have the same degree of control over the deepwater port beyond the 3-mile limit as it has within its own territorial waters?

Professor MOORE. For essentially every functional incident that would be important in the context, yes, we would have the ability to construct and operate such facilities.

Senator SCOTT. Let me say it has been more than 30 years since I studied international law, but it is my understanding that within the

territorial limits, that that is as much a part of the nation as the land adjacent to the water. As a broad concept, is that true?

Professor MOORE. I think it is somewhat qualified by the international legal rights that would apply within the territorial sea.

Let me give an example: Suppose, for example, that the United States had a lightship on semi-permanent station beyond its territorial sea, and that there were a deliberate attack on that lightship, or there was some problem of whether we had jurisdiction over the lightship.

Senator SCOTT. Over what sort of a ship?

Professor MOORE. A lightship, or a ship in aid of navigation.

Senator SCOTT. You are talking about a lighthouse, something of that nature?

Professor MOORE. Yes, except it is a lightship instead of a lighthouse.

Senator SCOTT. A vessel.

Professor MOORE. Yes. That is the kind of circumstance in which, for years, it has been accepted that the flag State would have jurisdiction. That jurisdiction is not lessened by the fact that the vessel is on the high seas.

Senator SCOTT. We have jurisdiction over any American-flag vessel anywhere in the world on the high seas. But there are rules of international law that we must follow with regard to our vessels that would not be true within the territorial water of this country. Is that accurate?

Professor MOORE. Yes, that is correct. But I do not see, in terms of the deepwater port facility, any functional difference, from an international legal standpoint, that would make any legal difference.

Senator SCOTT. Mr. Chairman, I am very much concerned about this concept. In fact, I was wholeheartedly in favor of this bill until the witness from my own State started to speak and I do have definite reservations about anything beyond the 3-mile limit.

I wonder if the Chair might ask our staff to check this matter out a bit. Certainly I have great respect for our witness, but this is an important matter that we are talking about. I am interested in the legal implications of us putting a structure beyond the 3-mile limit and it being subject to international control, because in the present energy crisis that we find ourselves in, I think it is tremendously important, in fact it is essential, that this country maintain complete control over any deepwater port that we establish.

My question that I would like the staff to give an answer to is, will we have complete control if it is beyond the 3-mile limit?

Senator JOHNSTON. Yes; in conformity with that, would the staff further check that matter?

Senator SCOTT. Mr. Chairman, it is very fine to have the witness with us.

Senator JOHNSTON. Senator Buckley.

Senator BUCKLEY. Thank you, Mr. Chairman.

Professor MOORE, we have had for some years now offshore drilling, drilling platforms and so on. Does this establish any sort of precedent that would be applicable to the maintenance and rights with respect to controlling deepwater ports?

**Professor MOORE.** I think it is one of a series of uses of the high seas beyond the territorial sea that does illustrate the reasonable-use doctrine.

**Senator BUCKLEY.** I believe some of these installations are far from shore, are large, complex, and would no doubt require the kind of navigational controls that would be contemplated in connection with the deepwater ports.

**Professor MOORE.** That is correct.

**Senator BUCKLEY.** Are there any problems that have arisen that you are aware of with respect to jurisdiction over these facilities?

**Professor MOORE.** No, I think there has been no problem that has not worked itself out pragmatically and quickly.

Again, it is a question of a reasonable use of the oceans among competing uses.

**Senator BUCKLEY.** Out of curiosity, sometime ago I did some reading, and I stumbled across the phrase "right of imperium." Is there such a phrase in international law?

**Professor MOORE.** Yes, there is.

**Senator BUCKLEY.** Is it a doctrine of long standing?

**Professor MOORE.** Yes, it is.

**Senator BUCKLEY.** Is it the right asserted by the fact that you have a larger warship than the other person?

**Professor MOORE.** I would prefer to refer to it more as control or power, rather than a right in that sense.

**Senator BUCKLEY.** Does this become relevant in answering or meeting the concerns expressed by Senator Scott?

**Professor MOORE.** The question of enforcement of international law is always relevant, but I think the question of the reasonable community expectations that give the law its authoritative character are also relevant. In this case I am confident that we would be living up to Dr. Kissinger's statement made recently before the United Nations General Assembly that we should strive for a world in which the rule of law governs.

**Senator BUCKLEY.** How does the international community regard an assertion, by the Canadian Parliament, I believe, of jurisdiction over all of the waters between the North Pole and Canada? In terms of control of navigation, environmental protection, and so on.

**Professor MOORE.** It is not lawful to make a unilateral claim for pollution control zones beyond the territorial sea. We are presently pursuing agreement in the multilateral context of the Third United Nations Law of the Sea Conference on all of these issues. In that context, we feel that it is preferable in dealing with vessel source pollution, to have international rather than coastal State standards and we hope the Canadians will agree.

**Senator BUCKLEY.** You have stated in your testimony that under currently recognized law, we do have the authority to establish deepwater ports and to issue such regulations as are necessary to manage it. But at the same time, you speak of this forthcoming conference, and you look forward to a clarification of ground rules or specifics on this particular facility by the international community.

Is there any reason to defer action on this bill pending action at the United Nations?

Professor MOORE. No, I do not believe it is necessary to defer action on this bill. I believe that the bill contains a course of action that would be perfectly lawful under existing international law. There should be no adverse impact on the Law of the Sea negotiations.

Perhaps I could elaborate very briefly, first on existing law, and secondly on what we have proposed in the Law of the Sea negotiations on this. Existing law, it seems to me, is solidly based on article 2 of the High Sea Convention. I do not believe that there is any real cause for concern that we do not have an adequate jurisdictional basis.

Moreover, in terms of the policy considerations underlying existing ocean law, it makes excellent sense. Ocean law has evolved not to unnecessarily restrict nations in creative uses of the oceans that would be in the shared community interest, but rather to promote broad use of the oceans as long as such uses did not unreasonably interfere with similar and different uses of the oceans by others.

And that is exactly what the administrations bill is carefully balanced to do. In fact, as we go through the bill, there are at least four or five different places in which we have specifically accommodated the international legal aspects and asked the Secretary of the Interior to take into account our international legal obligation in siting and in conditions in leases.

Second, with respect to the Third United Nations Conference on the Law of the Sea, we have proposed rules in the articles on the Coastal Seabed Economic Area intended to clarify the existing international law. For example, under article 1, subparagraph 3, the coastal State would have the exclusive right to authorize and regulate in the coastal seabed economic area, the construction, operation, and use of offshore installations affecting its economic interests. We are not talking about, in the negotiations, a generalized international management or regulation of these deepwater port facilities; we are talking about an exclusive right of the coastal State in the coastal seabed economic area to construct, operate and use those facilities.

The coastal State, of course, would be subject to a series of duties as well. These would be designed to protect the international interests, including our interest in navigation and other uses of the world's oceans.

The conditions contained in article 2 of the draft articles would include insuring that there is no unjustifiable interference with other activities in the marine environment. On this point, I think we should keep in mind that we have a number of competing interests in this area. We have not only our interest in deepwater port facilities at stake but also we have the interests of the United States in other high seas uses, including navigational uses elsewhere at stake. Thus we must insure that the construction and operation of such facilities would not unjustifiably interfere with other uses.

The coastal State would also be able to take appropriate measures to comply with minimum international standards for the protection of the marine environment concerning the deepwater port facility or other economic installations in its coastal seabed economic area.

Again, we feel there is a strong common interest that all States have in obtaining that kind of duty on coastal States in these areas.

And finally, the draft articles provide for compulsory settlement of disputes should disputes arise among nations as to the construction and use of these facilities under the new treaty.

Senator BUCKLEY. Thank you.

Do you have any estimate as to when one might expect this conference to come up with specific recommendations?

Professor MOORE. The conference timetable pursuant to a general assembly resolution passed last year calls for an organizational session in November and December of this year, followed by a session scheduled for Santiago, Chile in the spring of next year.

We feel that from everything we have heard it is likely that the basic timing of the conference schedule will be carried out and that there will be one or more substantive sessions of the Law of the Sea Conference held in 1974.

Senator BUCKLEY. With conclusions reached in 1974?

Professor MOORE. We would hope that it would be possible to reach agreement in 1974. And we will be going to the conference prepared to reach such agreement. If it is not possible to do so, the general assembly resolution has called for the possibility of a later session of the conference, no later than early 1975, to finally conclude the comprehensive law of the sea agreement.

Senator BUCKLEY. Thank you.

Professor, I have been asked by the staff to seek clarification of one of the answers made by the State Department to questions submitted by the committee. This is the answer to question number 7. The question is, "In light of such conclusions or recommendations as may have been cited in response to the question above, what specific further actions, including additional studies or investigations, do you recommend the federal government undertake with respect to the development of deepwater ports?"

The answer first alludes to the fact that this conference is going to take place. And then proceeds with the following statement, "The Department of State believes that more detailed consideration should be given to questions such as shipping and navigational safety requirements, storage and transshipment, environmental requirements, the customs laws and civil and criminal jurisdiction as related to the operation of deepwater facilities. Such consideration could provide inputs for further decisions on regulatory and licensing policies." There are those who suggest that is not a responsive answer.

Does the Department have any specific recommendations to this committee at this time with respect to those matters?

Professor MOORE. No I do not have any specific recommendation at this time on these issues. Generally however, the two principal issues are I believe, is anything necessary under existing international law to clarify the situation, and, is any additional draft article or research necessary under the Law of the Sea Conference and the negotiations going forward to clarify the legal situation.

On the first of those, I think that we do need to explore the possibility of international agreement in the Intergovernmental Maritime Consultative Organization on the kinds of navigational accommodations and safety and marine pollution standards, that would accompany deepwater port facilities.

On the question of additional research or positions at the Third United Nations Conference on the Law of the Sea, we have recently introduced the draft articles which state our latest and current position on the question of deepwater port facilities. My feeling is that the basic thrust of the law of the sea negotiations, which is to confirm expanded coastal State resource management and economic jurisdiction in a broad area adjacent to the territorial sea, will confirm the kinds of provisions in our articles on deepwater port facilities. And the existing legal basis, which is already clear, will, I feel, be made even clearer.

Senator BUCKLEY. Thank you, very much.

I have no further questions, Mr. Chairman.

Senator JOHNSTON. Thank you, very much. Professor Moore, your testimony has been very interesting and helpful, if not a bit provocative for the committee.

Senator SCOTT. Mr. Chairman, might I pursue a little further, as long as we have the witness here?

Senator JOHNSTON. Yes.

Senator SCOTT. Mr. Moore, I do not mean for my questions in any way to reflect upon your standing, your opinion at all, but as I see it, some of these questions certainly that are in my mind, the nations have gotten together in some way and there has been general agreement, but still I have reservations about having to go back in any way to any international tribunal with regard to the rights that we have.

Now, along your eastern sea coast, do we have anyplace where we have territorial waters in excess of 3 miles? For example, it is my understanding that there are places, if there is an island that is out from the coast by several miles, that the land in between that island and the mainland is considered territorial waters of the United States.

Are you familiar enough with the eastern sea coast to say whether we have places along the coast where our territorial waters would be in excess of 3 miles?

Professor MOORE. Senator, I can say unequivocally that the United States does not at any point claim a territorial sea broader than 3 miles. There is a question of baseline contiguous zones, and historic bays, however.

Senator SCOTT. I happened to be present in the Supreme Court of the United States when they said just to the contrary.

Thank you, Mr. Chairman.

Senator JOHNSTON. Thank you, very much, Professor Moore.

Hon. George Stafford is our next witness, the very distinguished Chairman of the Interstate Commerce Commission.

**STATEMENT OF HON. GEORGE M. STAFFORD, CHAIRMAN, INTER-STATE COMMERCE COMMISSION; ACCOMPANIED BY FRITZ R. KAHN, GENERAL COUNSEL; AND LARRY T. REIDA, LEGISLATIVE COUNSEL**

Mr. STAFFORD. Mr. Chairman, I am pleased, of course, to have the opportunity of appearing before you today to present the Commis-

sion's views on S. 1751, and to present a short review of our jurisdiction over the pipeline industry.

I have with me my general counsel, Mr. Kahn, and his deputy, Mr. Reida.

The purpose of S. 1751 is to authorize and regulate the construction and operation of deepwater port facilities off the coast of the United States, beyond a 3-mile limit, in order to provide for the transshipment of commodities between vessels and the U.S. mainland. The bill specifically includes in the definition of a deepwater port facility all associated equipment and structures such as storage facilities, pumping stations, and connections to pipelines. It specifically excludes pipelines.

My testimony will deal with the authority the Interstate Commerce Commission now has over pipelines pursuant to section 5(c) of the Submerged Lands Act —43 U.S.C. 1334[c] and part I of the Interstate Commerce Act.

Under the Submerged Lands Act the Commission has the authority, after hearing, to determine the proportionate amounts of oil to be transported without discrimination through oil pipelines constructed on rights-of-way through the submerged lands of the Outer Continental Shelf granted by the Department of the Interior. This means the Commission, upon complaint or on its own motion, may conduct hearings to protect any shipper from being discriminated against by a pipeline carrier. For example, if a carrier discriminates against one shipper, the Commission is empowered to proportion the traffic all shippers can tender. It does not mean that formulas must be established when the pipeline carrier's operation begins after receiving the necessary concurrence of the Department of the Interior.

Currently, this act only applies to oil produced from the submerged land in the vicinity of the pipeline. Section 2(b) of the bill would broaden the scope of our authority to cover the transportation of all oil transhipped through deepwater port facilities into pipelines.

Pursuant to part I of the Interstate Commerce Act, the Commission's authority over pipelines of oil or other commodities, except water and natural or artificial gas, is not coextensive with our authority over other carriers subject to the Interstate Commerce Act. For example, oil pipelines are not required to obtain certificates of public convenience and necessity.

Additionally, the act does not give us jurisdiction over such aspects of pipeline operation as issuance of securities, formation of interlocking directories, mergers, and consolidations, construction and abandonment of lines, or the granting of credit. Nor are pipelines subject to the commodities clause prohibiting transportation of the products of their owners.

Oil pipelines are subject to those provisions of the Interstate Commerce Act which prohibit unjust discrimination and undue preference, that require just and reasonable rates, reasonable facilities for the interchange of traffic, and compliance with the long-and-short-haul proviso of section 4. Additionally, the carriers must comply with the accounting, reporting, and valuation regulations, and the

procedural provisions of the act in respect to rates and tariffs. Further, the Commission has the power to institute enforcement proceedings against oil pipelines for violation of the antimonopoly provisions of section 7 of the Clayton Act.

The bill does not specifically state that the provisions of the Interstate Commerce Act shall apply to pipelines connecting with the deepwater port facilities; however, there is a possible inference that such a result is intended. This inference is gleaned from the provision in section 107(5) of the bill which specifies that the Secretary of the Interior can condition licenses for deepwater port facilities to require nondiscriminatory access at reasonable rates. Moreover, section 111 of the bill makes the laws of the United States applicable to deepwater port facilities and to activities connected with their operation and use.

Finally, section 112 of the bill provides for the supremacy of Federal laws where pipelines and cables extend above or into submerged lands or waters subject to the jurisdiction of any State or possession when the laws of that State or possession are inconsistent with Federal laws or regulations.

However, if Congress desires the Commission to have the same jurisdiction over pipelines connecting with deepwater port facilities as we have over pipelines in the continental United States, the bill should be amended so as to specifically apply the provisions of the Interstate Commerce Act to the operations of the pipelines in question.

That concludes my formal statement. At this time, I, or any members of my staff, will be happy to answer any questions you may wish to ask.

Senator JOHNSTON. Thank you very much, Mr. Stafford.

First of all, your statement that section 112 of the bill provides for the supremacy of Federal laws where pipelines or cables extend over or into submerged lands or water subject to the jurisdiction of the States, does that mean you interpret section 112 to grant to the ICC power to control pipeline activities in the State zoned portion of the 3-mile limit?

Mr. STAFFORD. Yes, sir, it does.

Senator JOHNSTON. And the State then would have no control at all?

Mr. STAFFORD. That is right.

Senator JOHNSTON. I see.

I am interested in this question of common carrier transportation without discrimination. We are confronted with this same question right now in Conference on the Alaskan Pipeline.

Does the Commission take the view that it is the responsibility of the owner of the pipeline to construct feeder lines, or the responsibility of those who wish to have their oil transported?

Mr. STAFFORD. We have no authority to force those other oil pipelines that are not owners of the oil, that were involved in the building of the main line. We have no responsibility to tell any other oil pipeline companies that they must, or that the primary company must build any feeder lines. This is a responsibility, as I know it, for

the other independent oil companies or other oil pipeline companies to build their own feeder line.

Senator JOHNSTON. As a practical matter, what do you do if—not on this bill, but in your operation of your day-to-day operation—what do you do when a company constructs a pipeline and it uses all of the capacity of that pipeline? How would you interpret a claim by a new discovery that they wished to have a portion of the capacity of that pipeline?

Mr. STAFFORD. By another company, you mean, other than the one that owns the pipeline?

Senator JOHNSTON. Right.

Mr. STAFFORD. And this is a private pipeline, not a—

Senator JOHNSTON. Private as opposed to what?

Mr. STAFFORD. As opposed to a common carrier.

Senator JOHNSTON. Well, as a common carrier, it crosses part of Federal lands.

Mr. STAFFORD. If it is a common carrier, then it must provide a percentage of its line to the other company. And if they don't, then we have the authority to apportion.

Senator JOHNSTON. What I am talking about is how practically have you interpreted it?

Mr. STAFFORD. Actually, we have had no complaints in this area.

Senator JOHNSTON. The question has never arisen?

Mr. STAFFORD. We have never had any complaints of lack of service, in other words, an independent or some other oil company has never come to us and told us that they are unable to get the pipeline to carry their product. But if they did, then we do have the authority to apportion the amount of oil that they must ship themselves as compared to what they must permit the other one.

Senator JOHNSTON. You have never really gotten into the question of interpreting that phrase as to what it means with respect to a pipeline?

Mr. KAHN. I know of no decided case. However, the Commission has no doubt as to its jurisdiction and its powers to assure that the pipeline common carriers render a nondiscriminatory service, to require the publication of tariffs or by cease and desist orders, to make the facilities universally available.

Senator JOHNSTON. There is not a body of jurisprudence as to what is nondiscriminatory with respect to pipelines?

Mr. KAHN. No; the case law is very limited.

Senator JOHNSTON. Have you interpreted the phrase, "in the vicinity," either under the Submerged Lands Act or the Pipeline Act, whatever it is called?

Mr. KAHN. The Interstate Commerce Act.

You are given jurisdiction under the Pipeline Act—I forget the technical name of it, where you cross Federal lands, you are given jurisdiction to enforce nondiscriminatory provisions?

Mr. KAHN. Correct.

Senator JOHNSTON. And that same phrase, "in the vicinity," is used there. And that phrase has not been interpreted?

Mr. KAHN. No, sir, it has not.

Senator JOHNSTON. Nor do we know what common carrier really means with respect to a pipeline?

Mr. KAHN. I think that has been pretty well established, primarily in the valuation body of cases.

Senator JOHNSTON. Valuation?

Mr. KAHN. Valuation, right, in the rate filing requirements.

Senator JOHNSTON. Rates are one thing, but I had reference to the capacity of a pipeline. Say where a pipeline is originally built by one owner to carry its oil and it is full and later a discovery is made by someone else in the area. Do they have the right to displace a portion of that?

Mr. KAHN. We have jurisdiction to make that common carrier pipeline available.

Senator JOHNSTON. You have the jurisdiction, but we don't know what the decision will be?

Mr. KAHN. Right.

Senator JOHNSTON. Under S. 1751, do you feel that you have the same authority beyond 3 miles over a deepwater port facility?

Mr. STAFFORD. Well, as we said, there is an indication of it, but we feel that it should be amended to confirm the understanding that we do have the same authority beyond the 3-mile limit as we now have from the 3-mile limit in. Our concern appears to have developed over the meaning of the deepwater port facility, Section 102(b). Everything else was listed, all of the other Government agencies are taken care of, but we appear not to have been specifically listed.

Senator JOHNSTON. Now when you say that you have authority—

Mr. STAFFORD. Well, actually it says right here in the bill, "but does not include pipelines."

Senator JOHNSTON. You say you have authority under this bill to control what happens within the state's 3-mile portion?

Mr. STAFFORD. That is correct.

Senator JOHNSTON. You interpret that to mean if, for example, a State had regulations, environmental regulations or traffic regulations, let's say they required the pipeline to be built so many feet under a canal, for example, that you would have the authority to supersede those regulations?

Mr. STAFFORD. No; not as to building the pipeline, no, sir. We have no authority how the pipeline will be built or where.

Senator JOHNSTON. No authority on how, where, or if? Do you have authority on "if"?

Mr. STAFFORD. No.

Senator JOHNSTON. A state, then, does have jurisdiction?

Mr. STAFFORD. Well, the Department of the Interior—

Mr. KAHN. I think, Mr. Chairman, in responding affirmatively to the question about the Federal preemption Chairman Stafford was talking about insofar as there has been a delegation by the Congress to the Interstate Commerce Commission of certain jurisdiction. Certainly, in the area of pipeline construction, the standards therefor, there has been no delegation by the Congress to ICC, and to the extent that the Federal jurisdiction otherwise is not asserted, then the power will continue to reside with the States.

Senator JOHNSTON. Suppose a State said, "We don't want any pipelines in marshes, because there is a danger of a spill in a marsh, and marshes are important producers of fish.

Mr. KAHN. Then you get into the standard constitutional law question of whether this is a reasonable interference with interstate and foreign commerce by the State. That would be totally beyond the jurisdiction of the ICC.

Senator JOHNSTON. S. 1751 at least doesn't affect that?

Mr. KAHN. Not as far as we are concerned, that is correct.

Senator JOHNSTON. Let me ask you one more question. We have just heard Professor Moore talk about the law of the sea and about what we can and can't do beyond the 3-mile limit. How, under the Submerged Land Act, did we claim authority to regulate pipelines out beyond the 3-mile limit? Do you have an easy answer to that? Or is that that right of imperium Senator Buckley talked about?

Mr. KAHN. No. We haven't had to construe that one.

Senator JOHNSTON. I am just advised by the staff that we derive such authority from the International Convention on the Continental Shelf. Thank you for completing the record.

Mr. Stafford, we appreciate your testimony very much. Thank you so much.

Our final witness this morning is Mr. Joseph C. Caldwell, who is Director of the Office of Pipeline Safety of the Department of Transportation.

**STATEMENT OF JOSEPH C. CALDWELL, DIRECTOR, OFFICE OF PIPELINE SAFETY, DEPARTMENT OF TRANSPORTATION; ACCOMPANIED BY GARY ADAMS, OFFICE OF GENERAL COUNSEL**

Mr. CALDWELL. Mr. Chairman, I am pleased to testify before this joint subcommittee. I have with me this morning Mr. Gary Adams of our Office of General Counsel.

We understand from your letter of September 21 to Secretary Brinegar that the focus of this hearing is to discuss the Department's pipeline safety program and to assure safety in the operation of the pipelines for proposed deepwater ports and in Alaska. I would like to discuss the points the subcommittee raised in their letter.

First, the authority to carry out the liquid pipeline safety functions 18 U.S.C. 831-835 was delegated to the Office of Pipeline Safety (OPS) on November 7, 1972.

I would like to emphasize that the term liquid includes petroleum, petroleum products, and other hazardous liquids.

Prior to that time the authority was with the Federal Railroad Administrator. Under FRA, regulations for the design, construction, operation, maintenance, testing, and accident reporting were developed and the main body of the regulations was put into effect April 1, 1970. The OPS assisted FRA in the development of those regulations.

Since the transfer of authority to OPS, we have initiated a program to evaluate the effectiveness of the regulations. This is being

done through on-site inspections and evaluation of data and reports submitted to us by the pipeline operators, the public, and other Government agencies. We are also utilizing the related experience and information that has been gained through our gas pipeline safety program.

To date, we are aware of several areas that need modification and are taking the necessary action. As other areas are identified, we will take steps to make appropriate modifications. In order to obtain information in two areas where our experience has demonstrated a need, we have provided for independent contract studies to be performed. One contract is presently underway to provide state-of-the-art information relative to rapid shutdown of failed facilities and pressure control of pipeline systems. We are preparing to award another contract for a state-of-the-art study of the transportation of highly volatile, toxic or corrosive liquids transported by pipeline. This study will serve as the basis for the promulgation of regulations.

We have already revised the reporting system to require immediate telephonic notification of significant failures. This is an aid in monitoring the effectiveness of the program.

I might also add that the regulation for liquid pipelines, where appropriate, apply to pipelines located on the Outer Continental Shelf. We are now studying the adequacy of these regulations as they relate to offshore pipelines and will make necessary changes to provide comprehensive coverage in this area.

We have participated in the interagency task force regarding the proposed Trans-Alaskan Pipeline, and have completed a project to determine the adequacy of the proposed design stress criteria of that pipeline.

Your second question is on the subject of the States' liquid pipeline safety programs. Some State agencies have authority and programs to regulate the safety of oil pipeline facilities. Specifically, New York has recently promulgated regulations for oil pipelines. California has adopted our Federal liquid pipeline regulations for their intrastate oil pipelines. New Jersey has also adopted certain regulations regarding intrastate oil pipelines. A number of other States have safety or environmental statutes which give them some authority over intrastate oil pipelines.

