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COAST GUARD

Oil Spills Continue Despite Waterfront Facility Inspection Program

Statement of
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Mr. Chairmen and Members of the Subcommittees:

We appreciate this opportunity to testify on federal efforts to protect the marine environment from pollution caused by oil spills at waterfront facilities, where vessels load or unload. In June 1991, we issued a report to the Committee on Merchant Marine and Fisheries and the Subcommittee on Coast Guard and Navigation on the Coast Guard's inspection program.[1] Our report addressed (1) the extent of oil spills occurring at waterfront facilities, (2) whether the Coast Guard's inspection program for these facilities is reducing the risk of these spills, and (3) whether the Coast Guard's responsibility for regulating and inspecting these facilities is adequately defined.

In summary:

-- Spills occurring at waterfront facilities account for about half of the oil spills that occur in U.S. waters. In 1988, the total amount of oil spilled at waterfront facilities nationwide was more than twice the amount that poured from the Exxon Valdez in Alaska's Prince William Sound in March 1989.

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[1]Coast Guard: Oil Spills Continue Despite Waterfront Facility Inspection Program (GAO/RCED-91-161, June 17, 1991).

-- Coast Guard inspection records show that noncompliance with federal regulations aimed at preventing water pollution by oil continues to be high. For example, during a recent 3-1/2 year period, 58 percent of the facilities inspected at four major ports had deficiencies. However, the Coast Guard is not in a position to determine the impact of its inspections in reducing the risk of oil spills because it does not compile and analyze inspection data and data related to the causes of spills--information needed to make this determination.

-- Although the Coast Guard's responsibility to regulate and inspect waterfront facilities is adequately defined, the agency was not inspecting pipes between the dock and storage area. Coast Guard headquarters officials now acknowledge this responsibility. These pipes pose a significant pollution risk because of their short distance from the water and their age. At one port we visited, for example, their average age was 30 years.

In our report, we made recommendations to the Secretary of Transportation to ensure that (1) data on inspections and on oil spills are recorded and analyzed to determine the effectiveness of the Coast Guard's program and (2) waterfront facilities' pipelines transporting oil between the dock and storage tanks are inspected.

As of this date, we have not received the Department's response on actions planned.

BACKGROUND

Before discussing our findings in more detail, I'd like to briefly provide some background on the Coast Guard's program. A waterfront facility consists of docks where vessels moor to receive or discharge their oil cargo and a system of pipes and valves that transport the oil between the dock and other areas of the facility, such as the storage area. Generally, a waterfront facility is a small portion of a larger petroleum facility that processes or distributes petroleum products. There are approximately 4,130 waterfront facilities under the Coast Guard's jurisdiction in 48 port zones in the United States. The Coast Guard, having responsibility under the Water Quality Improvement Act of 1970 to prevent pollution from transportation aspects of a facility, established standards for equipment used and operating procedures to be followed. The Coast Guard annually inspects waterfront facilities to ensure that operators comply with its pollution prevention regulations.

IMPACT OF COAST GUARD'S INSPECTION PROGRAM IS UNKNOWN

Spills at waterfront facilities generally account for about half of the oil spills that occur in the navigable waters of the

United States. According to Coast Guard officials, the objective of the waterfront facility inspection program is to ensure compliance with the Coast Guard's pollution prevention regulations and thereby reduce the frequency and severity of oil spills. The Coast Guard, however, has not taken the steps necessary to determine how effective its inspection program is in reducing the risk of oil spills.

Extent of Oil Spills at Waterfront Facilities Is Significant

We reviewed the Coast Guard's files on investigations of oil spills occurring in Chicago, New Orleans, New York, and Philadelphia to determine the extent of oil spill pollution from waterfront facilities at these ports. We chose these ports because they handle the largest amounts of petroleum on the East and Gulf Coasts, and the Great Lakes.

Table 1: Oil Spills in Four Ports (Jan. 1987 - June 1990)

GAO Oil Spills in Four Ports (Jan. 1987 – June 1990)

	Chicago	New Orleans	New York	Philadelphia	Total
Number of spills	69	719	376	238	1,402
Total gallons spilled (thousands)	32.3	1,206.9	1,282.9	84.6	2,606.7
Number of spills at waterfront facilities	43	281	231	157	712
Percentage of spills at waterfront facilities	62.3	39.1	61.4	66.0	50.8
Total gallons spilled at waterfront facilities (thousands)	29.0	109.9	1,108.2	70.1	1,317.3
Average number of gallons spilled per incident at waterfront facilities	675	391	5,277	449	1,909
Percent of spills occurring during transfer operations	62.8	57.3	60.6	49.0	56.9

As table 1 shows, during a 3-1/2 year period--January 1987 through June 1990--about 1,400 spills occurred at these four ports totaling 2.6 million gallons. Of these spills, 51 percent occurred at waterfront facilities. The waterfront spills averaged about 1,900 gallons. Fifty-seven percent of the spills occurred during the transfer of oil between the facility and a vessel.