Third, the experience with safety associated with rolled steel oil pipelines having diameters in excess of 48 inches is very limited. At present the largest diameter pipe installed in the U.S. for cross-country oil pipelines is 48 inches. We understand that one operator installed 44 miles of this size pipe in 1972 and is currently planning to install an additional 116 miles. Worldwide, 48 inches is predominantly the largest size installed for cross-country pipelines; however, we understand that larger pipe is being installed in the Soviet Union. I would like to point out that the engineering technology for pipelines in excess of 48 inches in diameter is substantially the same as that for smaller pipelines.

Furthermore, the engineering technology for the deepwater port systems and the associated pipelines is being discussed with industry, and our engineering staff is keeping abreast of the technology relating to larger diameter pipe.

Fourth, our Department does have the authority to promulgate safety regulations for certain liquid storage facilities. Although the Transportation of Explosives Act, 18 U.S.C. 831, which gives us authority over liquid pipelines, does not specifically refer to "storage facilities."

This act gives the Department of Transportation the authority to promulgate regulations for safe transportation which shall be binding upon carriers engaged in interstate or foreign commerce which transport by pipeline liquid petroleum products. Therefore, we have authority with respect to a liquid petroleum storage facility if: (1) the facility is operated by a carrier who is engaged in interstate or foreign commerce, and (2) the liquid petroleum is still being transported, even though temporarily placed in a storage facility as an incident to that transportation. Each case would, however, have to be decided on its facts.

We would also note that where certain liquid storage facilities are located in immediate proximity to piers, wharves, docks, and similar structures, they may be deemed waterfront facilities as defined by 33 CFR section 6.01-4. This would authorize the Coast Guard to prescribe such conditions and restrictions deemed necessary to assure the safety of vessels and waterfront facilities. As I have indicated previously, our authority applies both to interstate and foreign commerce and therefore this authority applies to oil transported from outside the United States.

Fifth, on the subject of manpower needed to adequately deal with the safety aspects of pipelines now being planned for Alaska and to connect with the proposed deepwater ports, we are considering the need for additional manpower based upon our responsibility for liquid pipeline safety and pollution control and for gas pipeline safety, particularly the monitoring of State gas pipeline safety programs. In response to a congressional request, we are preparing a report due on October 31, 1973, which will discuss these issues and the resources for the pipeline safety program. We will be pleased to supply each committee a copy at that time.

At the present time, the Office of Pipeline Safety has a staff of 25, including 3 persons located in a field office in Houston. We have a staff of eight full-time engineers and four engineers, including myself, in management roles who possess considerable industry related technical expertise in the liquid and gas pipeline areas. Our engineers have an average of 12 years of pipeline related industry experience and an average of almost 20 years of combined government and industry engineering experience.

With respect to the legal authority regarding liquid pipelines planned for Alaska and deepwater ports the Department presently has sufficient jurisdiction. However, we have submitted legislation that would authorize us to impose civil penalties for violations of the liquid pipeline regulations, since the imposition of present criminal sanctions in this area in most cases is not an appropriate response, and in any event, is difficult and cumbersome to administer.

Sixth, the authority for gas pipeline regulation is found in the Natural Gas Pipeline Safety Act of 1968, and the authority for

liquid pipeline regulation is in the Transportation of Explosives Act. Basically, we have fairly extensive authority under both statutes. The Natural Gas Pipeline Safety Act applies to all gas pipelines which affect interstate or foreign commerce, and therefore, the authority goes to inter and intrastate gas pipelines. The Transportation of Explosives Act applies to all carriers engaged in interstate or foreign commerce, and in this way applies to interstate liquid pipelines and interstate liquid pipelines operated by interstate carriers.

Under the Natural Gas Pipeline Safety Act, we can assess civil penalties for violations of our gas pipeline regulations. This is not so under the Transportation of Explosives Act, and under that act we can only ask that a criminal fine or prison sentence be imposed. The imposition of the criminal sanction has proven to be a very cumbersome process, and is many times too harsh a sanction for violations that do not pose a serious safety problem. As I mentioned before, we have submitted legislation—S. 2064—to amend the Transportation of Explosives Act. The bill is designed to correct certain problems with our hazardous materials program, and it would also allow us to impose civil penalties for violations of the liquid pipeline regulations.

That concludes my prepared statement and I'll be happy to answer any questions the members might wish to ask.

Senator JOHNSTON. Thank you very much, Mr. Caldwell.

Mr. Caldwell, I am sure you saw the article in the Post in August 1973 on oil pipeline safety. In that article it was stated, among other things, that you have a Mr. Robert Aubry on your staff there, and among the things it says about pipeline safety is the following, "Yet Robert Aubry's mission is even more impossible. He is the only Federal engineer assigned full-time to accomplishing the safety of the Nation's entire 220,000-mile oil pipeline network."

The article goes on to make the point that strict regulations are one thing, but enforcement is quite another, and that the staffing and the actual enforcement is totally wanting in your department.

What is your response to that?

Mr. CALDWELL. Well, sir, I am quite familiar with the article, and the information indicating that Mr. Aubry was the only engineer involved is incorrect. Mr. Aubry is one of our staff engineers and his primary responsibility is to work in the area of liquid pipeline safety. However, we have five other engineers in that particular division who also, from time to time, work in the area of liquid pipeline safety.

Senator JOHNSTON. Does that mean that he is the only full-time man?

Mr. CALDWELL. No, sir. I said his primary responsibility is in this area. He also, from time to time, works in other areas of safety also.

Senator JOHNSTON. You say part of the time he works on liquid pipeline safety?

Mr. CALDWELL. Yes, sir, the majority of his work is on liquid pipeline safety.

Senator JOHNSTON. He is not full-time on liquid pipeline safety. What other duties does he have?

Mr. CALDWELL. We have within the office, of course, the responsibilities for gas pipeline safety also.

Senator JOHNSTON. He does liquid and gas?

Mr. CALDWELL. Yes, sir. But the vast majority, I would say 95 percent of his time, is spent on liquid pipeline safety.

Senator JOHNSTON. How many full-time people do you have on liquid pipeline safety?

Mr. CALDWELL. The way our office is set up, sir, we operate more on functional lines. These engineers are in a technical division. As I said earlier, we are responsible for gas pipeline safety. We only had the responsibilities for liquid pipelines, assigned to us last November. As I stated in my prepared statement, we are evaluating the entire program for both liquid and gas pipeline safety.

Senator JOHNSTON. That adds up to how many people in liquid pipeline safety full-time?

Mr. CALDWELL. Sir, I do not assign individuals to work full-time in any one specific area. These engineers work in the broad spectrum of technical or engineering, in whatever area we need them to work in. Of the six engineers in that division, many of them work on liquid pipeline safety from time to time also. In fact, I have had one of them working over 50 percent of his time on the Alaskan pipeline alone. And also the two field engineers spend a large portion of their time monitoring the compliance of the liquid pipeline operators to our regulations.

So I feel that we have much more than one many-year effort devoted toward liquid pipeline safety.

Senator JOHNSTON. Well, if there is more than one, how many would there be?

Mr. CALDWELL. Well, sir, it would be hard to give you a precise figure.

Senator JOHNSTON. I am becoming aware of that.

Mr. CALDWELL. It would be no more than eight, I could assure you.

Senator JOHNSTON. Let's see. We have a staff of 25, three persons located in the field office in Houston, a staff of eight full-time engineers, and four engineers, including yourself, in management roles. Four of the eight are in management roles.

Mr. CALDWELL. Four besides the eight, sir.

Senator JOHNSTON. I see. I am not saying this critically of you, because DOT gives you the staff to work with. But I am concerned that, for example, close to my home in Louisiana we had a pipeline blow out a few years ago. It killed a large number of people and leveled the countryside, pine trees, homes, everything. I am just wondering what kind of ability your office is going to have—again it may not be your fault, if they haven't given you the people to operate the office—but what kind of ability do you have to determine when that sort of thing is going to happen and what kind of monitoring are we going to have on a 24- or 48-inch pipeline coming in from the superport out there? That is what concerns us. It just frankly appears that there is not enough personnel in your office—is that a fair statement?—to really do your job like you would like to do it.

Mr. CALDWELL. Even though we have a very small staff, we feel we have come a long way. As you have indicated, and obviously observed, the resources that are made available to us are again a matter of priority within the department. So we hope that the report we will be making available to the Congress in the latter part of October will show some serious consideration in this area, and some increased requests for staffing.

Senator JOHNSTON. When you talk about a submerged pipeline, a pipeline from the deepwater port to the storage facilities onshore, what size pipeline are they talking about?

Mr. CALDWELL. I have heard various sizes; it depends on whether they use parallel lines or just a single line. They are talking about probably up through 48 to maybe 54 inches.

Senator JOHNSTON. Bigger than anything in the United States today?

Mr. CALDWELL. Anything beyond 48 inches would be, yes, sir.

Senator JOHNSTON. Now it is going to have to be high of pressure pipe than anything else, too, would it not? Doesn't it have to suck that oil up very quickly from the superport out there and bring it ashore to the storage facility, so that the ship waiting at the dock will not have too long a delay?

Mr. CALDWELL. No, sir, I don't think they are anticipating pressures higher than we have had operating in pipelines for many years. Of course, any line that is laid out to the deepwater will have to provide an adequate degree of safety based on the specified yield of that pipe. So our rules will require that whatever diameter the line is, or whatever the pressure it is operated at, it will still provide the same degree of safety from the design standpoint that we require on-shore.

Senator JOHNSTON. Are there any special problems with submerged pipe in the Gulf?

Mr. CALDWELL. Sir, with the information that we have now, on the pipelines that have been designed and constructed within recent years with recent technology, there are no major problems. In fact, the majority of the lines that are laid offshore today—I am speaking now of the larger transmission lines—in most cases they are designed beyond the specifications that those onshore are, because you have a lot more expensive operation in the event that they should have a failure or a line should leak for some reason.

Senator JOHNSTON. How do you monitor a leak out there?

Mr. CALDWELL. You say monitor a leak or monitor for a leak?

Senator JOHNSTON. Monitor for a leak.

Mr. CALDWELL. Well, to date the Geological Survey who is responsible for the production facilities they monitor in the areas of the platforms and the production facility sites. The Coast Guard monitors the navigable areas or the shipping lanes. To date, we have not established a monitoring program for offshore facilities in our office other than our requirement on the operator to report certain leaks to our office by telephone and written report.

Senator JOHNSTON. You do not have a monitoring program?

Mr. CALDWELL. No, sir, not for leaks. We do periodically evaluate

the design and the construction of these lines with a limited amount of onsite inspection during the construction period.

Senator JOHNSTON. How many miles of pipe are there in the Gulf?

Mr. CALDWELL. Counting the flow lines and the production facilities, there are approximately 12,500 miles in the Gulf. About 8,000 miles of these are transmission lines that come to shore.

Senator JOHNSTON. You have got 12,500 miles of pipe out in the Gulf and nobody is watching for leaks and observing what is happening?

Mr. CALDWELL. No, sir. The Geological Survey is monitoring constantly in the areas of the production facilities, and, of course, the Coast Guard is also monitoring.

Senator JOHNSTON. They just physically observe for oil slicks, don't they?

Mr. CALDWELL. That is correct; that is the way.

Senator JOHNSTON. Who checks the day-to-day operation of these pipes and checks pressures and all of the things that one does to test for safety?

Mr. CALDWELL. From the standpoint of regulatory agencies, again the Geological Survey does it on the platforms, in the area of production, and we would be responsible for the monitoring of the facilities coming on to shore.

Senator JOHNSTON. I know, but who does it?

Mr. CALDWELL. Sir, what little is done, we do, along with the Geological Survey.

Senator JOHNSTON. What is the breakdown between your authority and that of the Department of the Interior to set safety standards for oil pipelines in the Outer Continental Shelf?

Mr. CALDWELL. We have interpreted our authority to cover the pipelines that come from the production facilities into shore. The Interior Department, under the Geological Survey, is responsible for the safety of the production facilities. This is basically the flow lines and the downhole equipment.

Senator JOHNSTON. Mr. Caldwell, there are many, many questions raised by your testimony. Frankly, I am not at all reassured that pipeline safety regulation is being given the commitment by the DOT that it ought to have. With all of these thousands of miles of pipelines and heavy danger not only to human life, but to the very delicate environment, ecology as well, it would seem to me if we are going to adequately regulate the flow of up to, what, a million barrels a day, which a superport would handle, that we are going to have to have more of a commitment from DOT in terms of personnel, in terms of effort, as far as pipeline safety is concerned for this superport. I might add not only for the superport, but as far as I am concerned, for all of these pipelines, not only in the gulf, but on-shore as well. I have seen personally what a pipeline blowout can do and I know that the effort of DOT in large measure was started as a result of that—I think it was Tenneco that had the pipeline blowout in Louisiana.

If that kind of thing happened in the Outer Continental Shelf or adjacent to this superport, we might have an oil spill of massive pro-

portions, and I just think that this measure is entitled to a great deal more emphasis, personnel, commitment by the Federal Government, than it has received.

I say that without criticism of you, because I don't know whose fault it is that we haven't received that commitment. But perhaps we will be able to get that from DOT before we go to the superports.

Thank you very much.

Do you have anything else you would like to add?

Mr. CALDWELL. No, sir; that is all I have.

Senator JOHNSTON. Thank you very much.

The committee will come back at 10 a.m. tomorrow.

[Whereupon, at 11:50 a.m., the committee was adjourned, to reconvene at 10 a.m. Wednesday, October 3, 1973, at the same place.]



# DEEPWATER PORT ACT OF 1973

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WEDNESDAY, OCTOBER 3, 1973

U.S. SENATE,  
COMMITTEES ON COMMERCE,  
PUBLIC WORKS, AND INTERIOR  
AND INSULAR AFFAIRS,  
SPECIAL JOINT SUBCOMMITTEE ON  
DEEPWATER PORT LEGISLATION,  
*Washington, D.C.*

The subcommittee met at 10 a.m. in room 5110, Dirksen Senate Office Building. Hon. Joseph R. Biden, Jr., presiding.

Senator BMDX. The committee will come to order.

This is the second day of open public hearings before a Special Senate Joint Subcommittee to consider S. 1751, "The Deepwater Port Facilities Act of 1973."

The subcommittee has devoted a great deal of time to the issues involved in deepwater port policy. Still, there are some issues which have not been adequately addressed over the 4 days of hearings which have already been held.

It is hoped that the witnesses who appeared before the subcommittee yesterday, and those who are to appear today, can clarify some of the points which have been raised in the course of this subcommittee's consideration of deepwater ports.

The answers we are seeking today deal primarily with the structure of the corporations which propose to construct deepwater ports off U.S. shores and the manner in which they will be regulated.

We are also seeking discussion on the manner in which deepwater port policy will be coordinated with other espoused national goals of domestic energy self-sufficiency, the equitable distribution of energy supplies, and the development of alternative, clean forms of power production in the United States.

I would like to welcome this morning the Director of the Bureau of Competition of the FTC, Mr. James T. Halverson; the President's Energy Advisor, Governor John Love; and the Deputy Assistant Attorney General for the Anti-Trust Division of the Department of Justice, Mr. Keith I. Clearwaters.

Is Mr. Halverson here?

Sir, any time you are ready. Why don't you come up and get started. I apologize for the delay in getting the hearings started.

**STATEMENT OF HON. JAMES T. HALVERSON, DIRECTOR, BUREAU OF COMPETITION, FEDERAL TRADE COMMISSION; ACCOMPANIED BY RICHARD L. WILLIAMS**

Mr. HALVERSON. Thank you, Mr. Chairman.

Before starting, I would like to introduce Mr. Richard Williams on my staff who is sitting next to me.

I have a prepared statement which I would like to read, and then I will be very happy to answer questions after that.

I would like to thank you, Mr. Chairman, for the opportunity to appear before this committee as a representative of the Federal Trade Commission and to give the Commission's views on S. 1751.

Careful consideration has been given to the competitive consequences of this bill. For this purpose, some of the previous testimony before this committee, which bears on issues related to competition, has been reviewed. The Commission's concern, however, is limited solely to any potential anti-competitive impact on the Nation's future supply of energy that may be engendered by this bill or any of its provisions. Insofar as other areas of public policy—such as environmental quality—are affected by this bill, they are outside the Commission's area of expertise.

The Commission strongly supports the idea of increasing imports of needed oil supplies and believes that the construction of deepwater ports will aid greatly in accomplishing this objective.

At the same time, however, the Commission is concerned that there be protections built into the framework of the bill to assure that these ports are not created or operated in an anticompetitive manner. The Commission's first concern is that the bill does not contain any requirement that the Secretary of the Interior consult an antitrust enforcement agency, such as the FTC, for its assessment of the anti-competitive effects which may be caused by the issuance of a particular proposed license.

It is true that the bill permits the Secretary to include, in any license, conditions designed to assure that operation of the deepwater port facility will not substantially lessen competition or to assure that nondiscriminatory access at reasonable rates will be available to any user. But it does not require inclusion of such conditions, at least that is the way I read the bill, nor does it require solicitation of an antitrust agency's viewpoint on such conditions.

These deficiencies are serious because of the prospective role of the deepwater ports in our economy, the degree of power over entry of crude oil and product each port will possess, and the potential for abuse by the owners of the ports.

The threat to competition is real regardless of whether or not the owners of the deepwater port facilities are to be petroleum companies.

The role of energy in our national economy, and the unprecedented rates at which our needs for it will grow in the future, are known to everyone. The important place of oil in the energy picture is also widely recognized.

Oil company executives have testified before these hearings, for

example, that petroleum will supply a large percentage of the Nation's energy by 1985, and that in that year imported oil will supply between 11 percent and 38 percent of our total energy requirements.

Few people, however, have realized the significant function that superports, or deepwater port facilities, will have in the importation of oil. The supertankers of the present and future, while affording the prospect of significant transportation economies, can only be unloaded in ports in very deep water.

No existing natural harbor facilities on the east or gulf coasts of this country can accommodate a tanker or more than 50,000 tons. Thus, to permit the usage of supertankers, either deepwater facilities must be constructed in this country or the oil from the supertankers must be unloaded in Caribbean or Bahamian ports and transshipped to the United States.

The transportation economies generated by the use of supertankers will be so immense when viewed in the aggregate, and will thereby offer the promise of such successful financial operations, that entry would undoubtedly be attractive to both petroleum and nonpetroleum companies alike.

Statistics given earlier in these hearings indicate that the annual transportation economies attributable to each of these ports will be one-half of the cost of construction for each of them.

Furthermore, since single point moorings have been constructed in over 100 locations around the world, the technological risks associated with their development should, by now, have been minimized.

The significance of these superports to our expanding energy needs and to our growing imports of oil, the magnitude of their operations, and their attractiveness as a business investment, are all clear. These same factors magnify the risks to competition, and because of the tremendous amounts of money spent by consumers on petroleum, they highlight the potential losses which may flow from any exclusionary or discriminatory behavior.

For these reasons, the bill must be examined carefully to determine whether it provides adequate safeguards to insure that the superports will function with a minimum of anticompetitive consequences. We think it does not.

The market position which would be held by each of the deepwater ports will be an unusual one. Not only will each port be a Government-licensed, local monopoly over imported oil destined for refineries in certain sections of the country, but each port will also be a "bottleneck."

All of the affected commerce—here imported oil—will flow, and must flow, through these deepwater ports since the transportation economies involved will render imported oil not carried in a supertanker noncompetitive. In situations such as these, when a monopoly extends not merely to a small amount of commerce, but effectively controls all access to imported petroleum in an area, special care must be exercised to prevent competitive abuse.

Aside from the apparent dangers of potential abuse of monopoly, we find a number of specific dangers that may be spawned by the

deepwater port system. They are not inevitable, however, and could be controlled without damaging the concept of coastal deepwater ports.

The local monopoly position of each port will afford any joint venturers participating in it a stranglehold position over port users. The joint venturers might set arbitrary quantities which would have to be met in order to receive the most advantageous price.

Some joint venturer-owners might decide that a ship would have to unload a certain amount of oil before it would be granted any access to the facility. They might, in addition, require that ships using the facility meet certain design specifications which are unrelated to operation of the port.

Furthermore, the joint venturers' decisions as to location of the ports will affect the location of future refining capacity, since new processing plants will be constructed near the ports in order to minimize the pipeline costs.

The facts in each case would have to be assessed before the specific anticompetitive dangers could be identified—but we are able to delineate some additional areas of concern.

Participation in a joint venture by many members of any industry might, for example, facilitate collusion. Another problem might occur if a single set of joint venturers attempted to build all of the deepwater ports, and thereby string together a number of local monopolies into one larger and comprehensive monopoly over deepwater ports.

The danger areas just mentioned only begin to exhaust the problems that may arise because of the identity of the parties who own the deepwater ports and because of the practices they may engage in.

Of course, the type of danger and its particular threat will ultimately depend on the identity of the proposed licensees, the market in which they do business, and the relationship of any one joint venturer to another, as well as numerous other factors. For this reason, and because of the potential impact on competition of any one license, an antitrust enforcement agency like the FTC, should have input into the decisionmaking process of whether or not to grant a license.

Consultation with the Commission may avoid a situation in which a license is granted, only to be found later to be violative of the antitrust laws.

It is true that the bill presently requires in Sec. 104(b) that the Secretary of the Interior "shall consult with all interest [sic] or affected Federal agencies."

While this section might be interpreted to include the FTC, the remaining portion of the section indicates that its thrust is toward minimization of environmental damage. This ambiguity should be removed by requiring that the Secretary consult the FTC and request from it a report on the competitive impact of a proposed license.

The Commission, in turn, should be required to submit a report assessing the actual and potential competitive impact of the proposed license. In addition, it should be required to recommend approval, approval upon conditions, or disapproval of the license application.

If the Secretary should give other than controlling weight to the Commission's recommendations, the Commission should still be permitted to initiate any complaint it deems proper in the public interest pursuant to its statutory responsibilities.

In this respect, section 103(f) states that the grant of a license shall not "operate as a defense to any civil or criminal action for violation of the antitrust laws of the United States."

We wholeheartedly agree with the thrust of this section, but recommend that "antitrust laws"—those words "antitrust laws"—be defined in section 102 to include the Federal Trade Commission Act.

As you may or may not know, there is some ambiguity since the FTC Act is not considered an antitrust statute for purposes of private damage actions under the Clayton Act. Any possible ambiguity should thus be eliminated.

We also recommend inclusion of this bill of explicit statutory power for the Commission to seek preliminary injunctions pending a determination of its antitrust challenge to a particular deepwater port venture when it deems such injunctions to be in the public interest. We recommend the grant of this power because we believe it would be necessary to preserve the status quo while the Commission is prosecuting a complaint in this highly important area.

Additionally, the Commission believes that section 105 of the bill should be clarified. Section 105 includes a number of procedures to insure that "interested" persons—a term not limited to federal agencies—be given an opportunity to comment on a proposed license.

Section 105(b) requires that the Secretary "publish in the Federal Register notice containing a brief description of the proposed facility and information as to where the application and supporting data required by subsection (a) may be examined \* \* \*"

Section 105(c), in turn, states that if the notice published in accordance with 105(b) does not provide for a public hearing, "then upon the request of any interested person when in the judgment of the Secretary substantial objections have been raised to the grant or the terms of the license the Secretary shall hold one or more public hearings to consider such objections."

Again, because of a certain ambiguity, we recommend that the FTC actually classified as an "interested person" under the terms of this section to forestall any confusion that may arise over definition of an "interested" person. The Commission would then definitely be permitted to participate in any public hearing convened by the Secretary.

As an alternative and, in my opinion, a preferable suggestion for implementation of the Commission's recommendations, the Commission proposes that a specific provision be added to the bill to allow for a mechanism by which the Commission could participate in the process of decision by the Secretary of the Interior. As to the competitive consequences of the grant of a license and the conditions, if any, which should be attached to any grant to protect competition, the Secretary should be required to seek the Commission's views immediately upon receiving an application. The Commission would then have 60 days to supply the Secretary with its written views recommending approval, disapproval, or approval with conditions.

If the Secretary then approves over the objection of the Commission or fails to include the conditions suggested by the Commission, the Commission should then be given another 90 days in which to begin an antitrust suit and seek a preliminary injunction in a Federal District Court.

If the Commission acts within the 90-day period, the license grant should be held in suspense pending a determination on the application for preliminary injunction to prevent the applicant or applicants from proceeding with the proposed venture.

If the Commission fails to obtain a preliminary injunction, the Secretary could then issue the license and the participants would have to decide if they want to risk going ahead while suit is pending.

If the Commission fails to act within 90 days, of course, the licensees would be assured that the Commission would not attack the venture either because of the nature of its participants or because of the conditions of its license, but the Commission would be free to sue later if specific anticompetitive practices are detected in the operation of the port.

In addition to providing for the participation of the Commission in the decision to issue a license and the formulation of conditions designed to preclude anticompetitive operation of the facility, we consider it important that the bill afford a private right of action for any person injured by virtue of its unfair operation.

Although the bill provides that each port's facilities should be available without discrimination at reasonable rates, it does not expressly guarantee a port's customers the right to enforce these conditions. An express right to do so is, in our view, essential.

I might add that the savings clause in this bill, which saves all rights under criminal and civil laws might be interpreted to do that, but we think specific mention of the private remedy would be appropriate. We recommend that in addition to any remedy which may be available to an injured party under the antitrust laws, the bill be amended to provide that any person damaged by the failure of a licensee to afford him nondiscriminatory access to the facility at reasonable rates shall be entitled to enforce his rights in Federal district court.