Our report noted that noncompliance with pollution prevention regulations was the cause of many spills. For example, (1) an 800-gallon spill in New Orleans occurred because a hose that had not been tested or marked in accordance with the Coast Guard's regulations burst while transferring diesel oil under pressure, and (2) a 5,000-gallon spill in New York occurred when a tank was overfilled with oil because no employee was present to monitor the transfer, as required by regulations.

Impact of Coast Guard's Inspection Program in Reducing Spills Unknown

During an inspection, Coast Guard inspectors use checklists to verify compliance with regulations. The inspectors are to ensure, for example, that operations manuals are complete and current, that records of required testing of equipment are up to date, and that an emergency shutdown device is in place. If an oil transfer is under way between the facility and a vessel, inspectors use additional checklists to verify that operating practices are in compliance with regulations. For instance, the inspectors ensure that qualified personnel are present, the vessel has been properly

moored to the dock, and oil transfer hoses between the dock and the vessel are properly supported. Deficiencies, if any, are listed in an inspection report, and a copy is given to the facility's manager. According to Coast Guard officials, deficiencies are to be corrected by a specified date and may be verified by a follow-up inspection. If the deficiency is considered very serious, inspectors may order an immediate cessation of oil transfers. Monetary penalties for each violation can also be assessed.

We reviewed the Coast Guard's files on inspections at the four locations we visited, and we compiled information on deficiencies. This information is not being compiled and analyzed by the Coast Guard.

Table 2: Coast Guard Inspections of Facilities in Four Ports (Jan. 1987 - June 1990)

As table 2 shows, during the 3-1/2 year period covered by the spill data, the Coast Guard conducted approximately 1,400 inspections at these four locations and recorded at least one deficiency in 58 percent of the inspections. Close to 2,900 total

GAO Coast Guard Inspections of Facilities in Four Ports (Jan. 1987 – June 1990)

	Chicago	New Orleans	New York	Philadelphia	Total
Number of inspections	137	524	574	166	1,401
Number of deficiencies	112	642	1,798	340	2,892
Percent of inspections with deficiencies	39.4	47.3	72.0	60.2	58.2
Percent of deficiencies corrected immediately	13.4	5.3	4.8	0.3	4.7
Percent of facilities reinspected	22.7	9.5	11.3	31.3	14.0
Percent of deficiencies verified as corrected	20.5	8.7	7.0	5.0	7.6

deficiencies were recorded even though the inspections were announced in advance and conducted by appointment with managers of the facilities. Examples of deficiencies recorded were such things as inadequate lighting and untested hoses. About 14 percent of the facilities were reinspected when, in the opinion of local Coast Guard officials, deficiencies were serious. It was not clear from the records which deficiency or group of deficiencies the Coast Guard judged serious enough to warrant a reinspection. Upon reinspection, Coast Guard inspectors documented that about half of the reinspected deficiencies, or about 8 percent of the originally identified deficiencies, had been corrected. The records did not show whether the remaining half of the reinspected deficiencies were corrected. In addition, the records did not indicate whether these corrected deficiencies were the most serious.

Local Coast Guard officials currently send quarterly reports to headquarters that show the number of inspections completed but do not provide additional details on the deficiencies found or corrective action taken. The Coast Guard does not compile basic information on the results of the program, such as the types, severity, and frequency of deficiencies. Nor does the agency compare data on the deficiencies found with information found by investigators on the causes of oil spills. Until the Coast Guard collects and analyzes such information, it will not be in a position to determine the effectiveness of its inspection program. Such information would be useful in setting operational goals for managing the inspection program and in targeting, if necessary, inspection resources on areas of greatest pollution risk.

PIPES POSING SIGNIFICANT RISK NOT INSPECTED BY THE COAST GUARD

We also found that the Coast Guard is not meeting its full responsibility in inspecting waterfront facilities in accordance with the Water Quality Improvement Act of 1970. More specifically, it is not inspecting high-risk portions of intrafacility pipes that transport oil between docks and tank storage areas at petroleum facilities because its inspectors mistakenly believed these pipes were not their responsibility.

For those petroleum facilities that receive or ship oil by vessel, the Coast Guard shares with the Environmental Protection Agency (EPA) the authority to regulate water pollution prevention.[2] The President gave the Department of Transportation the responsibility for preventing oil spills at all transportation-related facilities, and gave EPA this responsibility for spill prevention at all non-transportation-related facilities. A subsequent memorandum of understanding between Transportation and EPA defined which facilities are transportation-related. The memorandum states that when intrafacility pipelines are used

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[2]The Water Quality Improvement Act of 1970 (P.L. 91-224) gave the President the authority to act in order to prevent water pollution from oil. The President delegated the authority for preventing water pollution from facilities involving transportation, such as oil-loading docks for vessels, to the Department of Transportation, and from non-transportation facilities, such as oil storage tanks, to EPA. The Secretary of Transportation, in turn, delegated the Department's responsibility to the Coast Guard. The Federal Water Pollution Control Act Amendments of 1972, as amended, popularly referred to as the Clean Water Act, superceded the Water Quality Improvement Act (33 U.S.C. 1251-1376), which contained similar provisions.