A specific provision of this nature, joined with the customary remedies under the antitrust laws, should serve as a strong safeguard against any anticompetitive practices on the part of port licensees.

In summary, the Commission supports the laudable objective of the bill to increase needed oil imports, but expresses reservations about the mechanisms now provided for assuring that deepwater port ventures would not be formed or operated in an anticompetitive manner.

Therefore, the Commission respectfully suggests some changes which would facilitate antitrust agency input at an early stage, and provide a specific private remedy for actual or potential users injured by unfair operation of a deepwater facility.

Thank you for allowing the Commission to present its views on this important bill.

Senator BIRN. Thank you very much for a very enlightened statement.

Rather than ask questions myself now, I think what I will do is start off with Senator Johnston, to see if he has any questions.

Senator JOHNSTON. I am particularly interested in your view that individuals have the right to enforce their rights in court. They would not have that right under the Clayton Act?

Mr. HALVERSON. Yes, they would. As I read the statute, it probably does have that saving clause in there, to save all rights under the antitrust laws.

What I am saying is that just to make certain there is no ambiguity, a sentence might be added to say that there is a specific right of action for anybody who is injured by any rate or other discrimination or unreasonable refusal of access.

Senator JOHNSTON. They certainly ought to have that. If that is ambiguous under the statute, it certainly ought to be cleared up.

Mr. HALVERSON. There is a private right of action under the Clayton Act. It is there in the language right now. It might be better to have it more specific.

Senator JOHNSTON. Is the right under the Clayton Act pervasive enough to give them a full right, or should we grant them an additional right or access to jurisdiction?

Mr. HALVERSON. To exercise the right under the Clayton Act, of course, you would have to show full proof of an antitrust violation or a reasonable likelihood of success of proof of an antitrust violation in order to obtain an injunction.

I suppose you could specifically define, and I do not have exact language in mind although I do have an idea in mind, a right of action which would be more specific and be directed toward discrimination in access or discrimination in rates, and you would not have to prove the likelihood of success of a full antitrust action to get injunctive relief.

Senator JOHNSTON. It occurs to me you might have a denial of access which was not motivated at all by a desire to discriminate; you are just not getting the kind of access that would be nondiscriminatory. You ought to give the right of injunctive relief to an individual to go to court and enforce that by injunction.

Mr. HALVERSON. I agree with that. I think that is why you might want to add a few carefully drafted sentences to that provision.

Senator JOHNSTON. I am concerned on the other hand in bringing the FTC into too much of a structure of appeals, consultations, and possible delay.

The whole idea behind this bill, it seems to me, was to centralize all the agencies in the Secretary of the Interior—some other committees think it ought to be the Secretary of Commerce or another Secretary—but to centralize all this in one agency so that we would not have interminable delays.

The idea behind that section there on page 7, 104(b) was that you give to the Secretary the duty to consult with all affected Federal agencies, and I would assume that would include the FTC, and then you charge him over in section 107(5) with the duty of effecting conditions designed to assure that the operation would not substantially lessen competition.

It seems to me—I know the intent of the bill was that this kind of centralized grant of authority to the Secretary of the Interior was meant to provide for the very dangers you point out, which are real dangers, but on the other hand, to simplify the procedure.

What is your response to that?

Mr. HALVERSON. Let me comment on that in two respects.

First of all, we have suggested two alternative routes for FTC input to the antitrust considerations here. The first route would be much less formal than the second route.

The first route was designed to eliminate some ambiguities in the bill as presently drafted with respect to whether the FTC would be one of the "interested" parties within the meaning of this section.

Senator JOHNSTON. Under 104(b)?

Mr. HALVERSON. Yes, and we recommended a specific reference to the Commission so that its views would be solicited.

Senator JOHNSTON. Consult with all affected Federal agencies, including the FTC?

Mr. HALVERSON. Yes. We then suggest that some specific direction be added to the bill to consult with the Commission.

If you do not agree with my second alternative, which seeks to provide a formal mechanism with a certain day limitation for comment by the Commission and a certain period of time for the Commission to act thereafter, than the earlier recommendation I made in my statement would be that at least the Commission be specifically consulted with no day limitation on it at all.

As soon as the Commission's comments were received, the Secretary would be free to reject them and go ahead at that point and that would probably save the delay factor.

I happen to think the day limitation that I suggested in the second part of my statement probably operates to prevent delay, since it would force the Commission to get its opinion back within 60 days and you might have under other circumstances a longer period of time than 60 days when the Commission would be putting together some sort of statement in response to the Secretary's request.

Senator JOHNSTON. It seems to me, if I may interrupt, with regard to the Alaskan pipeline bill, I think the duty to consult on antitrust was with the Attorney General.

Now, what would your response to the statement that the Attorney General would be the proper party to rule on the legality of anti-competitiveness?

Mr. HALVERSON. I would say, in my opinion, either antitrust enforcement agency, the Antitrust Division of the Department of Justice or the FTC, would be appropriate to put in this bill for the specific purpose of being consulted by the Secretary of the Interior.

The problems that I have with it as it is presently drafted are two. If you look at section 107, lines 16 through 19 say:

"The Secretary is authorized to include in any license granted by the act any conditions he deems necessary to carry out the purpose of the act. Such conditions may include, but need not be limited to."

and then you read down and you get to condition number 5:

Conditions designed to assure that the operation of the deepwater port facility will not substantially lessen competition or tend to create a monopoly.

The problem I have is that in reading the opening sentence of section 107, it looks like an authorization to the Secretary, but not a requirement to consider what is contained in subsection 5. That seems to me to be a very strong defect in the language as presently drafted.

Senator JOHNSTON. What you are getting at is this may preempt the field, and if the Secretary does not include that we may be legalizing monopoly.

Mr. HALVERSON. It certainly could be argued that he had given consideration to this and had left it out and therefore there may be a preemption.

But more specifically, I think there should be a requirement, not just an authorization, but a requirement to consider anticompetitive effects and to consult some agency that has more expertise in assessing competitive effects than the Department of the Interior has.

Senator BIRN. Would the Senator yield?

Senator JOHNSTON. Yes.

Senator BIRN. I think if you read the remainder of the bill, although it is not within the scope of your authority, you will find that that is a criticism that some of us—not all of us—that I have of the whole bill. It is open-ended all the way through like that with the Secretary.

I just want to point out that that section is not an exception. That is the rule in this legislation in my opinion.

Mr. HALVERSON. Thank you, Senator.

Please understand that a principal concern of the Commission is that the Secretary of the Interior, although expert in many areas, is not particularly expert in making determinations of what may have an anticompetitive impact under our antitrust laws.

If there would be a specific provision directing him to consult an antitrust enforcement agency and requiring him to do so, not just authorizing him to consider competitive consequences, but requiring him to do so, we think it would be beneficial.

Senator JOHNSTON. I would like to ask the Chair to request the staff at the appropriate time to have some language ready that would assure, not just authority, but that would direct the Secretary to effect rules relative to nondiscriminatory access and to have some language relative to common carriers, so we can discuss that at the appropriate time, at the markup of the bill.

Mr. Chairman, I have got some more questions, but I had better yield. I have used too much time.

Senator BIRN. Senator Stevens.

Senator STEVENS. Thank you.

Please again take a look at your statement, for I am not sure I agree with my colleagues here.

You say, "They might in a decision require that ships using the facility meet certain design specifications which are unrelated to the operation of the port." That is a very pregnant statement, because I think it is the congressional intent that they do in fact meet design considerations unrelated to the port, for instance, double-bottoms, for instance, guidance mechanisms that are necessary to go in and out of the Valdez arm, and go into the Alaska tankers, special mech-

anisms for going into Puget Sound, which have nothing to do with the operation of the superport.

It seems to me that the impact of your statement is you think that we are dealing with people that are operating a normal port. This is a superport for supertankers, and there are not very many of them in the world. I think you are overemphasizing the monopoly aspects when dealing with supertankers unless you are saying to us you expect us to provide a bill that would provide the berthing of a robot in the berth of the Queen Mary.

Mr. HALVERSON. No, that was not my intention and it is not the Commission's intention.

The series of hypotheticals on page 5 were designed to show how a deepwater port facility might be used if somebody were motivated by anticompetitive motives. We are not saying that anybody would be. What we are saying is that care ought to be given in the licensing process to building protections built into the terms of the license so that a port will not be used in an anticompetitive manner.

Senator STEVENS. We are talking about something like 150 vessels. That is what we are talking about. There will be approximately 40 in the Alaska trade to take care of 2 million barrels a day.

As I quickly multiply it, it may be at the most 200 vessels using superports in the United States.

I would like to know where the antimonopoly question arises. Where does the antitrust situation arise when you are dealing with that limited number of vessels that can use these specific ports? Are you saying through the operation of this we are liable to destroy the use of the smaller tankers that are presently going into the ports of New Orleans and Seattle and other places?

Mr. HALVERSON. I am not, Senator. What I am saying is all 200, or however many there are, supertankers, and there may be more in the future as these ports become more important, if they do, I am saying all 200 will not be owned by the owners of the superport facilities, and these superport facilities are absolutely necessary to unload those supertankers.

Now, if the owners of the superport facility prefer their tankers over the tankers of others, there is a problem, a potential for non-competitive or anticompetitive discrimination here.

All we want to ensure is that the terms and conditions of the license are granted with such care that there is no way in which the owners of the superport facility can use that facility discriminatorily.

Senator STEVENS. I can agree with that, but I am afraid I was reading too much into your emphasis on the problems of antitrust, because when you are dealing with such a very limited number of users, very special group of users, I do not see the need for emphasis on the antitrust concepts of the license.

I might in operation. You are talking about the operation of the superports as opposed to the considerations that the Secretary of the Interior is dealing with in terms of his first review of the structure of the operator of the superport and the conditions for using the port.

You are saying that even under that license, under the conditions set down, you could have antitrust implications in the operation. I

agree with that. But I don't see that it comes in at the level of the reviewer talking about as far as the Secretary of the Interior is concerned.

Mr. HALVERSON. Senator, I think I disagree somewhat, in that the Secretary of the Interior under this bill would be empowered, as I understand it, to set the conditions of the license. The conditions of the license could set conditions for operation.

If the conditions for operation were not fairly determined, in our view, there could be anticompetitive consequences flowing from that, and if the license were granted with specific conditions, I suppose it might be a defense by the facility that it was operating along the lines specifically laid out by the Secretary of the Interior, and that it later could not be attacked by antitrust agencies or by private parties for doing exactly what the Secretary said it could do.

Senator STEVENS. What you are telling us is Congress had better be specific on what we intend these operators to do. I am not arguing with you; it just happens that I haven't had breakfast yet.

The problem really is, take the Jones Act, we say you cannot go from port to port in the United States in coastwise trade except with American-built vessels. We are going to have superports sitting out there. Professor Moore says, "No, we don't want to make these part of the territory of the United States. We just want to license them." So, I am not sure whether the Jones Act applies out there or not.

What you are saying is, if the operator of the port says, "This is an American port," you think he could be raising antitrust implications.

Mr. HALVERSON. Certainly.

Senator STEVENS. What you are really telling us is be specific about the authority we are going to give to these people, and if we are saying that they must have, as we now say under the Jones Act implications, a segregated ballast, double bottoms, and the whole thing, that operator cannot decide that unilaterally; we ought to give him a series of guidelines as to what he can or cannot do?

Mr. HALVERSON. I think the bill should specifically require consultation with an antitrust agency so that the Secretary of the Interior has at least some views from the antitrust agency when he makes the potential anticompetitive determination.

Senator STEVENS. One last question.

On your statement, you recommended, "Explicit statutory power for the Commission to seek preliminary injunctions pending a determination of its antitrust challenge to a particular deepwater port venture when, in the public interest," be included in this bill.

As I understand the problem of ports, the public interest is for us to get these ports built as quickly as possible and in operation, and that the public interest is going to be severely injured if we do not keep that oil flowing.

You are talking about an injunctive power. To do what?

Mr. HALVERSON. Senator, let me explain the situation here.

First of all, I think that if you are careful to preserve the private rights of action under the antitrust laws, a private party does have the private right to seek injunctive relief under section 16 of the

Clayton Act if he is discriminated against or feels that this situation as approved by the Secretary of the Interior would violate the anti-trust laws. It is a peculiarity of the Federal Trade Commission Act that the Commission does not have specific authority to go into a Federal District Court even when it is bringing an antitrust suit and seeks a preliminary injunction.

There is legislation pending right now in Congress that would give the Commission that authority across the board. If that legislation does not pass generally, then I recommend a specific provision if the FTC is going to be a reviewing agency here from an antitrust standpoint. You recognize that one provision would save the antitrust review provision. Then I think it would be available to include a provision that would allow the FTC to seek an injunction.

As with all injunctions under the antitrust laws, the FTC under this provision would have to prove the likelihood of success in its case before a Federal district judge would grant an injunction. The Commission would have to use discretion just like the Antitrust Division of the Justice Department would have to use discretion as to whether it was in the public interest to attack this on an antitrust basis.

There is a saving provision which I think would allow the anti-trust agency to do just that if it thought it was in the public interest to do so. I think it should be clarified.

Senator STEVENS. I may be old fashioned. I think it would have been in the public interest to allow the Alaska pipeline to be built 4 years ago. If we had we would not have had to shut those schools in Texas last year.

If you have an injunction power, in most instances you have decided the lawsuit. If you can enjoy the operation of a superport until you get a resolution of an antitrust question, you are going to stop the flow again of a considerable amount of oil which could be coming into the country. That is why I say what kind of injunctive relief do you seek to empower the Commission to obtain from the courts. Is it an injunction against the operation? Is it an injunction against a particular discriminatory practice?

Do you really think we ought to give you just broad authority to go to the Federal courts and seek any kind of injunctive relief?

Mr. HALVERSON. No; I think it would be injunctive relief coextensive with what private parties under section 16 of the Clayton Act and the Antitrust Division of the Department of Justice already have. At present, both could go in any Federal District Court and seek a preliminary injunction pending a final determination of the case if they could show there was a likelihood of success on the merits of an antitrust case if it were prosecuted.

Judges are very careful people. They believe in balancing the issues in the case. If they do not balance, they will not issue it.

Senator STEVENS. I do not think I am getting too old, but if you come back after you have practiced 25 years and you tell me judges are careful about injunctive relief, it will be a little different matter.

I think it is the easiest thing to obtain today in the judicial system, and we ought to be very careful about it, and I am very interested in

that, because we have the hundred billion barrels of oil in Alaska and we are trying to get it down here to the rest of the 49 States, and if these superports can be enjoined and a plug put in that maritime leg of our pipeline, it is going to stop everything up the line. I think we have got to have some rules—I agree with you; I agree with my good friend, the chairman, here about the problems of the antitrust implications, but I do not want anyone to have the power after we get the pipeline going to put a plug in the pipeline. That is what is going to happen if we get into this place where every Tom, Dick, and Harry and everyone of these government agencies can go to a Federal judge and say, "Give me an injunction; they are doing something wrong," and before it is determined they are doing something wrong, they get an injunction against the operation of a superport.

This business about this injunctive relief when you are dealing with something as critical to the country as energy is something that I hope is going to be debated for a long time, because I think it is the wrong place for you to seek injunctive relief.

You can go into court and you can try your case if they are wrong; you can get a judgment against them and deny them as much as you can make them pay. But meanwhile I do not think you ought to stop the operation or even have the power to seek an injunction to stop the operation of the superport.

Mr. HALVERSON. All I am saying, Senator, is the FTC ought to have the same power which already exists in the Antitrust Division and in a private party. That is all I am saying, the same power. They would have the power to go and seek an injunction. We would not under existing statutes.

Senator STEVENS. Maybe we ought to have put in a little provision in there that you ought not to have injunctive relief.

Senator BIVEN. I would like to pursue the point that my distinguished colleague from Alaska raised. It seems to me that one of the concerns we have when we talk about the—separation of powers, and we, in the Congress, constantly talk about how the Executive has taken all our power and our authority.

We lament that fact and beat our breast and say we are going to change things. Some of the same people who say that amaze me when, as I think my colleague from Alaska has just done, they in effect say the courts have no place when the national interest is at stake. I am really fascinated by this concept of the national interest.

We have determined that in the national interest the preeminent interest is oil. So, therefore, there is reason, in order to expedite the movement of oil, to go beyond the purview of the doctrine of separation of powers, and move into judicial areas. For example, in the Alaskan pipeline we made a single exception for that pipeline to be singularly excluded from some existing law.

I don't see why it doesn't follow that we say the automobile industry is in the national interest, which it is. There is more money and jobs there so that if they can't meet the Environmental Quality Act, do we make an exception for them, because it is in the national interest.

We bug people in the national interest.

We bomb places in the national interest.

I am really a little bit upset about the national interest.

Now, after that little speech, it seems to me the more I get into this, and I admit a strong bias to begin it. I think we all have biases, I admit mine openly. I am not the biggest fan of the oil companies. They haven't given me any awards recently, they are not likely to. But it seems to me implicit in deepwater port production is an extreme tendency toward monopoly with the integrated system we have for deliverance of energy in this country.

Now, please correct me if I am wrong. I understand your agency and others have been doing studies on the integration of the oil industry. Questions range from everything to what other sources of energy do they control, coal, geothermal steam, to how much, if at all, they cooperate with each other.

If I can go through a little scenario here. As I understand the way these superports are going to work, and it is interesting, by the way, there are three outfits so far, Loop, Seadock, and Delaware Bay Transportation Corp., and there are a number of oil companies involved in each of these. Amoco, Ashland, Cities Service, Continental, Mobil and Phillips are in two of them, and Exxon and Texaco are in all three of them, by the way, if I were they, I would be in all of them, if I could.

You move to little known facts on the east coast, the State of Delaware, not the whole east coast, but that portion that is affecting the State of Delaware, and I quote from the hearings before the Committee on Interior and Insular Affairs of the U.S. Senate, the Delaware Bay Transportation Co. testified, and I quote:

These 11 companies represent a substantial section of the petroleum industry, collectively they have east coast refining capacity of over a million barrels per day. This capacity plays a vital part in meeting east coast energy needs.

My understanding is the entire east coast refining capacity is 1.3 million barrels per day. So they do have a little bit of an effect on the market. These same companies are the companies that want to build a port off of Delaware, and some of them are the same companies that are down in the gulf coast, another place where they are going to be built.

It seems that we have a situation here that economically there is going to be no way to transport oil in a competitive manner other than by supertanker. I mean, you are just not going to be able to put it on the back of your barge and come from the Persian Gulf and sell it for the same amount of money that Exxon or the other companies are going to be able to.

I know they say anybody can build a superport. But when you control the port facility and you control the refining capacity in that area and there is a call for an increase in that refining capacity and you also control the distribution in that area at a retail level, it seems to me that there is no way of getting around the monopolistic tendency, intended or not.

And I happen to think that whether or not it is intended is irrelevant. It doesn't make much difference to me whether you intend to be a monopoly or you are in fact a monopoly per se. It seems to me

that is what we are developing here. This is just a further extension of the control of energy in this Nation by a relatively small number of people.

Maybe that is what we want. Maybe that is the only way it can be. Maybe we should consider licensing monopolies just like we have utility companies. Maybe we should make the oil companies utility companies in effect, in terms of the way they operate.

But it seems to me it is difficult to ignore the potential impact that these ports have.

You raised some of the questions in your testimony of things that you were concerned about, which would indicate there might be a monopolistic effect, an anticompetitive effect. I would like to ask you whether it is possible not to have an anticompetitive effect with these deepwater ports, and if so, I would like to know how?

Mr. HALVERSON. Senator, recognizing that these ports are going to be very expensive facilities, and I don't know how many of them there are going to be, but I doubt there will be a great number of them. I think that they can be owned and operated in a competitive manner.

Some of the very concerns that you have expressed are of concern to me. If you look at the set of participants carefully, if you look at the terms—

Senator BIRN. I should say for the record, I am not suggesting there is any collusion by these companies. I am not suggesting they are being immoral or improper. I am just saying these are the facts of life. When I singled out these companies, I don't think they are conspiring in the backroom to rip off the American market. That may be the effect, but I don't think that is what they are intending to do.

Mr. HALVERSON. All I am saying is that if there are adequate safeguards—if we don't, as you say, get carried away too fast here and pass a bill that does not provide for adequate antitrust safeguards—I think you can have a review at the outset of the antitrust or pro-competitive significance, determine whether the set of proposed joint venturers and their arrangements as proposed would be procompetitive or would be at least not anticompetitive, and determine whether the conditions under which the port will be allowed to operate will be pro or anti-competitive.

In this sense, I guess I disagree with Senator Stevens. If you don't make that determination at the outset, how in the world are you going to unwind something after it gets off down the line.

Senator BIRN. Assume that the language which you suggested was incorporated in the legislation as passed, and this may be a little unfair to ask you this because you may not be prepared this morning to respond—what are some of the things you will look for, your agency, in determining whether or not there is an anticompetitive impact?

What would some of the indicators that it is anticompetitive be?

Obviously, if they say only our supertankers can come into this port, that is anticompetitive. That is obvious.

Please tell me some of the nuances that you would be looking for, so that I understand this?

In fact, for example, let's say the Biden Oil Co. happens to own 60 percent of all three of the superports we mentioned—is that in and of itself at all anticompetitive? Does that have a monopolistic tendency? Is it like the du Pont Co. owning General Motors?

I am revealing my ignorance here, but I am very concerned about it.

Mr. HALVERSON. You are asking me to speculate without really having the fact situation specifically in mind and I am now speaking only for myself, not the Commission. Let me say that I suppose, as I mentioned during the course of the testimony, that if you saw a pattern developing where one company or a group of companies had substantial ownership of all port facilities, you could find, I think, a string of essentially local monopolies being expanded into a super-monopoly, so to speak, of all the port facilities.

You might also want to look at—again I am speaking for myself and not the Commission—the relationship between the ownership of the port facility, the ownership of the transportation facilities, and the ownership of the processing facility, the refining facility, for instance, and see whether there was so much of a coincidence in the terms of those ownerships that there was very little likelihood of allowing for any participation by anybody who isn't in that ownership stream.

Senator BIDEN. Let's say we build a superport anywhere, it doesn't matter, and we have a pipeline running from that port to shore, and assume that the refining capacity at the end of that pipeline for that area is 2 million barrels per day. This may not be what would happen, but assume that the two or three major interests that own that superport have the capacity themselves to fill up that pipeline every day. They have enough ships. They have enough foreign sources to be able to do that.

So, just in lining up the ships, 1.75 million of the 2 million barrels per day come coincidentally from the ships of the outfit that owns the superport. Is that an anticompetitive situation?

Mr. HALVERSON. Again, let me answer on behalf of myself and not the Commission.

Senator BIDEN. I assume all your answers on this point are in that regard. Just say otherwise, if they are not.

Mr. HALVERSON. It seems to me that one of the situations that could cause a problem would involve a joint venture of smaller oil companies with a few supertankers being denied access to a port at which to unload their oil.

How are they going to transport it competitively unless in supertankers?

I think we have to give some thought to the bottleneck nature of the superport facilities we are building. Imported oil can only be imported by supertankers in order to be competitive now because of the transportation savings produced by supertankers, and there will be oil companies who don't own superports, but who do own supertankers. We have to be careful that they are allowed to unload at reasonable rates and in a nondiscriminatory way, and that they are allowed to use the pipeline to get that oil to the continent. If they

aren't, in effect, by enacting this legislation, you are saying to them, you cannot get the economies on imported oil deriving from the use of supertanker.

Senator BIDEN. I would like very much to pursue this. I want to ask you a favor.

Governor Love is here, who has a very hectic schedule, and I would like to put the Governor on, if I may. Might I ask you to stay if that is possible and testify after the Governor testifies?

We would like to follow up on that.

Governor, I am sorry to keep you waiting.

**STATEMENT OF HON. JOHN LOVE, ASSISTANT TO THE PRESIDENT  
AND DIRECTOR OF THE ENERGY POLICY OFFICE; ACCOMPANIED  
BY JOHN SCHAEFER**

Mr. LOVE. That is perfectly all right. I appreciate this.

As you have noted, the schedule gets a little pressed.

Senator BIDEN. Proceed, Governor.

Mr. LOVE. Thank you, Mr. Chairman.

I have with me Mr. John Schaefer who headed up an interagency task group that looked into this problem and I think perhaps is as well informed on the proposed program as anyone in the administration.

It is a pleasure to testify before this special committee today on the subject of deepwater ports. With so much current debate on virtually every phase of energy policy, particularly the immediate supply problems, deepwater ports is a topic on which there should be relatively little controversy. I am aware of no other major energy initiative, except possibly energy conservation, where the energy, economic, and environmentally related interests are so close to accord.

For a change, the least expensive method of accomplishing a specific energy objective—delivering imported petroleum and petroleum products to our shores—is also the most environmentally acceptable method.

Today I intend to discuss the relationship of deepwater ports to the overall energy situation, the need for deepwater ports, the development of the administration's position on this issue and offer a brief review of the findings of our studies.

Finally, I would like to discuss a few of the policy issues which are the subject of current discussion.

We are all aware that our imports of crude oil and petroleum products have risen significantly in the past few years. They currently exceed 6 million barrels per day.

Our latest estimates indicate that imports of crude oil from North Africa and the Persian Gulf now exceed 1 million barrels per day. The current level of crude oil imports from Eastern Hemisphere sources requires the use of about 175 vessels of 65,000 dwt, or would require the use of about 40 very large crude carriers of 250,000 dwt.

Projections by the Department of the Interior indicate that imports of crude oil and petroleum products could be as high as 9 or 10 million barrels per day by 1980; and much of this incremental

amount over present levels will probably come from the Persian Gulf. In addition, until new refineries are built or at least a significant refinery expansion is accomplished, much of the incremental imports will of necessity be refined products.

In general, supertankers or VLCC's are utilized to carry crude oil exclusively on long hauls, such as from the Persian Gulf to the United States. Because of the great number of different petroleum products, and a relatively limited demand for these products at any given time, most product-carrying ships are smaller and they are multiproduct ships. Thus, total import projections are not equal to projections for the throughput of a deepwater port; in general we must only consider crude oil imports which would be brought to the United States on VLCC's.

The projected throughput through deepwater ports will also depend upon the utilization of foreign trans-shipment terminals, the development of domestic production of crude oil and natural gas. Department of the Interior projections for imports through deepwater ports for 1980 range between 2.4 million barrels per day and 5.4 million barrels per day.

As there appears to be little question that there will be significant increases in imports of both crude oil and petroleum products, it is apparent to me that we must either take action immediately to facilitate the siting of deepwater ports or be prepared to accept the alternatives.

Accepting as given some level of increased imports, there appears to be one major alternative use of foreign transshipment terminals, primarily in Canada or the Bahamas.

Foreign trans-shipment terminals would mean that large numbers of small, generally older ships carrying either crude oil or petroleum products would be utilizing our already overcrowded conventional harbors. The studies conducted by the Federal Government to date indicate that the environmental risks associated with this alternative are far greater than those associated with the use of offshore, deepwater ports with modern VLCC's operating in a controlled environment.

I believe that deepwater ports constitute part of the normal evolution of the Nation's transportation system. Just as we needed new or expanded airports to handle the planes of the jet age so, too, we need deepwater ports to handle the larger ships of today and the future.

However, as this country has only a limited number of natural, deepwater harbors, most deepwater ports would have to be built offshore, perhaps at distances of 10 or 15 miles. Thus, most ports would be in international waters. Although the State and local governments working in cooperation with the private sector have been primarily responsible for port development in the past, they do not have jurisdiction over international waters. For that matter, I do not believe that the Federal Government has sufficiently clear authority without new legislation to license the development of ports in international waters.

The need for these ports, the need for an in-depth environmental, economic, and legal analysis of the issues and the possible need for legislation became apparent within the administration in the spring of 1972.

Building upon work already under way or completed by the Council on Environmental Quality, the Corps, the Coast Guard, and the Maritime Administration, the White House organized a broad inter-agency review of the deepwater port issue in June 1972.

The agency analyses were broadened to include a legal, extensive, computer-based economic analysis. Study results which can be found in the draft environmental impact statement which was released last August by the Department of the Interior, so, based upon the outcome of these studies and after a number of cabinet-level meetings, legislation was recommended by the President to the Congress entitled "The Deepwater Port Facilities Act of 1973," and introduced in the Senate as S. 1751.

We, in the administration are particularly pleased with the development of the deepwater ports question and legislation. We believe that it was an exemplary process. The studies included a number of independent, in-depth economic, engineering feasibility, and environmental analyses. Government agencies, five independent Sea-Grant studies by major universities, public hearings conducted by the Corps of Engineers and then publication of a draft environmental impact statement accompanying the legislation.

I believe that this was the type of orderly and open process which was intended by the drafters of the National Environmental policy Act. I am hopeful that this thorough examination of the issues will greatly aid the efforts of the Congress to agree rapidly on legislation. I can assure you that we will do anything possible to assist you during your deliberations. To this effect, I am supplying detailed answers for the record to the questions which you had forwarded to me.

Now, I would like to summarize briefly the results of our studies.

First, I want to discuss the environmental conclusions and then the economic and legal.

I know this committee previously has heard testimony from the Council on Environmental Quality, EPA, and NOAA. I will now attempt to point out what I believe are the important conclusions.

Obviously there are definite risks associated with the importation of crude oil and petroleum products. There are the risks to the marine environment associated with possible operational spills at a deepwater port facility, although usually only a few barrels.

Worse, there is always a slight chance of a catastrophic accident involving collision or grounding of a VLCC. The risks of these catastrophic accidents can be greatly reduced at any port facility by a number of measures including use of navigation control procedures as well as ship design features such as double bottoms and segregated ballast. Our studies indicated that the risks of either operational or catastrophic damage are far less at off-shore port facilities as contrasted to our conventional, inshore facilities with their comparatively narrow channels and close proximity to shorelines.

I do not wish to minimize the environmental damage caused by oil spills. However, I would like to point out that, at least to my understanding, crude oil is a natural substance, it is a biodegradable substance. Consequently, it is my understanding even when relative catastrophes occur, such as the Santa Barbara Channel blowout, the

marine environment may not be permanently damaged. I also understand that techniques for both surveillance and a cleanup of oil spills have greatly improved and that the sea itself has a certain capability to absorb at least operational oil spills through a process known as "weathering."

Thus, I believe it is highly probable that use of offshore deepwater ports and VLCC's will lessen, not increase, the amount of crude oil reaching our beaches and marshes.

I understand that the greatest potential risk to the environment is not from offshore spills but from the onshore secondary economic development that would normally follow offshore deepwater port development.

In other words, associated industrial, commercial, and residential development ashore. In my view, the real risk here is not the amount of development but the concentration. I do not believe that the siting of deepwater ports, per se, will significantly change the total amount of petrochemical capacity or any other form of industrial activity in this country in 1980 or in any other year.

What, theoretically, can happen is that a great number of these facilities will tend to cluster around a limited number of deepwater ports and their associated refineries.

I admit that this is a real risk. However, I believe that between the coastal zone management program and land use programs, this form of development can be controlled. Further, I believe that both the economic incentives and our environmental preferences should heavily favor dispersion of deepwater port facilities, in other words, a reasonable number of these facilities somewhat evenly distributed over our coast. This would reduce the chance of environmental damage, both at sea and from associated onshore development.

At this point, I will discuss briefly some of our economic findings. We are all aware of economies of scale associated with the use of VLCC's. It turns out that the cost savings associated with the operation of these huge ships are the controlling economic factor. For shipments over long distances, such as from the Persian Gulf, savings of approximately 40 to 60 percent of the transportation costs will result from the use of VLCC's versus the ships now serving our ports.

The natural economic incentive is to maximize the use of these expensive ships and thus to deliver their cargoes directly to U.S. ports.

However, if U.S. ports that can handle these ships are not available in a timely fashion, most of the economic savings could still be realized by utilizing nearby, foreign transshipment terminals in the Caribbean or in the Canadian Maritime Provinces. We fear that, unless legislation is passed fairly soon, many companies may exercise options currently held and develop these foreign transshipment terminals.

Unfortunately, besides the economic loss, jobs and revenues, and the national security disadvantages of foreign transshipment terminals, this alternative would result in the use of large numbers of transshipment vessels and thus greatly heighten the environmental risks.

On the other hand, if the United States does permit the timely construction of needed deepwater ports, most observers agree that these ports will have an economic advantage over the foreign transshipment terminals.

Depending upon the type of port and associated capital investment and operating costs, as well as the throughput level, our studies indicate that the savings incurred from using U.S. deepwater ports as contrasted to foreign transshipment terminals may be as great as 16 to 18 cents per barrel, easily 5 cents to 10 cents per barrel. We all know that these are appreciable savings when we are talking about millions of barrels per day of throughput.

We recognized that the necessity for Federal licensing and regulation of offshore ports in international waters might pose questions with respect to our current posture in the ongoing Law of the Sea negotiations.

A special interagency legal task force was instituted and drafted many of the sections incorporated in the administration's proposed legislation. Two conclusions are of greatest importance.

First, the experts within the State Department and the Department of Defense believe that we, as a Nation, may license and regulate deepwater ports based upon the concept of "reasonable use of the high seas."

The Chairman of the Interagency Task Force on the Law of the Sea will speak before this committee regarding this point.

Second, we favor legislation which extends to deepwater port facilities off our shores to insure that they are subject to a complete legal regime. In addition, this broad extension of Federal and State legal authority will insure maximum protection of the marine environment as it would automatically extend not only current law and court interpretation but all future environmental laws to these port facilities. I can think of no better way, no stronger measures including new specific detailed regulations which would do more to assure the protection of the environment.

Before concluding my remarks, I would like to mention a number of points, some of which I have discussed already, which I believe are important policy issues which merit your specific consideration.

First, I encourage you to carefully consider our Law of the Sea negotiations and to very carefully consider adopting the concept of "reasonable use of the high seas."

I also strongly encourage you to provide a complete legal regime for these facilities, not just an isolated series of regulations.

Second, many are concerned about the interrelationship between the Federal and State governments. Some favor Federal preemption of State rights, others favor a State veto over possible Federal actions. These two issues were explicitly considered by the President and his advisers in developing the administration's proposed legislation.

Regarding Federal preemption, I do not believe it is necessary at this time. There are a number of States probably some other than those bordering on the Gulf of Mexico which may, subject to detailed environmental review, favor siting of a deepwater port off their shores. For those favoring development of ports at this time, I see no reason to raise the spectre of Federal preemption.

Regarding the possible implementation of a State veto, I am very worried about the implications of such a policy from both a practical and a constitutional point of view. The administration's proposals specifically require the Secretary of Interior to consult with the affected State and local officials and to insure that any proposed deepwater port facilities be in consonance with the State-approved land use plan.

It is certainly the intention of the administration not to force a facility on any state, as evidenced by the lack of preemption clause.

I believe some have suggested that any State should be able to veto any action contemplated off its own waters or off the waters of an adjacent State. With tides and waters affecting the whole coastline, and for that matter, the world, it is difficult to imagine how such a principle would operate.

This raises the constitutional issue I referred to as conceivably one or a number of States could be pitted against another State and the Federal Government either because of opposition to a specific proposal or because of fear of competition. I urge you to incorporate neither a provision for Federal preemption, nor a provision for a State veto. I can assure you that the program, as proposed by the administration and as would be administered by the administration, would be based on maximum involvement of State and local governments.

Third, it is not true that we as a Nation are in trouble because we do not presently have facilities capable of handling VLCC's. We are only importing about 1 million barrels per day of crude oil at present from Africa and the Middle East.

Assuming at least fairly level domestic crude production, we will not be significantly increasing imports of crude oil until we have more refinery capacity. This will take 3 to 5 years. We will be increasing imports of refinery products but these imports will probably not be carried on VLCC's. Thus, now is the time to complete serious plans and begin construction of deepwater ports for use by 1975-76 when hopefully, we will have significantly increased refinery capacity.

Fourth, many seem to think in terms of one or possibly two deepwater ports serving this Nation. I would guess that the origin of this thinking may be from two opposite sources.

On the one hand, promoters of deepwater ports want to maximize the throughput of their planned facilities and thus favor little or no competition.

On the other hand, some environmentalists, while recognizing the inherent superiority of U.S. deepwater ports to the foreign transshipment alternatives, may simplistically believe that as deepwater ports do involve some risks, both onshore and offshore, that the less ports, the better. For environmental reasons, both onshore and offshore, I favor a larger number of ports and thus dispersion of the ship traffic, operating skills and associated refinery development. Many knowledgeable observers often overlook the fact that a simple monopoly port facility may cost as little as \$25 million as compared to a refinery, depending on its size which may cost as much as \$1 billion.

Thus, I suggest that for a major new refinery or group of refineries, installation of a single-purpose buoy facility may be essentially a minor expense. For both economic and environmental reasons, I would be greatly disappointed to see legislation that would limit the number of deepwater port facilities.

Fifth, as you may remember, I stated that I believe that the emergence of deepwater port legislation at this time was evolutionary. I do not conceive of a new Federal bureaucracy and I do not conceive of a new body of law. I do not conceive of Federal ownership, management of extensive day to day regulation, and I do not foresee Federal direction of site selection or technology selection. I do see a thorough and pervasive Federal legal regime extending all of our laws including our environmental laws.

In essence I believe that the concept behind the administration's legislation and its policy regarding deepwater ports is quite simple.

We wish to leave the initiative to the private sector and to State and local governments. We wish to limit the role of the Federal Government to insuring that alternatives are well considered and that all laws and regulations are enforced.

Sixth, considering the simple concept which I believe we should follow in developing deepwater ports, I believe we are prepared at this time to also consider requests for facilities which would also handle any form of cargo.

I do not expect applications for facilities for other commodities such as iron ore carried by slurry pipeline. However, should such application be presented, I believe the NEPA would insure thorough examination of the proposal's environmental merits as well as alternatives.

Seventh, I believe there are a number of agencies which will play an important and continuing role in the development and regulation of deepwater ports, namely the National Oceanic and Atmospheric Administration, the Coast Guard, Corps of Engineers, and the Environmental Protection Agency and a number of others.

However, considering the predominant importance of land use considerations, as well as the expertise available on energy and development of facilities on the Outer Continental Shelf, I believe the proper location of the licensing authority for deepwater ports is within the Department of the Interior.

This rationale is augmented by the President's proposals for a Department of Energy and Natural Resources which would incorporate both the NOAA as well as the civil functions of the Corps.

In conclusion, in view of the overwhelming amount of evidence in favor of development of these ports, both from an environmental and economic point of view, I urge that this committee move as rapidly as possible to report out deepwater port legislation, preferably S. 1751. Again I pledge support and cooperation of the administration in your efforts.

Thank you.

Senator BROWN. Thank you very much.

The chairman of the Public Works Committee is able to be with us and I understand you have a statement, Mr. Chairman. It would be very convenient now for you to proceed with that.

Senator RANDOLPH. Thank you very much, Mr. Chairman. I regret

that a meeting of our committee, Public Works, of which you are a valuable member, kept me from being here in person to hear the important statement of Governor Love in his new position as Director of the Energy Policy Office.

I do have a very brief comment to make. I am especially glad that Senator Johnston is here because I make reference to Louisiana, as I do to your State of Delaware, Mr. Chairman, in these remarks.

Governor. I will, perhaps a little later, if it is appropriate and agreeable with the chairman, have questions that I might propound that we could have answered for the record without exchange of thought here.

Mr. Chairman, any national fuels and energy policy development should also reflect the national character of our energy supply system, but it also must reflect the regional character of our energy supply system. The problem of New England, I suggest, Governor Love, are different from those of the Middle Atlantic States, and even different from the States in the Midwest. The availability of adequate water supplies for cooling purposes in the arid Southwest is very restricted compared with the situation along the coastlines of the United States. Likewise, the problems of siting deepwater ports are peculiar to our coastal States. Yet, the energy demands that are to be served by the ports are national in character and need. For this reason, the formulation of a national deepwater port policy is exceedingly difficult. I am sure you understand that that is true.

Although one coastal State may be asked to site such a facility, its location may not be consistent with what the State believes as its rightful intent; for example, the state of Delaware. The other extreme is a State such as Louisiana, which is actively seeking, as I understand it, to develop a deepwater port.

At issue is whether the Federal Government, Governor Love, should preempt the so-called reluctant State. Yet, there still remains the national issue of who should make the final decision and how.

For example, a stimulus to oil may not be in the national interest, which interest many persons believe is a domestic energy self-sufficiency.

So, this is a consideration I think that we must weigh. These issues and others surely are being addressed in the joint Senate hearings with the Committees on Commerce, Interior, and Public Works.

As I understand it, we are completing the hearings, Mr. Chairman, in preparation for markup of legislation coming from the ad hoc study so that we can define a reasonable, workable, national deepwater port policy.

Although the Congress has been working for almost 2 years on the deepwater ports issues as part of an effort to develop a national fuel and energy policy, it has been within the last 6 months, really, that we have finally received administration support for such legislation.

Nevertheless, it is anticipated that this measure will receive action—some persons think this year, some think early next year, in the second session of the 83d Congress. Meanwhile, I reemphasize a State such as Louisiana is faced with the decision of formulating plans without Federal guidance or guidelines.

There also remains the question of whether in the light of recent

events, the supplies will be available, even from foreign sources, in the quantities required to make the deepwater facilities economically viable and feasible.

I thank you, Mr. Chairman. I don't know whether that would bring a response from Governor Love to any of the points I have raised, but I did want it to be placed in the record in connection with his testimony and the decision that you and others of the ad hoc committee would engage in.

Senator BIDEN. Thank you very much, Senator. It puts much of what we have discussed with Governor Love this morning in perspective.

Would you like to respond generally to that?

Mr. Love. Just generally, Mr. Chairman. First as to the important policy problem of the relationship of the import facilities to the stimulation of our own domestic production, there is little doubt that our policy must be and will continue to be to stimulate domestic supply of energy, hopefully to the extent where domestic supplies can be reasonably adequate in a reasonable period of time. But I think there is little doubt that all of the efforts we will make to achieve increased domestic production will involve significant lead time.

It is apparent that we are going to need importations of crude petroleum in larger quantities than present at least until the mid-1980's. I recognize some of the uncertainties in the supply situation, but I think we have to, as a matter of policy, plan to seek those imported supplies. Then it becomes very important, as I have said, to move them by the very large tankers, and in order to do that without transshipment, we do need the deepwater ports.

On the subject of Federal preemption, as my written statement indicates, we feel that neither Federal preemption nor State veto is wise. While the presence of a deepwater port has a potentially great effect on supplies of petroleum product to certain regions this does not justify preemption. To preempt is to say to a State, "You must indeed have a deepwater port;" this seems to be an unnecessary and erroneous intrusion of the Federal Government into the decision.

Senator BIDEN. Mr. Chairman, do you have questions?

Senator RANDOLPH. No, I understand the statement, the import of it.

Senator BIDEN. Governor, what I would like to do, if I could, I have a number of questions and I am sure Senator Johnston does, and I will try to limit my first round to 10 minutes.

I would like to pick up where you left off in response to the chairman's statement and in your prepared text about Federal preemption versus State preemption.

In meeting with the Department of Interior, with their people on a briefing for Senators on this subcommittee and with our staffs, that question was raised by me and by others, and at that time, although the people with whom we were speaking obviously couldn't speak for the department, in response to my question, they quoted that section 103(e) of the act which reads:

The Secretary shall consult with the Governor of any state off whose coast the facility is proposed to be located, to insure that the operation of the facility

and directly-related land-based activities, will be consistent with the state's land use program.

The department representatives indicated that they read that as sort of an implicit veto, that really if they didn't comport, if they didn't fit together, that if, in effect, if a State planner said, for example, it just doesn't work in our State, as a practical matter the Federal Government would not build or would not license such a facility to be built. If I understand the tone in your statement, as a practical matter, you are saying if the State really doesn't want it and it does not comport with their land use planning, that it would not be built. Is that overstating it or understating it?

Mr. LOVE. No, I certainly believe that to be true. The deepwater port would be of no use, obviously, unless it served an onshore facility that would include refineries, presumably, and other installations.

Whether or not we wrote anything into the law, it seems to me if the State chose not to have refineries, roads, and other facilities that would be necessary for this development that there would be no way you would find investors going into construction of a deep-water port.

Senator BIRN. If that is the case, Governor, and everyone that has testified seems to have the same impression of the meaning of that language, I am a little perplexed as to why we have to be in never, never land. You would rather the State not be able to veto the construction of the port and the Federal Government not be able to preempt the State. So, what we are going to do is to sort of work it out and hope that everyone interprets it as you have.

I guess the direct question is, if in fact there is a veto, which is a strong word—what is a better word than veto? We came up with one on the committee, but it meant the same thing—objections, strong objections. In other words, if the State can stop the construction of the port, why not write that implicitly in the law? It would put a lot of minds to rest in my State. They would all say it is a nice job that young fellow did for us. If that is what you mean, why don't we say it?

Mr. LOVE. I suppose that my quarrel with it would be more philosophical than practical, in that I do not back off from my belief that there would indeed be no facility without the concurrence of State officials.

Senator BIRN. The other question—

Mr. LOVE. There are—maybe this is getting too technical—there are some legal problems, I guess, involved when we are talking about beyond the 3-mile limit, where the Federal Government has jurisdiction in licensing a facility. If, indeed, then there were an act by another government unit such as a veto or a something, I think we might get into a question of jurisdiction, of overlapping authority, possibly a constitutional question.

Senator BIRN. One of the things I am going to request the staff to do is to investigate that one thing and maybe there have been some studies done on that. I don't know. It seems to me if in fact the Federal Government explicitly grants that right which they have to the State government, then you clearly move beyond the legal question. That is getting a little too technical.

I just want to make sure I understand the philosophy of this act, the thing you are trying to achieve.

The other sort of general question I have is Mr. Randolph, the Chairman of the Public Works Committee, who, probably is one of the most knowledgeable men in the Senate on the whole question of all sources of energy, in that his committee has been working on this for a long, long time and he comes from a State where he knows a little bit about coal and the problems there, and I know that is of some interest to him—he raised a question which I have been raising as sort of a red flag, but I don't know that I am right; I don't know that it is correct. It seems to me if we go down the road of encouraging, whether it is out of necessity or by design, the increased importation of crude oil over a long period of time, that will have the effect of diminishing our fervor for developing our own domestic sources of energy, not by definition, but as a practical matter.

Let me go on and explain why I think that and then correct me if I am wrong on it. The very people who will be building these facilities and have the most interest in construction and operation of the facilities and the ships, even though the facilities—I understand, someone from your outfit said we could build a deepwater facility for as little as \$5 million—other estimates I have heard range all the way up to a half billion dollars and a billion dollars—but the point is, regardless of what the investment is, there is a big investment in both the superports and the supertankers.

These same companies, as I understand it, also own a considerable portion of the coal reserves, the very thing that we are talking about developing.

As I understand from an article I read, and I realize you can't believe what you read in many of the magazines, but in one of the weekly magazines a couple of months ago, if I am not mistaken, some of these companies also own a significant portion of the geothermal sources. In short, they own a lot of energy sources domestically other than oil.

I wonder whether or not it doesn't have an inhibiting effect on the tendency to develop that as an alternate source, or at least delay it. Would you comment?

Mr. LOVE. To put it in perspective, first, it seems to me there is no one answer to this problem. We are going to have to provide a complete range of solutions. The demand has been and continues to be seemingly insatiable for increased sources of energy. I believe we are using about 1 million barrels of oil a day now, and historically that has been going up a million barrels per day on an annual projection.

My point being we are going to need all of it. I don't think the imports stand in the way of the development of coal, the development of additional nuclear generating plants, geothermal energy, or oil shale. It seems to me from the standpoint of the responsibilities of my office, that we need to promote each and every one.

On the other hand, looked at on a shorter-term basis, I do not expect significant increases in domestic supplies of energy within 3, 5, 7 years. It depends on how quickly we begin and how hard we push it.

For at least some period, unless we are going to severely limit the use of energy growth in this country, we are going to have to rely on increased imports of petroleum. I certainly agree that neither deepwater ports nor any other policy should stand in the way of the major effort that needs to be made as far as the development of domestic supplies of energy; I believe all of these policies will go hand in hand.

Senator BREN. I am not suggesting that it is the administration's intent in supporting the rapid development of deepwater ports, that they are in fact standing in the way of domestic supplies; I think it is clearly your intent to have that also rapidly developed; but I just raised the question that as a practical matter that that might not happen.

Mr. LOVE. I think it perhaps relates back to the situation that did exist in years gone by where imports or domestic production were an either/or kind of situation when we were not producing to the extent that we could. But to the best of my knowledge, for all practical purposes, we are producing all out on all of our domestic supplies of petroleum.

Senator BREN. Which raises another question I would like to get to later, and that is what are we going to do to try to educate the American people to realize that there has got to be an end somewhere?

A few more specific questions. By the way, Atlantic Richfield, just as a point of fact, is the second largest holder of Federal coal land leases in the Nation, and it goes from there. There is a direct relationship. You divided your statement very logically into the questions, and I compliment you on the thoroughness of it, of international waters and that problem, and the question of accidents and onshore development. And I would like to come back to them.

I would like to zero in on onshore development for a moment. You say you recognize that the greatest potential risk for environmental degradation is from onshore development, and that in your view this potential for damage is increased with concentration, and that it is your hope that there would be a dispersion of refinery capacity and related petrochemical industries away from the point at which the pipe comes to shore, and you think that will occur.

I am wondering, for example, on the east coast, one of the primary ports, as we all know, is New Jersey, Delaware, upper Maryland.

Senator SCOTT. Mr. Chairman, if I might interrupt. I have heard you refer to Mr. Johnston a time or two. Of course, you are aware you also have a Republican Senator present. So, when you start talking about the various States, include Virginia.

Senator BREN. It was not by design. The Delaware-Maryland-Virginia peninsula. I am unaware of the request of the siting of any port directly off any Virginia coast, but they would certainly be affected by such a placement.

My point is, it seems to me, regardless of where the pipe comes to shore, whether it be in Delaware or New Jersey or in Virginia or Maryland—it changes a little bit when you move to Virginia and Maryland, because that portion is not as densely populated—I wonder where the dispersion is going to come.

In other words, what makes you think we will be able to disperse this refining capacity to avoid what you and I recognize to be a very potentially serious problem?

Mr. Love. The thrust of my remarks were toward any limitations that the Congress in its wisdom intended to limit the number of ports to be licensed, let's say, to three. Obviously, with the quantities of crude that we will need to import in the years ahead, you would have to have three very large complexes to store, refine, and transport the crude and products.

On the other hand, if there are hopefully many deepwater ports, it would make for less concentrations.

Senator BUDEN. I misunderstood that. You said in your statement, if I am not mistaken, or in your comments on your statement, that if we were to grant a mechanism by which deepwater ports can be built, that is not going to have an immediate effect on lessening the energy crisis.

I just do not want people in this Nation thinking that, if we build deepwater ports tomorrow, our energy crisis is going to be over. That is not true, is it?

Mr. Love. That is not true. We are not going to import much more crude than we are presently importing because of our lack of refinery capacity, and there is a lead time of roughly 3 to 5 years to site and build a new grass-roots refinery.

Senator BUDEN. Thank you very much; Senator Johnston.

Senator JOHNSTON. Governor Love, first let me say how pleased I am personally and how much the President ought to be congratulated for appointing you to what has been called the new Energy Czar position. I think this is one of the best things the President has done in the field of energy.

Your appointment has been so far as I have heard, universally praised. You are regarded as a man of great ability and integrity and the kind of capacity that it is going to take to do this job.

Mr. Love. Thank you very much.

Senator JOHNSTON. First good news. Now the bad news.

In my judgment, the President's record in the field of energy has been absolutely dismal, as characterized by such statements as the fact first we will be energy sufficient in 3 to 5 years. I know you do not believe that. You have just said that in your testimony and for the record, you do not believe it, do you?

Mr. Love. No. Well, it depends. I suppose. Theoretically, if we could generate both a structure which had the power, including possibly some governmental financing, as part of a major push we could achieve the capability to be self sufficient. I do not know what the time would be, the whole range of oil shale, coal gasification and other programs are needed, but under the present movement and policies, I do not see that we are going to become self-sufficient in 3 to 5 years.

Senator JOHNSTON. Secondly, he said to the Arabs, you had better watch out or we will cut off your market, which is—if he believes it—terribly naive and certainly an untrue statement.

The point I make, Governor, is I see you have a tremendous responsibility to educate the American people about this energy crisis

and I do not think the kind of statement which you have in your testimony where you say "Assuming, at least, a fairly level domestic crude production, we will not be significantly increasing imports of crude oil until we have more refining capacity"—and I think an assumption of a level of domestic crude production, first of all, is a wrong assumption.

Second, it disregards the projected increase in demand over the next few years which means we must import more oil and each incremental barrel of oil must come from the Middle East.

I think it is time that the President and the President's Energy Czar start talking about this crisis in crisis terms, because I regard it as a crisis, not a shortage but a crisis.

I think the American people have to be made aware that they are going to have to swallow some very, very difficult pills, like rationing, like taxes on capacity of automobiles, horsepower tax, like gasoline tax, like unpleasant conservation measures. If they are going to do that, they have got to be made aware by Mr. Energy Czar that the situation is critical and not that here is a possibility in 3 to 5 years that we will be energy sufficient, because there is no way. We cannot be energy sufficient by 1983 according to the testimony in the Interior Committee.

Would you agree with that?

Mr. Love. Yes.

In the opportunities I have had to make speeches or appear on television shows during the brief period that I have been involved in energy policy, I have, I think, almost without fail, started out by saying that the first step, as you have said, to begin the solutions to this problem is a realization on the part of the public of the United States that this is for real and it is not going to go away.

It is not anything as transitory as a plot on the part of the oil companies: it is not simply the environmental restrictions. They have all perhaps had their part and they have had their share and the Government has made mistakes and so on.

I do not think the people of the United States are fully aware of it yet. There is not one single solution, there is not a single panacea. There are a series of solutions.

Push as hard as we may, in that period of time—and this 3 to 5 years I relate to primarily refinery capacity—there is no way we can meet demand except by a dampening of the demand curve.

Senator JOHNSON. Do you concur with the statement that we will be importing at least half of our oil by 1980?

Mr. Love. I think we will have the demand for it, but how much we will be importing or whether we will depends on many uncertainties that I cannot forecast at the present time.

As you have stated, look as you may, not only at the United States, but for the world in general, the demand is going up in the rest of the developed world even faster percentagewise than it is here in the United States.

If you look at the various potential sources of supply, you inevitably come to the Persian Gulf and primarily Saudi Arabia.

The political situation aside for the moment, there are very real reasons to believe that the Saudis may well decide that it is not in their self interest to increase production to 20 or more million barrels

per day that would be necessary to meet the projections you are talking about.

Senator JOHNSTON. The National Petroleum Council said 66 per cent of our oil will be imported by 1980. Assuming a reasonable set of assumptions, it is going to be at least half of our oil imported unless we drastically curtail demand, and I do not see how we are going to do that without some drastic action or unless we find some new source of energy that is not on the horizon right now.

Do you concur with that?

Mr. LOVE. I disagree, perhaps, in emphasis a little bit.

I believe that if we get at it, this is the kind of problem that Americans have historically dealt with very effectively. It involves technology. You know full well that we do have very tremendous deposits of coal which can be brought on stream as useable energy from gasification and liquefaction.

You know I am sure the oil shale situation is also developable; it is a matter generally of how much time and effort, and how much the North Slope is going to produce.

As you probably know, there is a very large structure off Pensacola and the gulf which, if it produces, could make some difference. There are all sorts of things that could add to domestic production.

Unless we do change the rate of new discovery or the production of domestic energy faster than we are, then if we are to in anyway meet projected demand, the 50 or 60 percent of imports would be correct.

Senator JOHNSTON. About at least half of that 50 to 60 percent would come from Saudi Arabia, would it not?

Mr. LOVE. Yes.

Senator JOHNSTON. What would it mean to this country to have 25 percent of its petroleum supplies suddenly cut off, that is, the share that would come from Saudi Arabia alone?

Mr. LOVE. I guess I can respond to that question best by saying I think that the gasoline shortfall this last season was no more than perhaps 2 or 3 percent. Under certain forecasts for the distillate or heating oil situation this winter we would have a shortfall of maybe 5 or 7 percent under bad circumstances.

If you relate impact of energy shortages to our economy and society, then when you talk in terms of a 25 percent shortfall, I think it would be very, very severe, if not chaotic.

Senator JOHNSTON. Following up on this point about the need to alert the American people, it seems to me that Detroit has not gotten the message yet, either in their design of automobiles.

I like big automobiles, big ones and fast ones, the kind that use a lot of gas. But I think Detroit has got to get the message and start designing cars immediately that use a whole lot less gas.

I do not think they are yet. Because I do not think they realize—their energy czar has not told them yet—that we have a real problem.

Senator BURX. They say they realize it, the American people do not want it and they do not want to give the American people what they do not want.

Mr. Lovz. I do not think I should attempt to state what their position is, but I think they are going to respond to public demand.

But I also would caution you, as right as I think the goal is, as with all these solutions, there are complexities because of lead time. Each of them say to the extent possible they are increasing their production facilities to make small engines and moving to production of compacts and subcompact as quickly as possible; but even if we did it today, there may be 110 million cars on the highways and by the time you phase those out, the change in energy consumption would not happen that quickly, either.

Senator JOHNSON. On another subject, Governor, you pointed out the difficulties of transshipment, the implications it would have for the economy of the country.

Given that set of facts, should we prohibit transshipment or put some kind of tax on it or an embargo? Or should we discourage it?

Mr. LOVE. I have mixed emotions on that at the present moment. I know we presently have a policy which has license fee arrangements on imports of product in an attempt to stimulate the building of new refineries, but in our present situation, I am inevitably pushed toward the position where I want to get the product or crude wherever I can, and I hate to put impediments in the way of getting it in anyway we can.

An orderly system certainly would flow from this deepwater port.

Senator JOHNSON. Much of this transshipment would just be transshipment of crude. We are not talking about transshipment—

Mr. LOVE. There have been some proposals, you know, to build deep-water ports in an island near Puerto Rico, or some such thing, and bringing in the product from there.

Senator JOHNSON. Of course. Puerto Rico is part of the United States, but how about in the Bahamas, Venezuela, where you come in with your big tankers, off load onto your small tankers, as you describe here in your statement, no refining taking place there, just offloading onto your smaller tankers, you are pointing out that those are beginning to be constructed and if we do not get on with this legislation pretty fast, they may build those and then make it uneconomical to build the superport.

Mr. LOVE. I think that is true, yes. So we need to get on with the licensing in order to avoid that kind of a situation.

Senator JOHNSON. Thank you very much. I see my senior colleague over here. I want to be very deferential to him.

Senator BIXEN. Since you are a Democrat and Chairman of the Finance Committee, why don't you go next? Sorry, Senator Scott.

Senator LONG. Go right ahead, Senator.

Senator SCOTT. I am quite agreeable to yielding to the distinguished Senator, but you know there are 43 Republicans now in the Senate and they cannot be completely ignored, especially when we have a Republican in the White House.

I am glad to yield to Senator Long.

Senator BIXEN. The fact that he is chairman of the Finance Committee is a good deal more compelling than that he is a Democrat..

**Senator Long.** Go ahead, Senator Scott.

**Senator Scorr.** Governor, let me add my word of welcome. I am certainly glad to have you in the position, and I share the kind remarks that were made by Senator Johnston with regard to your esteem here in the Congress and I certainly share his thoughts about there really being an energy crisis and that we should recognize that, although I might not agree with the suggested solutions that he has made.

With regard to the President's warning to the Middle East, we still are the Nation that, when the Nation is sufficiently aroused, we had a crash program to put man on the Moon. I heard you on television Sunday; it may have been pretaped, but you suggest that it would be 3 or 4 years, as I recall, before there would be relief, and just a few minutes ago you were speaking of 3 to 7 years. Isn't this sufficiently important—and I will get to the deepwater ports in just a minute—but isn't this sufficiently important that we give the same emphasis to a crash program to perhaps get oil from the so-called depleted wells that still have oil if we use the proper techniques, that we build further offshore oil, shale oil, the Alaska pipeline be expedited, isn't it sufficiently important that we proceed with such a crash program?

**Mr. Love.** I believe it to be of a very, very real importance. I have sometimes recently wondered whether I am seeing this thing objectively. So many people have flowed through my office talking about the problems that exist. We are bumping the top in almost every area, whether it be diesel fuel for the trucks or railroads or the petroleum products that the electrical utilities use, all down the line. When you contemplate what effect a real shortage can or will have on the economy and on society, it seems to me it is this type of situation that warrants the kind of urgency that you talk about—a program with a sense of urgency.

Our present proposed program is not small. The provision has been made by the President for about \$10 billion over the next 5 years in research and development, not only in conventional recovery, but certainly all the substitute and synthetic sources that we can develop.

Other programs that I think are vitally important, including this one, are the deregulation of new natural gas at the wellhead and stack gas cleaning technology, for example. All of these are programs that need to be pushed.

When I talked about the need, perhaps, for either a man on the Moon or Manhattan-type project, I was thinking and talking in terms of some sort of governmental corporation or agency that may be impossible to secure from the Congress of the United States now.

**Senator Scorr.** If I may interject, Governor, if I can interpret the mood of Congress and the American people, they would back any reasonable plan that might be developed, and I believe that the Congress would welcome suggestions that you might have. I know I will be followed by a much more senior member here, but that is my sense of the Congress and the mood of the American people.

If you can in some way provide the leadership here, I think you will get support, bipartisan support, in the Congress.

Mr. LOVE. I am encouraged in hearing that. I am in the process of formulating some additional recommendations. Let me caution it may be in order to be effective, that these recommendations would involve some drastic kind of action.

At the present time, as you know, the constraints on many of the things that need to be done are scattered across a great many different laws and different agencies: the regulatory agencies, the whole environmental program, and so on.

If, indeed, you simply took the straight line and allowed some agency to make all energy decisions, I think such an agency is going to be difficult to put across. But I am encouraged to hear what you say.

Senator SCOTT. Governor, let me share a concern with you and get your reaction. We had a gentleman here yesterday, a Professor Moore, who was with the Department of State, and I understand he has been a professor at the University of Virginia. I was concerned when he talked about the 3-mile limit and about there not being material difference between the use of a superport within territorial waters and international waters. And he did make an unequivocal statement that nowhere along the eastern coast did we have territorial waters beyond a 3-mile limit.

I believe that is a misstatement, because when there are islands out there in the ocean, I think perhaps the territorial limit may be extended to the islands and to areas surrounding those islands, for they, too, are American islands.

We have got a problem with getting sufficient energy supply without undue reliance on the other nations. I am concerned that if we put a superport in international waters, that we would not have a complete control, that we might have to go to an international body, and this gentleman from the State Department apparently had no concern with regard to us getting the necessary approval by international bodies. He said we could do anything that was reasonable.

My concern is, who determines what is reasonable and who determines what is not reasonable, and I am concerned enough from the defense posture that I just don't want us to have to rely on some other nation. When we build this superport, is there a way that we can construct that or have you delved into this so that it would be completely under U.S. control, whether we are talking about a 3-mile traditional territorial waters, or 12 miles, or 200 miles that some have claimed? Have you given consideration to this?

Mr. LOVE. Yes, and I will ask Mr. Shaefer to confirm this, but it is my understanding and belief that the thrust of the proposed administration bill for deepwater ports in this connection simply says we have determined that we can, on our own, without consultation, license deepwater ports beyond the 3-mile limit on the basis of—

Senator SCOTT. I read in your statement that you talk about having experts from the State Department and the DOD. Having been an attorney with the Department of Justice for 18 years, I know plenary authority with regard to lawsuits resides in the Attorney General. I just wonder what consultation has been made with the Department of Justice.

Mr. LOVE. The legal work, Mr. Schaefer says—why don't you answer it?

Senator SCOTT. Would you identify yourself for my information? I was late because I was at a Public Works Committee meeting.

Mr. SCHAEFER. I am John Schaefer. I now work for Governor Love.

Over a year ago, I was the chairman of a study on deepwater ports.

Senator SCOTT. You are an attorney?

Mr. SCHAEFER. No, sir. The chairman of the legal group that studied all the legal implications, including the international law of the sea, was Roger Crampton, the Assistant Attorney General, Office of Legal Counsel.

Senator SCOTT. What did Mr. Crampton in the Office of Legal Counsel in the Department of Justice have to say?

Mr. SCHAEFER. Not being a lawyer, I am not really qualified to speak to the exact issues, but it is my understanding that the Justice Department fully coordinated with both Defense and State in developing the administration's posture on the use of the international laws of the sea, and believes that we would have full jurisdiction and authority over all operations at and around that port.

Senator SCOTT. Mr. Chairman, I appreciate Mr. Schaefer's comments, and Mr. Love's comments here about talking with the State Department and the DOD, but to me, this is a very serious matter, that we be sure that anything we construct is under the complete sovereignty of this Government, because what we are trying to do here is somehow be as self-sufficient as possible, and if we spend, what could turn out to be several billion dollars, including pipelines and the port, and I don't know how much would be involved, and still find in some manner that we are subject to international control—somebody raised the question, I believe, with Senator Johnston yesterday about some hooks and somebody doing some deep sea fishing, catching on to some of our oil pipes under the ocean—I am concerned about this, and I just hope that your Office will give complete consideration to this.

I have requested that our staff check into it and my own office staff is checking with the Library of Congress and elsewhere, because to me, if it is a question between having it 40 miles out and having it 3 miles out and the only way we can have complete control is to have it 3 miles offshore, I am going to vote for something 3 miles off our shore, even though it might be more desirable to have it further out. I think that is a question we have to be absolutely certain of before we pass this bill, and, Mr. Chairman, I won't encroach further on the committee's time.

Senator BROWN. Thank you, Senator.

Senator LONG.

Senator LONG. I hope if we try to do something to get the benefit of all that oil which we should be locating one of these days beyond the 3-mile limit in the Atlantic and in the gulf, that it will be for the benefit of the United States. I saw, recently, that Senator Church introduced a measure that we dedicate all that oil to the United Nations. With the shortages that we are going to have here, I don't

really think we can afford to give it to the United Nations. I hope that part of it has been discarded now.

But there is really a concern to me, the suggestion that this Continental Shelf should be regarded as a Federal domain beyond the boundaries and not subject to the jurisdiction of any State.

Any island situated out there at the time that State joined the union would be treated just like Catalina Island or Santa Barbara or the Florida coast. It would be just regarded as a part of that particular State. The States do have a great concern what happens. They are going to have to educate their children and provide all the services a government is expected to furnish at the State level to all the people that work out there on those ports. They provide now for all the people working on the rigs that fabricate the materials that will be used to build and maintain such a facility.

So, it would seem to me that we ought to approach this as a Federal-State partnership just as we would if we were embarking on something of this sort within the 3-mile limit. I have seen the great enmity and resentment that can develop where these things are not approached on a partnership basis, but are approached on the basis of the Federal Government seeking to exclude the States from being a part of any of this.

Is it really the plan of this Government to proceed on the basis that the Federal Government is going to do what it thinks it ought to do about the matter and the adjoining States can be told to go take a walk, that they can do no more than just enter a suggestion or protest and perhaps will be heard? Is that how the Federal Government plans to do business about this sort of thing?

Mr. LOVE. No, Senator, the thrust of the bill is it would be a partnership between the Federal and State and consultation with the State and local officials, and we recommend no State veto, but no right on the part of the Federal Government to preempt and say that you have to.

We were talking earlier before you came in about the fact, as a practical matter, the port itself would be of no use unless there are very extensive facilities onshore for storage, refining, and so forth. These, of course, are going to be under the control of the State and local governments, in any event, and they are going to decide whether they are under their land use plan.

For all practical purposes, the State is going to decide.

We recommend further that we extend to the port facilities the complete range of relevant laws, both Federal and State, environmental as well as others. But I can't respond to you the same way on whether you indeed imply there should be some sharing of any kind of revenues that are gained, but I suppose it is possible that the tax system of the States would apply to the port or at least the refineries as well as their other laws.

Senator JOHNSON. If the Senator would yield, I have heard this answer so well stated by Governor Love that he recommends no Federal preemption, but no State veto with the right of consultation. I would submit if you give the Federal Government the right to grant the license and do not give the State the right to veto, you have preempted the field. You have given the Federal Government the right to build that superport whether the State wants it or not.

I think whatever else is said, that is a Federal preemption. Maybe we ought to have it, but I think it is.

Senator LONG. That is just part of the problem. When you proceed on the theory that these manmade islands erected out in the sea are going to be Federal domain beyond the States and beyond the reach of State laws, I believe that you are going to generate the opposition of every coastal State. I would be surprised if you don't.

I think the valid approach is a Federal-State partnership that we have on some occasions worked out to the mutual advantage of all with complete cooperation. We have people in Louisiana who were opposed to building these gas pipelines to move the gas from my part of the country up into the East and the North. They say, "Well, now, see what has happened: we were right. If you had listened to us, we would have all that gas in Louisiana and Texas for our use. Now we have to haul it up there; we haven't got enough for ourselves, and we have the worst of it.

If we had listened to those people 25 or 30 years ago, the State of Louisiana would have denied anyone the right to build a pipeline across a river, across a State highway or anywhere to take any gas or oil, particularly natural gas out of Louisiana. At the moment, it might appear we would have benefited from that.

But that type of thing can well be argued is not for the overall national interest. I understand you feel that way about it. I don't think we are going to achieve what we need in this area unless we proceed on the basis that the Federal Government and the States are partners working for their mutual interest.

Mr. LOVE. I would agree, and I think the thrust of the bill, as I understand it, is toward that kind of partnership, and it is an extension, I think, of not simply Federal control of the port facility but also the State law to the installation as well as the Federal law.

Senator LONG. Sooner or later you are going to have a parallel problem presenting itself with regard to the need of developing the Continental Shelf out in the Atlantic Ocean. If we find oil on Federal lands in the State of Colorado, the State gets 37.5 percent of all the revenues that are generated from that, about 10 percent is set aside for administration, and all the rest of it goes into a reclamation fund from which Colorado and the other States with similar problems in that area would benefit.

Off that 3-mile limit, it is a different situation. Louisiana gets no revenue out of there at all. I really think that resulted because of a very bitter fight that developed and the fact that the State was completely uncompromising in its attitude about the matter. The Truman administration, under Oscar Chapman, whom I believe hailed from your State at one time, was favorable to the position that the States should receive a share of the revenues, but as the fight generated and became so intense, I think they were pleased to see it work out that the State just got nothing out of all that.

We still want to develop it out there because there are so many jobs involved, just to keep our people working in a low-income State, but I don't think you are going to find that kind of cooperation off of these Atlantic coast States. If there is nothing in it for them, I

think they are going to take the attitude they don't want to be involved with the pollution problems, the oil flares, and the scenery being obstructed by oil rigs out there, which, if I do say, do not improve the view when you are looking out to sea. You are looking at oil flares and smoke and structures out there, and it doesn't look very attractive.

But the Nation needs the fuel. To achieve what needs to be done in this area and gaining the cooperation of those people, I think they are going to have to have some sort of equitable consideration, not as favorable as Colorado receives with regard to that Federal land located out in Colorado, something more than nothing; otherwise I think their attitude is going to be it is nothing but a minus to them, nothing but a burden on them, and they would prefer to haul it from the Near East or do what we can to produce the oil and coal somewhere else and make other plans to get the energy.

Mr. LOVE. The problem you describe is familiar to me. I think, in terms not of monetary gain at the moment, but of environmental impact. As you probably know, a very large coal-fired generating plant was built down in the so-called Four Corners area, primarily to produce power that went on to Phoenix and Los Angeles. It wasn't a very good plant and it put out a great deal of particulates and we had quite a group of people in Colorado, and some of the adjoining States, who complained loudly, why should we get all the disadvantage in order to provide the advantage for someone else?

As the pressures build in the area of energy, I am afraid there are going to be stresses and strains in many areas in this regard.

Senator LONG. It seems to me we ought to work together and we need to move with a certain amount of State and Federal cooperation, and also with the sense of urgency which you stressed when you appeared on television the other day. I know what it is to go out of the oil drilling business. I know what it is to go out of the oil drilling business. Someone makes the decision, let's see where we made money the last 10 times we drilled. Then they say all we are doing is losing money. Let's stop it, quit it. People have been going out of the business in droves. You have to figure out how much it costs to rework that well, to clean out the paraffin, and to open up the sands down there to get more oil out of it. If it costs you \$5,00 to do that and you have only managed to get \$4,000 of oil since that time you are not going to rework it again; you lost \$1,000 the last time; you are not going to make that mistake again. Pour concrete in that hole and forget about it.

That has been the experience of the average independent in my part of the country. They have been going out of business in droves.

Now, it costs about eight times as much to drill down to 20,000 feet as it does to 10,000 feet. Most of the oil and gas between the surface and 10,000 has already been found. To go deeper is going to cost a great deal more. It increases almost geometrically rather than arithmetically. If you are going to ask those people to drill deeper, and they are willing to do it, you are going to have to let them sell their production for whatever it would bring on an open market. That is why you recommend deregulation of the new gas, I take it!

Mr. Love. Yes.

Senator Scott. Would the Senator yield?

Senator Long. Yes.

Senator Scott. I was concerned about the question that Senator Long raised with regard to Senator Church's suggestion that some of this offshore oil beyond the Continental Shelf be given to the United Nations.

Senator Long. Not some of it. All of it.

Senator Scott. Is there any serious consideration being given by the administration or what would your personal reaction be to any such asinine suggestion?

Mr. Love. Personally, I would like to associate myself with the remarks of the Senator, if I may.

Senator Long. I hope that bill is not introduced again. I hope we don't have to take that one up on the floor.

Thank you very much. I hope you are lucky in this job.

Somebody asked you, Governor Love, on television the other day, if you had any ambition to be considered as a candidate for President of the United States. I would just say, if you can solve this energy crisis, they ought to make you President.

Mr. Love. One of the options that I have chosen to look at is an option that I think was brought up by the distinguished Senator, on the Vietnamese war, who said that the answer would be to simply declare we won and leave. I think if the situation gets any more difficult, I will simply declare that I have solved it and go on back to Colorado.

Senator Bowen. The really crucial question, Governor, is do you accept the nomination?

Governor, I have a number of additional questions as others do. I would just like to take 5 minutes to ask you a few and ask permission that I submit formal questions in writing to you, because I think it would be very important for us to have the answers at the time of the markup.

You may not have the answer to these on the tip of your tongue. I do not expect that. Let me go through with a little litany theory.

To zero in on one aspect of your testimony, accidents, and you pointed out there was a definite risk, but you went on to say the down side risk was not as much with supertankers as it is if we continue the way we are going.

You went on to point out that there are a number of controls, such as navigational controls, double bottoms, segregated ballast, that can help alleviate that danger.

My question is, would the administration be willing or suggest that we make these mandatory requirements, not leave them open-ended, for example, to require double bottoms?

Mr. Love. I think that is a necessary part of the licensing procedure, don't you?

Mr. Schaefer. There are CG regulations that incorporate those provisions within the licensing review that would be required.

Mr. Love. I think it is a necessary part of the licensing procedure that we do build in those safeguards. Mr. Schaefer is also saying there are CG regulations.

Senator BIRN. As I understand it, the CG has been directed to look at this, but there is no specific requirement that either the CG demand double bottoms; for example, I do not want to just dwell on double bottoms, but either that that be required, or as a matter of fact that they have to promulgate that regulation.

Mr. SCHAEFFER. I think we should check for the record. It is my belief that those specific regulations are being considered by the CG at this time and are out for comment, and being out for comment, I would assume that the intention, unless there is strong reason not to, would be to adopt those regulations.

Senator BIRN. Other things, for example, such as the requirement of certain coupling devices for the offloading of the oil, and there is a whole lot of technical data that this committee and another committee which I am on has received saying we have the technology to considerably diminish the possibility of a serious spill or a break-up, and I just want to make sure I understand it is the overall intent of the administration that this is not to be left as an open-ended thing, that it is their general position that technology, the most advanced technology there is, that that in fact be incorporated as a matter of law in order to gain a license. I would just appreciate having at a later date some comment on that.

Mr. LOVE. Mr. Schaefer suggested, and I think it is a wise suggestion, that perhaps rather than writing into the bill specifics in that regard, if you generally require that of the regulations, because the technology may change and we need flexibility so that the regulations can be kept current with the technology that is available.

Senator BIRN. I am not suggesting that it be written into this piece of legislation or that it be a stated requirement in the regulations of whatever agency. I just want to understand that as one of the intentions.

The State Department in response to a similar question said:

The Department of State believes, however, that more detailed consideration should be given to questions such as shipping and navigational safety requirements, storage, in-transit shipment, environmental requirements, customs laws, civil and criminal jurisdictions relating to the operations of deepwater facilities. Such considerations could provide further input on regulatory and licensing policy.

Everybody seems to be saying we have got to look further than we are now. I just want to make sure it is not the administration's intention that we move forward in licensing any of these in our pell-mell desire to serve the national interest, as Senator Stevens says, to get this oil flowing.

There is one other thing I would appreciate a comment on in more detail. I do not expect you to be able to answer this now. But my understanding of maritime insurance law at this point in time, without going into detail—is very, very skimpy. There is very little, if any—I am unaware of any—third party liability. We have laws and regulations now which call for the cleanup process, but it does not speak to, as I understand it, compensation for the third party, for example, the homeowner of Dewey Beach, who could be wiped out; or the shrimp fisherman, if he can prove as a consequence of the spill he has been specifically damaged.

I would like to have some detail on the administration's position,

if they have considered it, which I guess they have, whether the insurance requirements should go along, and whether or not they agree with me and others that there should be a broadening of that liability.

Moving to the question of onshore development, we talked a moment earlier about the relationship to deepwater ports. We expected if any environmental degradation is likely to occur, it is more likely to occur onshore than at sea.

You mention, Governor, "However, I believe again with the Coastal Zone Management Program and Land Use Program, this form of development can be controlled." I ask you the question now, we in the Congress have authorized \$18 million to be spent this year for such control, and the administration has seen fit to only spend \$5 million of that or release \$5 million of that for the development of the coastal zone management program and Land Use Development Act, as I understand it, unless there has been a recent change.

Am I incorrect in that?

Mr. LOVE. I am not familiar with it. We certainly can inquire into it.

Senator BIDEN. I would appreciate that. This has been used, and I think rightfully so, as indicia of the fact that we have the ability to control potential degradation on shore but yet my understanding is we have not used that tool, and the tool does not do us much good if it is not implemented.

The other thing is: we have talked about, and you have mentioned before, Governor Love, the Clean Air Act, and the need in some instances to maybe lessen the standards, temporarily or permanently, because of meeting an emergency or because of the inaccuracies of the standard, but when we get into that question, it raises a bigger question, as I see it.

Right now, our refining capacity on the east coast and the Nation as a whole--the vast majority of our refining capacity is capacity to refine sweet crude; only 5 percent of our consumption of crude comes from the Mideast now, and that is going to be increased by everyone's standard; the vast majority will be sour crude and we do not have that capacity now, the technical requirements for refining sour as opposed to sweet crude--in order to meet the Clean Air Act standards.

I would hope that the administration would not use that, that is, the need to build additional refineries that are going to refine sour crude as an argument to eliminate or further downgrade the Clean Air Act requirements.

Could you comment on that?

Mr. LOVE. Certainly it is not the goal of the administration to provide energy at any cost. Certainly we have in mind not leaving behind the reasonable goal of environmental standards.

I would express one caveat. On a temporary basis, there simply is not enough low sulfur oil or the desulfurization capacity to meet our needs this winter. On a temporary basis, it seems that we may need variances in certain areas if we are to assure supply. This may continue for a period of time because of lack of desulfurization facilities, and as you say, most of the imported crude is going to be relatively high in sulfur.

Senator BIXEN. Although I disagree with your decision about the ability, for example, of the utilities to use a higher sulfur content coal, I believe it is a completely different story. I want to differentiate between that and new refinery capacities.

I have read an article about—we want to be sure, in the national interest, we have got to get that oil and what we do not want to do is put an excess burden on those good old oil companies to put in this expensive technology to accommodate the Clean Air Act. I want to make sure we get that on the record.

Senator BIXEN. Senator Johnston?

Senator JOHNSTON. In your statement, you point out the very real danger of environmental degradation caused by onshore development. You point out that you are hopeful that the Coastal Zone Management Act and the new land use bill will take care of the problem, and I am equally hopeful.

You are aware, of course, that the petrochemical industries are for the most part capital intensive as opposed to labor intensive, highly automated, air polluters, and they are water polluters as well. You are, of course, aware of that, and that was the danger to which you were referring, was it not?

Mr. LOVE. Yes.

Senator JOHNSTON. Assuming that the land use bill, which if it passes the Congress this year or next, provides for 5 years before the regulations come into operation, the coastal zone management has not yet been funded, and assuming therefore that these two acts do not take care of the problem and you do get these capital-intensive industries in there, don't you think that a State which assumes the burden of these petrochemical industries to the extent that they are not controlled ought to have some consideration for an additional allocation of natural gas by the FPC to make up for the pollution caused by these industries, the petrochemical industries?

Mr. LOVE. I am not prepared to answer directly at the present time. I certainly recognize the equity of that position, but I have not thought through what kind of changes in allocation or retention and what kind of system, indeed, we would use. But I do recognize the equity of the situation to which you refer.

Senator JOHNSTON. I intend to put in some kind of amendment. We have not come up with the exact formula yet either. But my tentative thinking is, first, you need to identify the amount of onshore pollution caused by superport-related industries, first identify that, and then quantify it in terms of natural gas, how much additional natural gas, and simply direct the Federal Power Commission to exempt that much from the allocation or curtailment rules in order to make up for that pollution. That approach certainly has an equitable equity to it.

Mr. LOVE. If I am not mistaken, the FPC has under consideration some consideration as to whether they are indeed going to allocate priority as far as end use to some of the petrochemical industries which might—

Senator JOHNSTON. They have an allocation curtailment order. I think the latest one was issued just a couple of months ago, and it is under continual review, their curtailment order. But it seems to me

in consideration of those curtailment proceedings, they ought to consider pollution caused by the superport.

Mr. LOVE. I understand.

Senator JOHNSTON. I understand we agree?

Mr. LOVE. I understand your concept of equity. You are getting more specific in that it should be accomplished through the FPC. I was contemplating your suggestion that perhaps somehow under whatever statute is applicable we would attempt to allocate energy to some of the energy-producing States in payment of some of the disadvantages that they incurred. I say I recognize the equity you are focusing on.

Senator JOHNSTON. Thank you.

Senator BIVEN. Senator Scott?

Senator SCOTT. I will only take a couple of minutes and won't impose further on the Governor's time.

I would like to compliment you, Governor, on your response that you do believe in a reasonable goal with regard to environmental standards, and that is reflected in your statement when you talk about oil spills and a reasonable approach on that.

We had one witness who testified that he was concerned about oil spills because the fish would in some manner absorb the oil and people would eat the fish and people would get cancer from oil spills.

On questioning and then talking with him privately—this was one of our officials—he indicated that a staff member had prepared that and he really hadn't thought it through at all and he really didn't believe this. I think we have got to guard against these excesses.

Nobody wants an oil spill, and I am sure you don't, but this rule of reason that permeates our laws must also be the thing that we consider when we are talking about the environment and comparing it to our standard of living.

I compliment you on your statement, are there any other uses that can be made of these deepwater ports? Can they be used for products other than oil? Is there any multiple use? Are we thinking only of using these deepwater ports for oil?

Mr. LOVE. I made a very brief reference to it in the statement, that we see no reason—we don't have present applications or specific interests, I don't believe—but there is no reason that these ports could not also be used for any kind of product that indeed could be moved through pipelines.

Senator JOHNSTON. Scotch whiskey?

Senator SCOTT. You don't see any other—

Mr. LOVE. I don't see any reason why they cannot be used. I mentioned if you wanted to move iron through a slurry line, anything that could be moved by pipeline—Senator Johnston mentioned Scotch whiskey, but I don't think the supply will justify the larger tankers.

Any product that can be moved through a pipeline would be appropriate, it seems to me they could use this kind of port.

Senator SCOTT. Governor, just one suggestion as a long time Federal employec, we are glad to see you where you are, don't let the bureaucrats overwhelm you.

Senator BIDEN. Governor, are there other uses that can be made of deepwater ports. One group came into Delaware and wanted to put a deepwater facility in the bay and they let out a trial balloon, floated around the State, that it could be another Disneyland, that you could build an artificial island where you could boat over with your children on a ferry.

In my State, they build refineries that look like Disneyland and school houses.

One last question I want to get into the record. We had a suggestion earlier about monopolies, we are going to go back to that. I would really appreciate your office giving some consideration to that question. In the seven points you have made, you said a number of agencies will play an important part in the continuing role, and I just wonder whether or not the FTC might not be one of those agencies that would be best equipped to determine whether or not there is an anticompetitive tendency with respect to these ports, which I think is a very serious question.

Mr. LOVE. We will certainly provide a more detailed answer to you, but let me very briefly and generally say that at least in my state of thinking and knowledge on this situation, I don't completely share the concern you have.

It seems to me the pressures toward increased bigness or monopoly or whatever are more nearly related to finding the crude and the capacity to build refineries, larger financial and other problems than the deepwater port itself.

I would also indicate that those who have expressed interest so far in deepwater port applications have been consortiums of a good many companies going together, some of them independent, some of the so-called majors. At least, to me at this time, it doesn't represent as great a threat as you seem to think.

Senator BIDEN. There are a number of major companies that are in all three. I would appreciate your comment on that. There is one last thing, not a question.

There are so many things I want to ask you. You mentioned there is a special interagency legal task force which instituted and drafted many sections incorporating the administration's proposed legislation. I wonder if we could have that full report.

Mr. LOVE. Yes. It is my understanding it is--we will get you one.

Senator BIDEN. Again, thank you very, very much, and we will submit the additional questions.

[The questions and answers follow:]

#### QUESTIONS OF THE SPECIAL JOINT SUBCOMMITTEE AND ANSWERS THERETO

*Question 1. How many barrels of crude oil will our Nation need to import on an annual basis over the next twenty years?*

*Question 2. What nations will be the likely sources of this oil?*

*Question 3. What percentage (and volume) of this oil will be carried in tankers?*

**Answers.** As our population and industrial production continues to grow, our consumption of energy is expected to increase. At the present time, our domestic production of energy fuels; coal, gas, and oil are decreasing. Subtracting estimates of future domestic supply from demand leaves a gap of 15 million barrels of oil per day by 1965. Waterborne imports are expected to account for 13 million barrels per day.

This unsatisfied energy demand will have to be met by imports of oil. There

is no other short term alternative. Moreover, to the extent that we fail to bring nuclear power plants on-stream as scheduled, we will have to augment oil imports. To the extent that we restrict the use of coal, we have to use imported oil. To the extent that we continue to rigidly control natural gas prices and discourage the development of new reserves, we must import more oil. In short, oil is the swing fuel. Our domestic petroleum production this year can only account for 70 percent of the oil we need and it will take time to increase our domestic supply sources. Table 1 depicts U.S. petroleum demand-supply balance and demand by districts and Table 2 indicates our expected source of these imports and the amounts likely to be carried in small and large tankers.

TABLE 1.—U.S. PETROLEUM DEMAND BY PAD DISTRICTS

[In thousands of barrels per day]

	1970	1975	1980	1985
District I (east coast).....	5,884	7,535	9,240	10,812
District II (midwest).....	4,110	4,090	6,087	7,037
District III (gulf coast).....	2,369	2,910	3,628	4,364
District IV (Rocky Mountain).....	387	470	610	720
District V (west coast).....	1,952	2,595	3,225	3,952
Total.....	14,722	18,400	22,790	26,835

TABLE 2.—U.S. PETROLEUM SUPPLY-DEMAND AND SOURCE OF OIL IMPORTS

[In thousands of barrels per day]

	1970	1975	1980	1985
Domestic demand.....	14,728	18,400	22,790	26,885
U.S. production.....	11,328	10,860	10,500	9,725
North Slope crude.....			1,500	2,000
Total imports.....	3,418	7,600	10,790	15,160
Source of imports:				
From Canada (pipeline).....	766	1,300	1,800	2,200
Total waterborne imports.....	2,652	6,300	8,990	12,960
From Western Hemisphere.....	2,091	3,200	3,280	4,106
From Europe.....	177	200	300	400
Total in small tanker.....	2,268	3,400	3,580	4,506
From Middle East.....	185	2,325	4,610	7,354
From Southeast Asia.....	72	175	100	100
From Africa.....	127	400	700	1,000
Possible for large tankers.....	384	2,900	5,410	8,454

*Question 4. What size fleet will be required to carry this oil? What average size will the tankers be? What percentage of oil will be carried in U.S. flag vessels?*

Answer. By 1985 our total waterborne oil imports may grow to almost 13 million barrels per day. We would expect a small growth in imports of crude oil and petroleum products from relatively close Western Hemisphere sources and also a small increase in products imports from Europe. These imports will probably continue to arrive in small tankers. The total short-haul crude imports and petroleum products imports are projected to be about 4.5 million barrels a day by 1985. Our remaining oil import requirement will be for crude oil from Eastern Hemisphere sources. These imports are growing rapidly now and are projected to be about 8.5 million barrels a day by 1985.

A fleet of about 350 tankers of the 250,000 deadweight ton class would be required to meet this requirement for crude oil imports from Eastern Hemisphere sources. If we tried to import this crude oil from these long distance sources in tankers of 80,000 deadweight tons, it would require a fleet of over

3,000 of such tankers. These would be in addition to the similar size small tankers bringing in oil from Western Hemisphere sources and the small tankers in our own coastwide trade.

The United States is now building large tankers in the 250,000 and 300,000 deadweight ton class. Existing orders for large ships will probably keep U.S. shipyards full for at least 3 or 4 years. Oil supplied through the Alaskan pipeline will require the construction of a large number of tankers. Thus, the number of large U.S.-flag tankers which will be used to import crude oil from long distance sources will probably continue to increase.

*Question 5. Given that official U.S. policy seeks to develop domestic supplies to offset the need for reliance on foreign sources of oil, how many superports do you estimate are actually necessary to handle our import needs for the next twenty years?*

*Answer.* The proposed legislation only applies to deepwater ports outside of territorial waters which is now the three mile limit. The West Coast has deep water relatively close to shore. Thus, this legislation is primarily to allow deepwater ports on our more shallow East and Gulf Coast. If we can use industry plans as a basis for estimating development, we can foresee three to six deepwater ports on the Gulf Coast and East Coast.

On the Gulf Coast we know of plans for two or three deepwater ports. Two of these are well under way with planning and engineering. These are "Seadock" off of Texas and "Loop" off of Louisiana. These projects are essentially to serve existing refineries. Another deepwater port has been proposed off of Mississippi and Alabama to serve future refineries. On the East Coast a number of deepwater ports have been proposed to serve the existing refineries in the Philadelphia-New Jersey area. Three South Atlantic Coast States are studying the deepwater port/refinery question. Thus in total there are fairly extensive projects underway for three to six deepwater ports which would be licensed under the proposed Federal legislation.

However, the environmental risks associated with operation of deepwater ports and on-shore development are reduced with a greater, versus lesser number of deepwater ports. Thus, depending on the actual throughput and the locations of future refineries, the Nation would probably be better off with more than the currently projected three-to-six deepwater ports.

*Question 6. How many new refineries will be required to refine the expected increased consumption of foreign crude? Where will they be located?*

*Answer.* Assuming a new grass roots refinery to be sized at 160,000 b/d capacity, nine new refineries will be needed by 1975, 30 by 1980, and 61 by 1985 to run the required increased volumes of imported crude in this country.

It is very unlikely that all of the increased capacity will be gained in this manner. Historically, most increased capacity has been obtained by expansion of existing refineries rather than grass roots installations. For example, the short range picture for firm projects through 1977 shows the following distribution of increased capacity.

MB/D OF INCREASED CAPACITY

	PAD I		PAD III		Rest of United States	
	Expansion	New	Expansion	New	Expansion	New
1973.....	9.0	0.0	225.5	0.0	77.8	0.0
1974.....	54.0	.0	175.5	.0	200.0	.0
1975.....	253.0	150.0	213.0	30.0	414.0	15.0
1976.....	36.0	100.0	376.0	150.0	234.0	.0
1977.....	36.0	300.0	326.0	365.0	138.0	.0
Total.....	388.0	550.0	1316.0	545.0	1063.8	15.0

There are a number of projects which we have classed as "uncertain" and are not included in the numbers above. These are primarily grass roots projects totalling 1,406 Mb/d. About two-thirds of this capacity consists of grass roots projects planned for the East Coast. Some of these may ultimately be completed, but we anticipate continued strong resistance from environmental groups in that area.

*Question 7. Will these refineries be primarily for "sweet" or "sour" crude?*

Answer. In view of the future source of incremental crude, almost all new projects will be designed to handle sour crude. Many of the recent announcements of new projects have indicated this.

*Question 8. Will the Administration's energy conservation program reduce the number of superports needed?*

Answer. The Administration regards conservation as an indispensable goal. Success in reducing energy use does not mitigate the urgent need for more energy fuels than we are now producing; and, much of the oil to fill the supply-demand gap will be imported from Africa and the Middle East in tankers too large to enter U.S. ports. The safest and most economical way to handle this imported oil is to construct facilities which will enable us to offload these large tankers in deep water. In many places, water of the required depth lies beyond the three mile territorial limit. Thus legislation is necessary to authorize the construction of deepwater ports in international waters.

Energy conservation efforts hopefully will reduce some of our projected needs for oil imports in future years and, therefore, may reduce the number of refineries and deepwater ports which will be constructed. An economic study of deepwater ports\* prepared by an interagency committee last year indicated that "in any event, the penalties from building a deepwater port under false assumptions about throughput are generally not great while the rewards could be substantial."

*Question 9. Do you favor utilizing a portion of the economic benefits to be derived from the supertanker-superport delivery system for an environmental damage contingency fund, or for assisting those states which refine or store imported crude within their borders cope with attendant risks and community service requirements?*

Answer. In general, we believe that earmarking funds for special purposes is not a desirable budgeting policy. Moreover, in the case of the deepwater ports legislation the purpose is to facilitate licensing while reducing the threat to the marine environment. Many states are actively seeking the location of deepwater ports and refineries in their states for the economic benefits and tax revenues which will be generated by such industrial facilities. States which encourage these facilities will also tend to have lower fuel costs due to lower transportation and distribution costs from having the refineries in their state while conversely, states not allowing such facilities will have to pay more for petroleum fuels due to the added cost of transportation. Thus, we believe there are significant incentives built in to encourage states which want deepwater ports.

The Administration's legislation does provide requirements for bonding. This is to ensure that persons or corporations utilizing the facilities are sufficiently financially responsible for possible damage, including possible environmental damage.

*Question 10. By what date must we have a deepwater port or ports operational to handle the expected increased influx of foreign oil?*

Answer. Our petroleum imports are now increasing at a rate of over 1 million barrels per day each year. This year we will import more than 6 million barrels per day or more than one-third of our total consumption of oil. Our projections of waterborne imports and imports by VLCC are contained in our response to question #1.

The level of imported crude oil which could be carried by VLCCs does not necessarily warrant immediate use of a deepwater port. However, within a year or two, we shall need a number of deepwater ports. To achieve this, detailed planning and application for permits should start now.

*Question 11. What can we realistically expect from our domestic refineries in terms of crude runs? At what percent of capacity is it realistic to expect them to operate?*

Answer. Based on a survey of all new expansions and grass root plants planned in the near future, the following refining capacities and crude runs may be expected.

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\* This study was presented to your joint subcommittee on July 23, 1973 by Dr. William A. Johnson of the Treasury Department.

Year	Capacity—thousand barrel per day	Crude runs thousand barrel per day
1972.....	13,247	11,696
1973.....	13,612	12,484
1974.....	13,983	12,864
1975.....	14,711	13,534
1976.....	15,671	14,417
1977.....	16,702	15,366

Capacities for any given year are an average of the anticipated capacity for January 1 of that year and January 1 of the succeeding year. Crude runs from 1974 onward are assumed at 92 percent of capacity. This is believed the highest practical rate sustainable for long periods of time.

*Question 12. We have had testimony that deepwater ports for crude are needed only for new, now non-existent refineries. How do we want to divide our imports (and our deepwater port facilities) between crude and products?*

*Answer.* Our Nation's consumption of oil is expected to continue to grow partially as a result of petroleum products being required to substitute for declines in other fuels such as natural gas and coal. At the present time, our production of crude oil in the United States is declining. Therefore, even existing refineries are having to increase their use of imported crude oil. As indicated in our answer to Questions 6 and 7, most of our increased refinery capacity through 1977 will be through expansions of existing refineries rather than new grass roots refineries. Thus, deepwater ports are needed in the near future to supply existing refineries. The two proposed deepwater ports on the Gulf Coast, Seadock and Loop, would be located primarily to supply existing refineries. The two projects are designed for crude oil. In general, we believe the primary need for deepwater ports is for crude oil imports rather than petroleum products. Most petroleum product imports will probably be from short-haul sources and will continue to be delivered in smaller size tankers.

*Question 13. How does the Administration plan to approach refinery siting problems? What is the Administration's view on the inter-relationship of refinery siting and deepwater port siting?*

*Answer.* The President's Energy Message of April 18, 1973, proposed a balanced and bold approach to solving the Nation's energy problem. He recognized the seriousness of the near term dislocations and has taken effective short-term measures, particularly in the import program, to mitigate these dislocations. At the same time, he recognizes that the current problems have been developing for a decade or longer, and are not subject to instant solution.

The revised oil import program, announced in the President's Energy Message of April 18, 1973, established higher license fees for imports of petroleum products than for crude oil. This is a system which is designed to spur the construction of refineries in the United States. Since the Energy Message, many oil companies have announced that they now plan to build new refinery capacity in this country. Attached is a list of proposed refinery construction. Other companies have indicated that they are seriously considering building refineries here but have not yet made their plans public.

These announcements indicate that domestic refineries and pipelines to serve marketing areas will be provided to meet growing U.S. market needs by the interaction of market forces and local government approvals. If we do not develop new deepwater ports, these facilities will be based on imports in small crude oil tankers—an environmentally unacceptable alternative.

It is recognized that some previously planned refineries were not constructed because of difficulties with siting. The Administration has considered a legislative approach to refinery siting, similar in concept to other power plant siting or deepwater port siting. However, it was decided that at this time the best approach was to provide incentive for domestic refinery construction under the Mandatory Oil Import Program. With proper utilization of the Coal Zone Management and/or Land Use Program and an increasing public awareness of the Nation's energy problems, as well as the cleanliness of new refineries, it is not believed that siting legislation for refineries is required at this time.

*Question 14. Given the problems of refinery siting, has any consideration been given to the construction of deepwater ports for products?*

Answer. Most refinery capacity increases announced through 1977 will be expansions of existing refineries. With domestic crude oil production declining, deepwater ports are needed to serve both existing refineries and new refineries.

Since the President's Energy Message of April 18, 1973, there have been announcements of substantial additions to refinery capacity. Hopefully in the future, the U.S. will have sufficient refineries to essentially eliminate the need for imported petroleum products.

[The following information was subsequently received for the record:]

Hon. JOE BIDEN,  
U.S. Senate,  
Washington, D.C.

DEAR SENATOR BIDEN: Attached are responses to your questions as requested in your letter of October 12, 1973 (Tab A) and to questions you raised during my testimony on October 3, 1973. I hope these answers are satisfactory. If you have further questions, please contact me, Mr. John Schaefer of my staff, or the respective agencies.

I reiterate my request for speedy passage of legislation for the licensing of deepwater ports, preferably S. 1751. In spite of recent curtailments of Middle Eastern crude oil and petroleum products, I am convinced that we will import significantly greater quantities in the future and will need comprehensive legislation to facilitate the development of needed deepwater ports.

Best wishes in your efforts in reviewing the deepwater port issue.

Sincerely,

JOHN A. LOVE,  
Assistant to the President.

Attachments.

#### ADDITIONAL QUESTIONS FOR GOVERNOR LOVE SUBMITTED BY SENATOR BIDEN

*Question 1. In your statement you refer to cost savings which can be realized through the use of supertankers and deepwater ports for the transportation of imported petroleum supplies. Noted economists maintain that it has been the trend throughout the history of the world petroleum market, for cost savings generated by technological improvement or some other factor to be captured by the petroleum producing countries through the levy of a tax at the supply end. In your opinion, what policies adopted by the federal government or strategies pursued by the industry groups proposing to build and utilize deepwater ports, would capture the cost savings generated by supertanker transportation to benefit the American consumer?*

Answer 1. There is always debate about whether cost savings from technological improvements or other product changes are passed on to the consumer, realized as increased profits, or absorbed by other increasing costs. To my knowledge, there is no universally accepted answer to this question for any product, including crude oil and petroleum products. For example, contrary to popular conception, during the 12-year period of 1960-1971, the price of domestic crude oil in constant dollars decreased by 14%. At the same time, drilling costs more than doubled and oil company profits remained relatively stable. On the other hand, it is definitely true that Middle Eastern countries have increased their taxes and royalties on oil produced; most economists attribute this to the normal functioning of supply and demand and the strength of the OPEC cartel.

I believe that the United States consumers will benefit from any cost savings realized from the development of deepwater ports. However, this does not mean that I project decreasing costs for energy products, as we expect the cost of raw materials to continue to increase and expect similar increases in capital costs and other operating costs. I do not believe any specific action can be taken by the Government to ensure cost savings to the consumer from deepwater ports, per se, nor do I think such action is appropriate.

*Question 2. You have been quoted as expressing concern over excessive U.S. dependence on the Mid-East as a source of petroleum supply. However, your statement emphasizes that the need for deepwater ports in the United States is due to an expected increase in the volume of U.S. petroleum imports which will originate in the Persian Gulf. Would not the development of a deepwater port in this country act as an incentive to increase dependence on Mid-East*

oil and as a disincentive to the achievement of such other nation goals as energy conservation and increased potential for domestic energy self sufficiency?

Answer 2. Deepwater ports provide a capability to off load crude oil or petroleum products from Very Large Crude Carriers (VLCCs). Our dependence on oil from any foreign source results from a wide range of political and economic considerations essentially independent of the issue of deepwater ports. The deepwater ports themselves will not result in an increase in our supply of oil nor will they by themselves affect our dependence on any particular source. Further, considering current and projected prices for imported crude oil and petroleum products, there will probably be a far greater incentive for increased domestic production of crude oil, regardless of the existence of any deepwater port facility.

Question 3. The President has announced his intention to accelerate the Outer Continental Shelf leasing Program in order to increase this nation's domestic petroleum supply. Should such an accelerated program succeed in meeting this objective, how would this effect demand for petroleum imports and the associated "Need" for deepwater ports?

Answer 3. As part of our overall energy initiatives, development of oil and gas reserves on the Outer Continental Shelf (OCS) is high on the President's priority list. In his Energy Message of April 18, 1973 the President announced his plans to triple the rate of leasing on the OCS by 1979 and to immediately undertake studies of the impact on the marine development, particularly on the Atlantic Coast. The rate of leasing has already increased significantly and the major environmental studies will be completed this Spring. Even if the President's goal of increasing production from the OCS is achieved by 1979, the Nation will not be self-sufficient from this source alone. In the time frame between now and 1985, we will not only need more OCS production, but significantly increased production of coal, competitive pricing of natural gas, probably significant production from our oil shale reserves, and deepwater ports so we can most economically and with least environmental risks import needed foreign crude oil.

Question 4. The development of supertanker terminal facilities has been proposed for the naturally deep waters along the coasts of Maine, Delaware, Puerto Rico and Washington State. In view of the environmental risks associated with the transportation of large volumes of petroleum and the fact that such risks increase as the distance from shore decreases, how would you view extending a comprehensive framework of regulation over deepwater ports developed within the territorial waters of the United States as well as over those located beyond this boundary?

Answer 4. We would not support an effort to extend a comprehensive framework of regulation over deepwater ports within the territorial waters of the U.S. Our reasons for this position stem from the recognition of existence of a body of Federal law which already applies to deepwater port facilities within the three mile limit. The State of California has already permitted 18 buoy-type tanker off loading systems subject to the regulations and permitting authority of the Coast Guard, Corps of Engineers, and the Environmental Protection Agency. According to California officials, the environmental record of these facilities is good. I am not aware of any need for a greater Federal role, either by law or under regulation to provide for greater environmental security, to ensure adequate competition, or to achieve any other purpose. Rather, the regulations implementing existing laws must continue to be revised or updated to reflect new technology. Further, the siting, licensing and regulation of deepwater port facilities within the three mile limit is now almost totally a State responsibility; I believe it should continue to be so.

Question 5. In your statement you express your preference for "a larger number of ports and thus dispersion of the ship traffic, operating spills and associated refinery development." If port dispersion is most desirable from both an economic and environmental point of view, would you recommend including provisions and criteria to achieve this objective in legislation authorizing the development of deepwater ports?

Answer 5. There may be a definitional problem with the term "larger number of ports". In the full context of my statement, I referred to a preference for a larger number as opposed to the reference to "some . . . believe . . . the less ports the better." The thrust of these remarks was to recognize that in prophetizing the future we should recognize that not all deepwater ports will

be in the \$500 million category, but rather they could be relatively inexpensive single moone-buoy systems (less than \$25 million). Inclusion of legislative provisions or criteria to achieve the objective of dispersion would place the Federal Government in the position of pre-planning or determining the number and location of these systems. I do not support a Federal pre-emptive role because I believe it would unnecessarily usurp State efforts to manage coastal development and land use. These are the programs which should ensure dispersion. Further, I believe that the economies of the smaller facilities will favor installation of a buoy facility wherever a new coastal refinery is built.

*Question 6. In your statement you testified to the importance of land use considerations in the development of deepwater ports. In this regard, the Congress passed last year, the Coastal Zone Management Act to assist the States in developing comprehensive coastal zone management plans. Yet, this year the Administration initially failed to fund the Coastal Zone Management Program at the levels authorized and recommended by Congress. What are the reasons behind the Administration's decision not to fund the Coastal Zone Management Program? Has the program now been funded, and if so, at what level compared to the actual first year figure authorized by Congress. Under the level of funding requested by the Administration, will State coastal zone management efforts proceed at a rate sufficient to meet the pressures of development which can result from the construction of deepwater ports and/or an accelerated program of exploitation on the Outer Continental Shelf?*

Answer 6. The Coastal Zone Management Act has been viewed as complementary to the broader land use legislation proposed by the Administration. It was thought logical to have both programs proceed at approximately the same time. When enactment of the Administration bill appeared highly likely, the President moved to fund the Coastal Zone Act in August 1973, by submitting an amendment to the FY 1974 Budget adding \$5 million to the Department of Commerce program. First-year funding authorized by the Act was \$12 million.

Based upon the Administration's assessment of the readiness of coastal states to undertake planning of the nature provided for by the Act, the \$5 million initial funding is considered entirely adequate. The timing of deepwater port and Outer Continental Shelf development, even under the most expeditious circumstances, would not require any increase in the initial funding already provided.

My review of the record of the questions and answers subsequent to my testimony on October 3, 1973 before the Committee of which you are Chairman, indicates that you requested answers to the following questions:

*Question 1. What are your views as to the necessity of regulations intended to reduce the risk of environmental damage by requiring Very Large Crude Carriers (VLCCs) to be built with double bottoms or other safeguards to reduce the risk of catastrophe or of operating spills? What is the current status of Administration efforts to promulgate this type of regulation?*

Answer. I generally support whatever international conventions and regulations are necessary to provide reasonable measures, both in construction and operation, of ships to reduce the risks of oil spills. However, while I generally favor use of such techniques as double bottoms or segregated ballast, I cannot comment as to the necessity of any particular regulation at this time. It is my understanding that the Coast Guard is currently involved in a number of detailed studies as to the adequacy of such measures and the associated costs and benefits. Further, international standards for the construction and operation of oil tankers were recently agreed upon at the International Conference on Marine Pollution. In considering ratification of the International Convention for the Prevention of Pollution from Ships, 1973, an analysis of the Convention provisions must be made in the light of national interests and domestic laws. No immediate changes in construction and operating standards for tankers is anticipated until such time as a determination can be made as to the adequacy of the Convention to meet the requirements of the Ports and Waterways Safety Act of 1972.

*Question 2. Do you view the current situation with Maritime Insurance as adequate, particularly in regard to third party liability?*

Answer. I believe that the issue of Maritime Insurance is currently a subject of international negotiation, with representatives from the State Department attempting to significantly increase the responsibility of operators for damages resulting from oil spills. Two Conventions have been negotiated within

the Intergovernmental Maritime Consultative Organization to deal with liability and compensation for oil pollution damage resulting from vessel oil spills. The 1969 Civil Liabilities Convention, which imposes liability within certain limits upon the shipowner of the vessel involved, and the 1971 Compensation Fund Convention, which provides additional compensation through an international fund, have been submitted to the Senate and are presently awaiting advice and consent. The implementing legislation for these Conventions has also been submitted to the Congress and is awaiting action in both Houses.

*Question 3. Do you believe that deepwater ports will result in serious anti-competitive effects within the oil industry? Isn't this possibility signaled by the number of major oil companies which are participating in two or three of the most advanced proposals for deepwater ports?*

Answer. As I indicated to my answer to Question 1 in Tab A, I believe that there is a misunderstanding as to the costs and benefits associated with deepwater ports and that there could well be a reasonable number of these ports within the foreseeable future instead of only two or three. I believe that this would have the desirable result of dispersing both the offshore and onshore environmental impact as well as providing for a balancing of the petroleum supplies between regions. This should not be construed as meaning that I am opposed to some of the plans for major deepwater ports in the Gulf of Mexico. On the contrary, I believe that these ports will be essential, but for facilities of this magnitude, as contrasted to a simple facility serving possibly only one refinery, I believe that we should insure relative ease of entry by any participant. It is my understanding that those directing the development of the major proposals for deepwater ports in the Gulf of Mexico anticipate that these ports will be common carriers. I am personally convinced that the current jurisdiction of the Justice Department and the Federal Trade Commission, as well as the language which we provided in the Administration's bill, S. 1751, is more than adequate to insure that deepwater ports do not serve an anti-competitive effect. Finally, I do not view the participation of major oil companies in a number of these proposals as being indicative of an anti-competitive intention; rather, I view this participation as recognition on the part of these companies of the essentiality of these facilities and the possibility that one or a number of them may never come to fruition.

Senator BIDEN. Mr. Halverson, maybe you can resume the stand.

Mr. Clearwaters, is it possible for you to be able to—I suspect we have got another half hour of questions or thereabouts, I don't want to keep everyone through the lunch hour—is it possible we could reconvene at 3 p.m. and you come back at 3?

Mr. CLEARWATERS. That would be fine.

Senator BIDEN. I suspect we will only have about 15 to 30 minutes of questions of you now if we could just keep on going.

#### FURTHER STATEMENT OF HON. JAMES T. HALVERSON

Mr. HALVERSON. I might add, Mr. Chairman, that I, too, am very happy to respond to written questions if you have any which you would like to submit to us.

Senator BIDEN. My problem is I have a great deal many more questions than answers. I don't have any answers to these problems. I feel very reluctant to let you experts go by without having the opportunity to learn from you, because this legislation is going to be moving to markup very rapidly.

I think it will be a significant piece of legislation in the Congress this term. I do apologize for keeping you so long.

Back to this question of monopolistic tendencies, if there are such, or the potential for anticompetitive dealings in the construction of superport facilities, it may be beyond your purview, and I would appreciate your responding—I will understand if you decided not to

or you think you shouldn't—but I would appreciate your personal opinion, it seems to me it is difficult to discuss this aspect, deepwater port construction, without discussing, as Governor Love so appropriately pointed out in his last remark—the threat of monopolizing refining capacity is probably even more awesome than any potential anticompetitive thrust of a deepwater port facility.

Now, with that background in mind, let me ask you specially, do you see generally speaking a tendency—less of a tendency toward anticompetitive practices if we have numerous smaller deepwater port facilities than if we have just several large ones, and if so, why?

Mr. HALVERSON: Again, let it be understood, that I am speaking for myself and not the Commission.

I would tend to favor a greater number of deepwater port facilities, because I think that would diversify the participants and diversify the potential locations for refining capacity. I realize there might be environmental concerns with respect to that, but that is beyond my purview.

From a competitive standpoint, however, I would like to see more participants, maybe a greater number of ports and thus a greater number of potential locations for refinery capacity, because I think that tends to open up the industry. It tends to allow for a more free and open participation.

Senator BIDEN. You do think there will be less of a tendency the more deepwater facilities we have?

Mr. HALVERSON. Yes, because I think it would diversify the ownership.

Senator BIDEN. Is that because it would also diversify the location of the refineries?

Mr. HALVERSON. Yes. I also think the tendency would be if you had a greater number of ports the tendency would be to have a greater number of participants, and to the extent these are petroleum company participants, I would like to see, of course, as many possible participants as we can get. Again, even if we were to have a greater number of ports and participants, I don't want to give up on my former point, which is that no matter how many participants you have, these have to be facilities with open nondiscriminatory access on a reasonable rate basis. I am very concerned about the people who have a supertanker and who cannot unload at all unless they have access to the facility.

Senator BIDEN. I believe Governor Love has said on past occasions that the cost to build a superport facility would be near \$25 million. If that low figure, which is much lower than other estimates I have heard, if that low figure is in fact correct, does that open up or diminish competition?

Mr. HALVERSON. I think even under assumptions of somewhat higher figures than that, this ought to be a very attractive potential investment, not only for petroleum companies, but perhaps for other types of companies, maybe shipping companies, or whatever.

What I am saying is the potential for this being a profitmaking venture is great, given the economies that are projected by the petroleum companies with respect to the earning capacity of these

facilities. In fact, they claim that the economies over present shipping modes for one port alone in 1 year may amount to more than half the cost of the construction of the facility.

At least from the testimony we have reviewed, one could conclude there could be such substantial economies that this ought to be an attractive venture for investment capital.

Senator BIDEN. Everyone who has spoken to us emphasizes that this should not be a federally-run or closely regulated operation. I'm not sure, maybe it shouldn't be. Other than the philosophical reasons is there any real good reason why the Federal Government shouldn't build these facilities themselves?

We talk, for example, about security, the need for security, we talk about the great national interest that is being served here. We talk about the fact that deepwater ports are a matter of great importance to the economy of the Nation. I wonder why if they are so important, the Federal Government shouldn't construct them.

Mr. HALVERSON. You are striking a sensitive chord with me, because my entire background is in antitrust law, and I look on the antitrust laws as a method of assuring that Government doesn't have to step in in a regulatory way. In other words, antitrust laws are a method of assuring that businesses compete fairly and that the marketplace is open.

So, my preference would be, if asked generally, to see private industry develop something like this rather than the Government. In these situations, I would say I would have concerns that you have the proper sort of safeguards in order to prevent any one of these facilities from being used in an anticompetitive way. I do think it is possible to build those safeguards into the process so that there will be every incentive for them not to be used in an anticompetitive way, and given that position, I would like to see them developed by private industry.

Senator BIDEN. You do think, though, that there is, assuming you have access to make the determination, that there is sufficient legislation today to insure that deepwater ports are not used in a monopolistic way.

Mr. HALVERSON. I believe that the antitrust laws could assure that if you make some of the specific changes I have recommended in order to clarify some of the provisions of the bill.

Senator BIDEN. Again to clarify that, assuming those specific recommendations are not incorporated in the legislation, is it correct to say that you think your ability to make such an assurance about guaranteeing that there would not be a monopolistic or a potential for a monopolistic operation is greatly diminished?

Mr. HALVERSON. I think it would be somewhat diminished in this sense: If you don't build in some of the suggestions we have made, you will have the Secretary of the Interior who, with all respect, is not an antitrust expert, making decisions with respect to competitive consequences.

You will also have a provision in the bill that I think does not require him to make such a determination. It just authorizes him or allows him to do so. You don't have any assurance that there will be

conditions specifically incorporated in the licenses which are the result of specific focus on the anticompetitive potential of deepwater ports.

You want to have that section clarified and you want to insure that the three entities, the Antitrust Division of the Department of Justice, the FTC or private parties, can take action against any anti-competitive aspects under the existing antitrust laws.

Senator BIDEN. You have expressed in one particular area a concern I have about this legislation. This legislation makes the Secretary of the Interior a very powerful man. He already is very powerful. We are continuing to do that in our land use legislation and a number of other things.

I facetiously said a couple of months ago that people are not going to run for President any more, they are going to run for Secretary of Interior if we keep moving in this direction, because his power is very broad.

We seem to be moving away from the philosophy of having those departments with particular expertise being the final arbitrator of whether or not the particular projects meet the requirements of the laws they administer. We are moving away from that in the name of speeding up the process, because whether we talked about the environment, technological requirements, or antitrust considerations, it has been alleged by many, and I think it is probably true in part, it has had the tendency, if not the direct effect, of slowing down the whole process.

I think we are going to have some trouble getting into the bill, which you will support, the specifics of your Department's recommendation, unless you have some link with the administration that we don't.

Mr. HALVERSON. In that respect, Senator, I might say I have talked with some of my staff while Governor Love was testifying and if any of the committee's staff would like to consult with us on specific language, suggestions or something like that, we would be happy to discuss it.

Senator BIDEN. We clearly would like that option to sit down with you, and whether or not it is accepted, ask you to help us draft specific language that would accomplish the safeguards you are seeking.

The staff will be in contact with you on that.

One thing I found curious about your statement. You make the assumption that everyone else makes, and maybe it is because it is so clear that no other assumption can be made.

You start out in your statement pointing out that you as an agency have no expertise in any other area than the monopoly side of this question, and then in your second statement, you say, "The Commission strongly supports the idea of increasing imports of needed oil supplies and believes that construction of deepwater ports will aid greatly in accomplishing this objective."

It seems a little inconsistent to me. I guess you just accept the assumptions that have been stated in testimony before this subcommittee.

Mr. HALVERSON. I guess—why don't I speak for myself again? We do have some considerable expertise in the petroleum industry as a

result of the extensive investigation we did do in that industry, and we do believe in the claims of an existing petroleum shortage.

As concerns the relative merits of one way of solving the crude oil shortage over another, I think I would have to disclaim expertise. But to the extent that we are persuaded or that I am persuaded that we are going to have to rely on imports to a significant degree in the future, and I must say it appears that way, if we can reduce the cost of those imports by increasing the efficiency of making the imports, then, Mr. Chairman, it seems to me we ought to do that.

In other words, I think that the basis for the Commission's support is that superports and supertankers seem to be a method for reducing the cost to the American consumer of imported oil and current indications are that we will have to rely on imported oil more and more.

Senator BIDEN. I didn't say it to embarrass or contradict you. I mentioned it because of everyone who has testified here, and the findings of the legislation which I take issue with. For instance, the finding in title I of the bill says:

Offshore port facilities in the United States are becoming increasingly congested as the U.S. trade in fuel and other commodities increases. Such facilities are not able to accommodate some of the large vessels which are being used increasingly in ocean shipping. The Nation's interest in economic uses of resources, environmental protection, transportation safety, competitive advantage in world trade, and security in international relations, is best served by the use of larger vessels and development and operation of United States deepwater port facilities that can accommodate them.

If you agree with that finding, there is no way—no way—in my opinion, any State could legitimately say we don't want a facility off our shore. You would become the most unamerican group of people in the world.

We have just said there, this is it. If we don't have this, what else could you have?

Environmental protection, transportation safety, competitive advantage in world trade, security in international relations?

If you accept that premise, then, really, much of what we discuss here is really meaningless, because how can you accept that and say even though it will cause a problem to your particular State, we cannot go along with it?

I don't raise it necessarily for you to respond to, but one of the things I have tried to do, and it is probably beyond the purview of this committee, and I have been able to do it only when everyone else leaves and I am the only one here chairing the hearings, I think we in the Congress, for example, should be holding hearings on that one thing, whether or not that is true, and we have all made those assumptions.

Tied in directly with that kind of an assumption, I would like to explore something which I think your agency may have some knowledge of, and that is the question of, are oil companies, oil companies or energy companies?

I am not saying they shouldn't be energy companies. By energy companies, is it just oil that they have the primary control of, or don't they really in fact have a great deal to say about what alternate sources, with the exception of solar energy, what alternate sources of energy are developed and at what rate?

If I am not mistaken—maybe you can help me—it is my understanding that the oil companies own a great percentage, I may be wrong on this, a significant percentage of the coal reserves in the United States.

Do you know whether that is correct or not?

Mr. HALVERSON. I do know that we have a study going right now. Moreover, Congress just gave us an additional \$1 million appropriation to study all energy industries. A copy of that report will be furnished when it becomes available.

Senator BIDEN. I would like very much if you could supply that for the record, and if it doesn't come out until after this legislation, I personally, as one Senator, would like very much to see that. I think it would be of great interest to this body and to the Nation.

I am not suggesting again by asking you for that so emphatically, that there is any great collusion. I think it is important, as everyone here from Senator Scott to Senator Long has pointed out, that the American people really know what we are up against, I mean, what are the facts. And it seems that we bandy around, myself included, I am probably one of the biggest offenders in this regard. You don't have the hard data, consequently you use the soft data you have, in most cases intended or not, to support whatever initial bias or prejudice you may have.

It was pointed out to me, for example, that oil companies own 11 of the top 15 coal companies in the United States. That kind of information, I think would be important.

One other thing I would like for you to speak to, if you could. You are an attorney, I assume?

Mr. HALVERSON. Yes, I am.

Senator BIDEN. With your area of expertise, I think you could probably help me out and make sure I remember from my law school background correctly the theory behind granting monopolies to, for example, utility companies.

What is the basic rationale for doing that?

I am going to tie it into something else. What is the basic rationale for the legislation which, for example, allows the telephone company to be granted, in effect, a monopoly—the electric company or the water company?

Mr. HALVERSON. Let me start by saying I am often not at all convinced by the rationale underlying the grant, nor am I convinced by a number of the rationales which underlie exemptions from the anti-trust laws.

I suppose in the case of utilities, the rationale for regulation and exemption from antitrust would be the requirement that there be a uniform rate setting structure nationwide, that there be a guarantee of a certain return on investment with respect to a very important industry which is so important to the national interest that in some way it must be treated specially and different from other companies which must compete in the competitive system and have no guarantee of return, and that if freed from regulation the free market would be nonfunctional because of natural monopoly forces—that sort of thing.

It is very important in the national interest, and there is a potential in the case of a utility, for instance, for problems if there were not some nationwide method of setting rates.

Senator BIDEN. That is my understanding.

I don't suggest that you give that as a complete rationale nor would I. But it is my understanding that that is at least part of the basic premise upon which monopolies or exemptions to the antitrust laws have been granted. In addition to the added requirement that within a highly technical industry like the electric industry there is a need for uniform procedures, to make the same type of technology available throughout the industry, and to reduce the costliness of this type equipment. As I was going through that coming down in the car this morning trying to go back to my course in law school many years ago—5—when we studied antitrust legislation, it dawned on me that the same rationale that is being espoused before this committee by the witnesses that we have heard, is not very much different from the rationale that is espoused in order to grant exceptions to the antitrust laws to begin with, or for granting monopolies.

For example, I guess it was Samuel Clements, who once said, "All generalizations are false, including this one."

This is a consequence of a 2-hour drive down here from Wilmington this morning, and the concern I have about the attack on many of what I consider to be very important major pieces of legislation, like the antitrust legislation.

Strangely enough, we hear it is in the national interest, I mean paramount that we move in the direction of accommodating the energy requirements of this country, and coincidentally a certain number of companies are the only ones that can technically accommodate that, and that is in the national interest.

There is a need for uniformity, of availability of that product—energy—across the Nation, which is recognized. It is a highly technical and integrated industry, energy development, whether it be oil or gas or whatever. When you go through that litany, I am wondering if we may not soon be told we have to exempt the energy industry from certain of the antitrust requirements in the national interest, and—maybe I am just a young alarmist—but I see that same kind of tendency in the environment when we talk about the Clean Air Act, or the Clean Water Act. And again, I don't think that there are corporate executives sitting up in board rooms saying, how are we going to rape the country. I am not suggesting that at all.

But, it just seems the natural tendency of the movement toward accommodating the needs of this country is such that we are willing to begin to forget about things that I think are considerably more important than accommodating my automobile or accommodating the air-conditioner which I have in my house, or whatever.

I guess maybe this is just sort of a catharsis on my part. I am not sure.

Do you see any problem, or do you see any tendency—and I won't blame you one bit if you say, "Biden, you are crazy, I don't want to comment on it, do you want me to lose my job?" You may totally disagree with me.

I just see that kind of trend occurring. It is sort of a natural evolution.

Mr. HALVERSON. I can't speak to the environmental issues.

Senator BIDEN. I am not asking you to.

Mr. HALVERSON. I don't have any expertise in that area at all. As to antitrust, I think one has to be careful when allegations of crises are being thrown around, so that we don't panic and abandon antitrust enforcement which has been a very good system for policing the American economy for many, many years.

That would be of great concern to me, that we not abandon a heavy antitrust input with respect to these deepwater port facilities. So that we make sure that they cannot be constructed, owned, and operated in any noncompetitive manner.

In that sense, I agree with what you have said.

Senator BIDEN. Again for the record, I would like to point out, I don't think that deepwater ports in and of themselves, bring about this concern on my part. It is just one of many, many factors that are involved here in terms of the attitude of the American people and the elected officials toward accommodating the needs of the American people.

What I am afraid of is, we are going to move in the direction of diminishing the control by the vehicle of antitrust legislation in the national interest without having benefit of establishing suitable controls.

I appreciate your indulgence in this flight in fancy with me.

The hearing is adjourned until 3 o'clock today, at which time we will hear from Mr. Clearwaters.

#### AFTERNOON SESSION

Senator BIDEN. The committee will come to order.

Again, I thank you, very much, Mr. Clearwaters, for coming back and accommodating the committee like this. I guess more specifically accommodating me.

Proceed in any way you like.

#### STATEMENT OF KEITH I. CLEARWATERS, DEPUTY ASSISTANT ATTORNEY GENERAL, ANTITRUST DIVISION

Mr. CLEARWATERS. I have a prepared statement which I would like to read and then proceed to answer questions.

I am happy to appear before you today to discuss the competitive aspects of S. 1751, the Deepwater Port Facilities Act of 1973.

Following testimony by representatives of the LOOP and Seadock projects, this committee has requested the views of the Department on possible antitrust implication raised by consortium proposals such as these. I will discuss these issues in the context of certain competitive safeguards which we believe are contained in S. 1751.

S. 1751 would authorize the Secretary of the Interior to license

the construction and operation of deepwater port facilities beyond the 3-mile limit off our coastal shores.

The bill provides specific criteria for the Secretary's grant of these licenses and it sets out detailed procedures governing their issuance. The Secretary is authorized to impose any conditions he deems necessary in a license to carry out the purposes of the act.

In addition, provision is made for revocation or suspension of licenses, as well as civil and criminal penalties for violations of the act.

The bill would also establish for ports constructed beyond our present territorial seas a comprehensive legal system providing the full gamut of civil and criminal laws for activities on these structures.

Generally, the bill extends the laws of the United States to these ports, specifically naming a number of laws which are deemed to be particularly applicable to such facilities. It also extends to the superports as Federal law the civil and criminal laws of the adjacent State, where such laws are applicable and not inconsistent with the act or with other existing or future Federal laws and regulations.

The bill is drafted in broad and general terms to authorize offshore ports for importation of any and all commodities. It is generally understood, however, that the primary thrust of this legislation, and perhaps its only practical need, is to provide better facilities to import crude oil and petroleum products.

To say the least, it seems clear that for the short term we have an energy problem, involving forecasted shortages to the consumer of almost all present forms of energy.

In order to solve our energy problem, this country over the next several years will have to make a maximum effort to bring into play all available forms of energy for domestic use. Among other things this will include the importation of crude oil and petroleum products to the maximum extent feasible.

Imports on a greatly expanded scale but using the present size tanker fleet poses both environmental and economic problems. The greatly increased number of ship unloadings which will be required will multiply port congestion and chance of collision, while significantly increasing the risk of pollution through leakage and oil spills.

At the same time, these imports must be brought in as economically as possible. Supertankers possess the economies of scale to provide for significant reduction in transport costs compared with the present tanker fleet. But these huge ships cannot be accommodated in our harbors.

It seems clear that environmental and economic considerations alike dictate the use of offshore port facilities licensed by the Federal Government.

In his April 18, 1973 message on energy, the President strongly urged legislation to deal with these problems. He reiterated this legislative proposal in his June statement on energy and natural resources.

S. 1751 was introduced to meet this objective and the Department of Justice has joined with other agencies within the administration in generally supporting the bill.

While S. 1751 involves a wide variety of questions, the bill contains three provisions of particular interest to us.

Section 103(f) states that the grant of a license to construct and operate deepwater port facilities shall not operate as a defense to suit for violation of the antitrust laws.

Section 103(c) provides that licenses shall not be limited or denied on grounds of alleged economic effects on the commodity and transportation markets served by these or other port facilities.

And, finally, section 107 authorizes the Secretary of the Interior to condition a license, among other things, to assure that operation of the individual facilities will not substantially lessen competition or trend to create a monopoly, including a requirement of nondiscriminatory access at reasonable rates.

Viewing the legislation in the abstract, therefore, we believe these provisions provide adequate antitrust safeguards.

Nevertheless, the concrete proposals which have been advanced for the construction and operation of the offshore port facilities would seem to suggest the need for careful scrutiny by the Congress and, if S. 1751 is enacted, by the Secretary of Interior in the licensing process.

I think it might be helpful, before turning to the specific proposals advanced in the LOOP and Seadock projects to discuss some of the general antitrust issues involving joint ventures among competitors.

The courts have held that where competitors have jointly created a valuable property right or organization which gives them a competitive advantage over other nonmember competitors, and denial of that membership amounts to a significant limitation on nonmember firms and their ability to compete, such denial can amount to an unreasonable restraint of trade. Those competitors which jointly possess such an "essential resource" must grant reasonable and non-discriminatory access to other competing firms.

The rule grew up in connection with local transportation facilities—such as a railway terminal; it then was widely applied to local produce markets; and more recently, it has been extended to national institutions such as the Associated Press and the New York Stock Exchange. What is required is that there be some unique resource under the control of the defendants and some competitive advantage flowing from it.

It would seem fairly certain that an offshore facility as contemplated by S. 1751 will represent an unique and essential competitive resource. Oil companies which might be denied reasonable access to those facilities would appear to be deprived of the cost advantages inherent in the use of supertankers. This, in turn, could diminish their ability to compete on price with those firms having access to the facility.

Turning to the specific LOOP and Seadock proposals, testimony from their representatives indicates that in structure and operation these offshore facilities will be organized by large-scale joint-venture methods among petroleum companies.

Seadock and LOOP propose crude oil import facilities off the coasts of Texas and Louisiana, respectively, which are similar to

each other in concept and design. They involve a series of floating hoses which will connect tanker unloading lines to a pipeline attached to a mooring platform located some 20 to 30 miles from shore. The pipeline will carry the oil to shore, and to bulk storage facilities.

In the case of LOOP, an onshore pipeline, which would be owned separately by LOOP shareholders, is projected to connect the storage terminal with the Mississippi terminal of Capline, the large crude oil pipeline heading north to the midcontinent.

Thus, it is envisioned that Seadock will serve the Texas Gulf Coast refineries with crude while LOOP will supply refineries in Louisiana and, indirectly through Capline, the whole refinery complex in the Midwest.

Senator BIDEN. If I could interrupt you for a moment, there is a vote on the Senate floor and I am going to go over and vote and come right back. I have just been so informed. I will probably be about 10 minutes.

The committee is temporarily recessed.

(Recess.)

Senator BIDEN. The committee will resume.

I am informed there are going to be several more votes. I hope they are not for a while.

Mr. CLEARWATERS. To continue my testimony, the proposed organization of both groups shows a business form which has become increasingly familiar in oil industry operations. Seadock presently comprises a joint venture of 11 petroleum companies and one large petrochemical firm. All but one of the petroleum companies are so-called majors, among the largest, most fully integrated firms in the industry. LOOP is also a joint venture among 14 firms, consisting largely of petroleum companies, mostly "majors," with a few smaller oil companies.

Testimony of both LOOP and Seadock indicates that both projects will seek to deal with antitrust concerns over reasonable and nondiscriminatory access of nonmembers.

The LOOP facility is apparently being committed as a common carrier subject to ICC regulation, open to all potential users who meet published tariff requirements. This assumes that the ICC would have jurisdiction over such a facility under part 1 of the Interstate Commerce Act. We defer to the ICC on this issue.

I would note, however, that we have in the past observed situations in which, although a facility such as a pipeline may be operating ostensibly as a common carrier under Government regulation, it may be so sized and routed that it is impractical and uneconomic for many nonowners who did not participate in the design and planning. In this way, nonmembers may be denied access as a practical matter.

As I have indicated, the LOOP testimony states that the offshore oil port is open to all potential users "who meet published tariff requirements." These tariffs would be published by LOOP as a common carrier and, unless suspended or overturned by the ICC would be allowed to go into effect. The tariff itself may contain restrictions on use which are unreasonable or may be conceived to exclude competitors or members of the consortium.

As part of the review by the Secretary of the Interior under S. 1751, the Secretary may impose conditions in any license granted under the bill, including conditions designed to insure nondiscriminatory access at reasonable rates.

I do not believe it would be unreasonable for the Secretary to require, as part of the submission of LOOP, proposed tariffs to be submitted by LOOP to the ICC, with the understanding that the Secretary could impose as a condition that certain provisions be included in the tariff ultimately filed with that regulatory agency.

We understand that both projects are currently open-ended in membership, and additional shareholders are invited to join. This again would appear to meet antitrust concerns, coupled with the nondiscriminatory access features for nonmembers which I have discussed, over reasonable and nondiscriminatory access of competitors to an essential competitive resource.

I understand that some question has been raised in earlier testimony that these joint ventures themselves provide an opportunity for collusion among major oil companies. In our view, however, we do not believe that these two joint ventures provide significant additional risk of collusion among oil companies.

Already there is a significant degree of joint venture operations throughout the petroleum industry both here and abroad. This has included bidding combines for acquisition of leases on public lands, with interdependence increased greatly because various of the major companies belong to two or more combines. It naturally includes joint ownership and production from oil and gas leases which result from successful bidding, as well as a wide variety of other joint venture interests in exploration and production.

And—most closely analogous to deepwater port facilities—virtually all of the major integrated petroleum companies hold joint interest with others in the pipeline network that moves crude oil to refineries and products to markets.

The Department is fully aware that these and other joint ventures may provide a forum for discussions on price fixing, division of markets, and the like. We are also aware, based on our experience under section 1 of the Sherman Act—the criminal price fixing statute—that companies do not need expensive and, more importantly, public joint ventures to engage in antitrust conspiracies. Meetings can be arranged, telephone calls can be made in any event.

Nevertheless, the Department has and will continue to monitor joint arrangements among competitors in the oil industry to insure first, that the joint arrangements are themselves lawful, and second, that the joint arrangements are not used as a springboard for anti-competitive conduct. The LOOP and Seadock arrangements will be no exception to that enforcement policy.

I realize that an argument could be made, and that Congress has the power, to require that licenses be granted only to single oil companies or to a company which is completely independent of the petroleum industry.

There is precedent for independent operators in transportation in the field of oil. The Williams Brothers and Buckeye pipelines, for

example, have operated for many years entirely apart from any ownership ties with producers, refineries or marketers.

An argument can be made that large-scale joint ventures are unnecessary in these offshore facilities. The usual reason given for prevalence of joint ventures in the petroleum industry is that situations presenting considerable risks and very large capital requirements make necessary a sharing of both risk and investment.

But in construction of large pipeline systems, for example, petroleum companies have followed the 90-10 practice; 10 percent of capital requirements are met by direct investment and 90 percent by outside financing.

If the total costs estimated for Seadock and Loop in committee testimony range from \$390-400 million, then the capital investment, after outside financing, might run \$39-44 million. This is not an inordinate sum for one of the major oil companies and might not be insurmountable for two of the smaller Loop companies.

And a sharing-the-risk argument—often used to justify joint interests in exploration and drilling—does not seem applicable to this situation. The demand for imported oil, which will be steady and growing over the foreseeable future, would seem to insure against any significant financial risk in the construction and operation of such an offshore facility.

Bank financing should be no problem, and indeed a deepwater port would seem such a good financial opportunity that one need not assume it would be attractive only to those already in the petroleum industry.

One way in which independent offshore ports could be assured is to apply a "commodity clause" feature to regulation of these facilities, similar to that in the Interstate Commerce Act. That provision forbids a railroad to transport any commodities, with certain specified exceptions, which it may own in whole or in part, or in which it may have any interest, direct or indirect.

Nevertheless, in our view, an absolute ban of joint activities by the oil companies in the construction and operation of offshore ports is unnecessary and would disrupt those plans in the Loop and Seadock projects which are already underway. This in turn could further delay the time when these ports can come into use.

In our view, adequate safeguards exist in the bill to insure that these joint ventures benefit consumers and do not adversely affect competition. These plans are, aside from specific antitrust provisions I have discussed earlier, open for public comment to the Secretary and, in cases where in the judgment of the Secretary substantial questions have been raised, opportunity is provided in the discretion of the Secretary for a public hearing.

The Department of Justice would expect to review the material submitted by the applicant, and in more important cases, could provide comments to the Secretary of the Interior concerning competitive issues.

We believe these statutory provisions in S. 1751 will provide for adequate protection of competition. The Department continues to support this legislation.

Thank you, Mr. Chairman. That concludes my prepared testimony.

Senator BIDEN. Thank you very much, Mr. Clearwaters.

I have several questions. The most obvious one is you heard the testimony this morning of the FTC where they made certain suggestions. I am wondering how the addition of those things that were suggested by the FTC would disrupt, in any way, the intent of this legislation.

Mr. CLEARWATERS. Well, I don't think it does disrupt the intent of the legislation. I think that the objectives of the legislation, the kinds of antitrust safeguards that are built in the legislation, are really aimed at the concerns expressed by Mr. Halverson of the FTC this morning. I think I might quarrel with Mr. Halverson about whether or not the antitrust language already in the bill provides adequate safeguards. In my view, it does.

Senator BIDEN. But nothing he said runs counter to what your Department assumes is the intent of the legislation, does it?

Mr. CLEARWATERS. No, sir, it does not. The only thing I would be concerned about would be preclearance review as suggested by the FTC this morning.

Senator BIDEN. Why would you be concerned about that?

Mr. CLEARWATERS. We have a rather elaborate history of preclearance review on the part of the Department, advising Defense agencies review the Property Disposal Act, advising the AEC under the licensing review provisions provided in that act, and also, more recent pipeline legislation passed by the Senate, as I recall, contains that kind of language for preclearance review by the antitrust agency—the Department of Justice.

In my view, only in cases in which there is a significant question relating to antitrust issues and which a significant amount of time should be spent by the agency in reviewing each and every application under a particular license should preclearance review be contemplated by statute.

As you are aware, Mr. Chairman, in this legislation there is provision for comments by interested agencies, and certainly I would include the FTC in that, and if the FTC has a feeling they are not included, I would specifically include them in the language of the bill. Those comments can go to the Secretary in the discretion of the FTC or of the Department of Justice, but only in those cases which, in our view, there are significant antitrust problems.

Senator BIDEN. If I can put words in your mouth, your Department does not disagree so much as it thinks it is cumbersome?

Mr. CLEARWATERS. Yes, sir, more cumbersome, time-consuming, and it also involves significant expenditures on the part of an agency that may not be necessary.

Senator BIDEN. There are things that are referred to as business review letters which you fellows look over in the Justice Department; is that right?

Mr. CLEARWATERS. Yes, sir.

Senator BIDEN. In Loop or Seadock, were business review letters requested from the Justice Department?

Mr. CLEARWATERS. Not to my knowledge.

Senator BIDEN. Is that unusual?

Mr. CLEARWATERS. No, it is really up to the discretion of the firm, whether they want to run the business review gamut or not.

Senator BIDEN. That just sort of gives them a little insurance?

Mr. CLEARWATERS. Right. One of the interesting parts of the testimony of Mr. Halverson this morning I thought involved the question as to whether or not there was a private remedy for those independent shippers who would seek access for the use of these offshore ports. The Loop and Seadock testimony indicates that they are going to be common carriers subject to the Interstate Commerce Act and all its remedies.

Senator BIDEN. I would like to go back to the ICC and how it fits in here and Loop's assertions in that regard.

Mr. CLEARWATERS. It is pretty technical.

Senator BIDEN. I would like to get in the meantime very specific about some of your comments.

In your testimony, you say, "The bill would also establish for ports constructed beyond our present territorial seas, a comprehensive legal system providing for a full gamut of the civil and criminal laws for activities on these structures."

Where does it provide that?

Mr. CLEARWATERS. I would refer the chairman to section 111(a), "Applicable Laws."

Senator BIDEN. Does it provide it by saying they are treated as if they were built within the territorial waters of the United States? That is in essence how it does that?

Mr. CLEARWATERS. That is my understanding.

Senator BIDEN. I assume the same answer would apply to the continuation of that paragraph when you say "It also extends to the superports as a Federal law the civil and criminal laws of the adjacent State, where such laws are applicable and not inconsistent with the act or with other existing or future Federal laws or regulations."

Mr. CLEARWATERS. That is also recited in that section, Mr. Chairman.

Senator BIDEN. It has been mentioned in prior testimony and brought up here several times in the course of the 5 or 6 days of hearings we have had on this bill that the act, when using the term "facilities," does not encompass pipelines.

Is that your understanding or the Department's understanding?

Mr. CLEARWATERS. The definition of facility in section 102(b) provides a facility "constructed off the coast of the United States" and I am skipping "including all associated equipment and structures beyond 3 nautical miles from such coast but does not include pipelines."

I think the act itself says it does not encompass any pipelines.

Senator BIDEN. Does that create any problems as far as you see it?

Mr. CLEARWATERS. I think some assurance should be given to provide for reasonable access to the pipeline as well as to the docking facility. That is all we are talking about, a deepwater facility. There

should be assurance of reasonable nondiscriminatory access to the pipelines by nonmembers to this consortium. I think probably the answer the consortium would make, and the Seadock or the Loop people would make, is this is something that the ICC is in the business of regulating, we have committed this pipeline as a common carrier separate and apart from this act, and that the public can be assured that there will be no discrimination among users.

Senator BIDEN. The ICC in their testimony, which you may find of some interest, said yesterday:

The bill does not specifically state that the provisions of the Interstate Commerce Act shall apply to pipelines connecting with the deepwater port facilities; however, there is a possible inference that such a result is intended.

This inference is gleaned from provisions of Section 107(b) of the bill which specifies that the Secretary of the Interior can condition licenses for deepwater port facilities to require nondiscriminatory access at reasonable rates. Moreover, Section 111 of the bill makes the laws of the United States applicable to deepwater port facilities and to activities connected with their operation and use.

Finally, Section 112 of the bill provides for the supremacy of federal laws where pipelines and cables extend above or in to submerged lands or waters subject to the jurisdiction of any state or possession when the laws of that state or possession are inconsistent with federal laws or regulations.

However, if the Congress desires the Commission to have the same jurisdiction over pipelines connecting with deepwater port facilities as we have over pipelines in the continental United States, the bill should be amended so as to specifically apply the provisions of the Interstate Commerce Act to the operation of the pipelines in question.

Mr. CLEARWATERS. I would agree with that, because I think there may be some question raised under the jurisdictional scope of the Interstate Commerce Act as it is presently written.

Senator BIDEN. It has also been raised that even if that is written into the act, the act does not give the ICC jurisdiction over such aspects of pipeline operations as issuance of securities, formation of interlocking directorates, mergers and consolidations, construction and abandonment of the lines, or the granting of credit, nor are the pipelines subject to the commodities clause prohibiting transportation of the products of their owners.

Do you think the bill would cover that in some way, or do you think that is implicit in the legislation? Do you think it is necessary?

Mr. CLEARWATERS. Let me take it in two phases.

As far as the commodities clause is concerned, it is my feeling that we should not restrict oil companies from ownership of this facility. That is in essence what you would do if you said no oil company can transport its own oil over this facility. There would be no impetus for the oil companies to get into that business.

Senator BIDEN. Hold on just a moment, please. Why wouldn't there be the impetus to get into that business, because they say there is no other way to get to the refineries they are going to build regardless of who operates the pipeline? There is such a staggering need for this crude. I would think the impetus would still be there.

Mr. CLEARWATERS. The way the commodities clause reads and fitting it into the context of the matter at hand, if you are a petroleum company and you get into the transportation business in an offshore

facility you can't use that offshore facility to transport your own commodity. That is what the commodities clause says, as rewritten.

Senator BIDEN. That would mean if they had a supertanker, it couldn't dock at that facility?

Mr. CLEARWATERS. That is right.

Senator BIDEN. How about the idea of including that clause and incorporating the commodities clause into this legislation, at the same time also incorporating in this legislation a requirement—you don't suggest it, but you point it out as an alternative in your testimony that the company which is completely independent of the petroleum industry construct the facility or own the facility?

Mr. CLEARWATERS. I think a very strong argument can be made for a company completely independent operating this thing as an independent common carrier. However, I think the ICC, with proper regulatory oversight, can control these carriers to insure that their ownership of this facility doesn't prejudice a nonmember.

I think the ICC can do that.

The question then really becomes how much of a hurry are we in. We have got the Loop and Seadock projects in progress, and I gather the question really becomes should we just tell them to scuttle those projects and have some independent like Williams Brothers go it alone.

I am really in no position to make that kind of judgment.

Senator BIDEN. Assuming we did that, I would assume these plans would become just as salable as the construction of the facility. At any rate, there is a good deal of criticism with respect to the integration of the oil industry in such a way as it may cause problems beyond just potential monopolistic problems, and there seems to be an undercurrent here on Capitol Hill and other places, and I assume from some places within your own Department, that maybe we should take another look at that.

I am not suggesting that the Department has taken a policy stand, not at all. I have just heard a great deal of discussion about that. I realize you can't comment for your Department, but I would like your opinion as a knowledgeable attorney in this area as to whether or not you see from the standpoint of the Department of Justice and its responsibility, problems as a consequence of the industry being so integrated as it is from the source of supply to the distribution at the retail level.

Is there any merit in moving to change that structure?

Mr. CLEARWATERS. I am not sure that integration in and of itself is an evil. You can make a lot of arguments about efficiencies and economies when you do have certain kinds of integration. Some integration may be an evil simply because it provides unnecessary barriers to entry by other firms that would like to get in. But in the abstract, I wouldn't view it as a problem in and of itself to have integrated firms in an industry.

I think you can make an argument that the antitrust agencies have to take a very strong and hard look—and they have been looking very hard—at joint ventures in the petroleum industry to see if there is room for mischief, for abuse, and if so to put a stop to it.

We have had pipeline investigators for a number of years now. They raised some very difficult questions, but we continue in that area.

Senator BIDEN. Is it fair to say that the opportunity for abuse is greatly increased with the integration of industry or at least significantly increased?

Mr. CLEARWATERS. I don't think the opportunity for abuse is increased by a vertical integration of a particular firm. I think where we find an opportunity for abuse, if you have a conspiratorial view of the world, is in the sharing arrangements, exchange agreements, joint ventures of pipelines, the kind of close proximity that these oil companies have from day to day. Once you start with that impression, okay, there is a possibility of abuse—it is just like all belonging to the same club so to speak—then I think the antitrust agencies have an obligation to find out if there is in fact abuse.

Senator BIDEN. I appreciate that distinction. That is not what you hear much about these days. What I am hearing bandied around is the fact that an oil company owns the source straight through to the gas station that retails it, it has some very bad effects on the consumer and on competition.

I am not saying it is wrong. I am saying that is what is being said. There is a bill in the Senate that would require that you pick your poison, either you distribute, you refine, you retail.

If there is merit in that position, then there would even be more merit to the position that a completely independent operator, independent of the petroleum industry, be the operator of the deepwater port facility.

Again, I have no disposition on that. I don't know whether it is good or bad. I have just raised the question.

Mr. CLEARWATERS. It is a fascinating topic.

Senator BIDEN. In your testimony you state that pipelines "may be so sized and routed that it is impractical or uneconomical for many nonusers who did not participate in the design and planning. In this way, nonmembers may be denied access as a practical matter."

Do you have any further information on this matter? Do you see any possibility of this occurring at deepwater ports, or more the possibility with submerged pipelines than those on land? I am not sure I understand the concern.

Mr. CLEARWATERS. Part of the concern has been the suspicion based on some investigations that a pipeline may be built and its design so structured as to serve only those members of the joint venture, the owners of the pipeline. They may build a terminal at a certain point that serves their refineries. They are supposed to be common carriers, but you may have a small independent who wants to get on to that pipeline who is physically located in an area where he would either have to take a truck to drive to the terminal of one of the owners or he is out of luck. It is hardly the kind of thing in which a common carrier holds itself out to serve everyone.

In that way a pipeline could be routed in effect to exclude competitors who would like to get on the line. It can also be sized in such a way to make it small, some engineering feature that would

not allow the competitor to take advantage of the capacity of the line because the capacity is not there because of the size of the structure.

These are the kinds of thinking that concern us in the pipeline industry in general.

Senator BIDEN. You probably heard me say this before, and I may be repeating it in this testimony, but the fact that the legislation now is as discretionary as it is, is one of the concerns that I have, that "the Secretary is authorized," for example. That is the kind of language that is used.

For example, on the first page you say "The secretary is authorized to impose any conditions he deems necessary in a license to carry out the purpose of the Act."

It seems to me maybe we are surrendering an awful lot of authority. Maybe we should take the responsibility to specify that. I assume it is your department's position that you would independently be reviewing these anyway, and even if the secretary decided he didn't want input from you, you are still in the position to, if not specifically at least practically, embarrass him to looking to your views? In other words, it would be very difficult for the secretary to say I don't deem it necessary if your department was saying you had better deem it necessary because you have got a problem here.

Mr. CLEARWATERS. We would file a paper with the secretary which would be a matter of public record.

Senator BIDEN. With all the bureaucratic maze that every major department is encumbered with, you think there is such a watchdog effect that it would be done anyway?

Mr. CLEARWATERS. Based on our experience under the Property Disposal Act which again doesn't require the Secretary of Defense, for example, to follow our advice, if we send the Secretary of Defense a letter suggesting that there are strong antitrust concerns, that will have a rather great degree of bearing on his activities in disposing of the property, even though he would know it is not mandatory that he follow our advice.

Senator BIDEN. I am sure that is correct. My point really is with all the work you fellows have to do, unless it is required, are you going to independently on your own review each of these as a matter of course anyway? I am sure if you say you have got a problem, clearly that will have a significant effect. My concern is you may not say unless you are required to look into it because you are strapped already. At least that is how it works here in the Congress, and I don't see that the agencies are significantly different.

Mr. CLEARWATERS. I think the answer to that, Mr. Chairman, is in our view there are not that many applications going to be coming up. We have in the past in our antitrust enforcement policy taken a very hard look at pipeline consortia in the petroleum industry. I view these as no different, and I would like to assure you that we would be following these in any event.

Senator BIDEN. Are you fellows in the process of taking that kind of positive, affirmative action with regard to the trans-Alaskan pipeline? Did your guys get into that as a matter of course?

Mr. CLEARWATERS. We had a civil investigative demand issued to the companies, just something like a subpoena, and a formal investigation even before the legislation specified review by the Department of Justice, and we are proceeding with that.

Senator BIDEN. I don't have any more questions that I can think of right now. I found very helpful your testimony. It has been very constructive.

The committee is adjourned.

[Whereupon, at 4:05 p.m., the subcommittee was adjourned.]