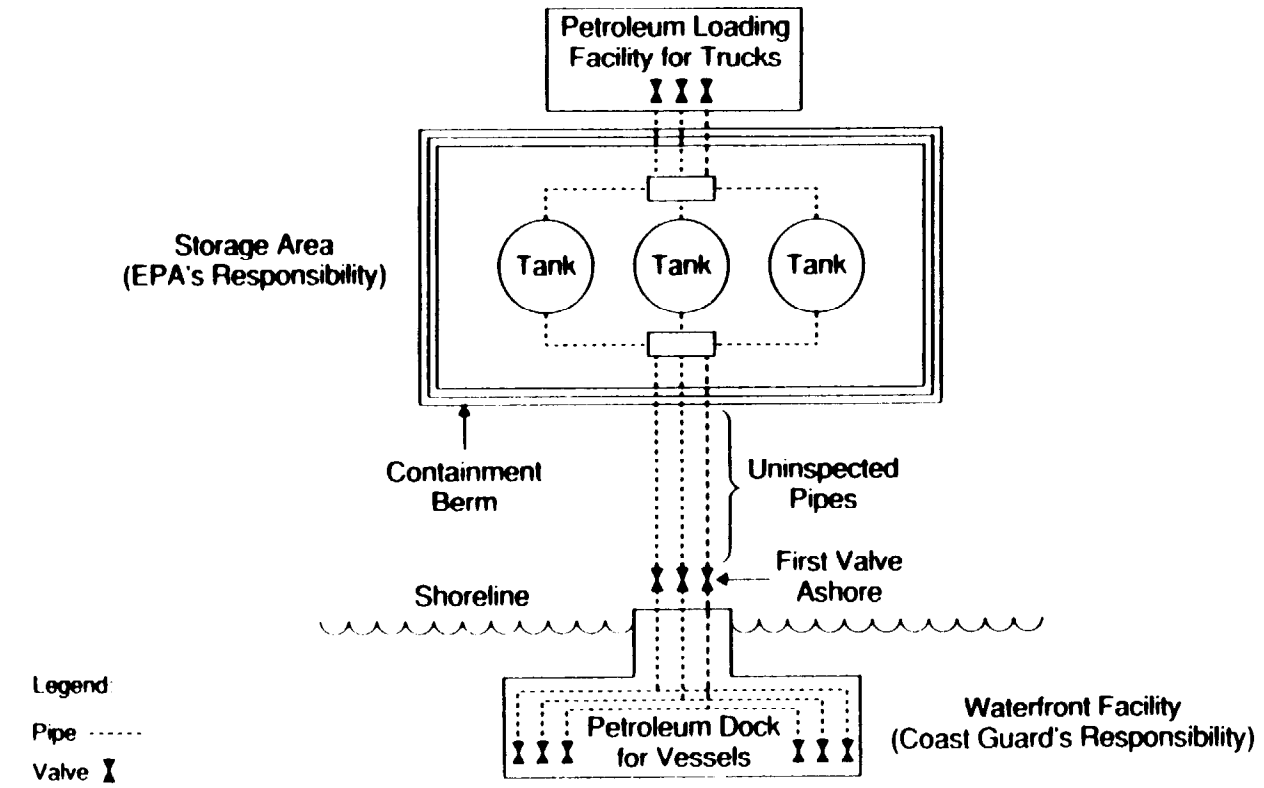
primarily to transport oil to or from vessels, they are the responsibility of the Coast Guard. In addition, the memorandum specifically states that these pipelines are not the responsibility of EPA.

Nevertheless, Coast Guard field inspectors mistakenly believed that pipes between the first valve ashore and the storage area were not clearly delineated as transportation-related. According to the inspectors, pipelines within a waterfront facility are a continuous system, and some can be used to transfer oil between storage tanks which, being non-transportation-related, are the responsibility of the EPA. However, the primary purpose of the pipes that move oil between the first valve ashore and storage tank areas is transportation. Therefore, the Coast Guard should inspect these pipes. Coast Guard headquarters officials now acknowledge their responsibility to inspect pipelines leading to and from storage areas. We were told that the Coast Guard has instructed it's local officials to include these pipes in their inspections. The area that was not being inspected by the Coast Guard is depicted in figure 1.

Figure 1: Diagram of a Simplified Petroleum Facility

The figure shows a simplified petroleum facility with both transportation-related and non-transportation-related aspects. The petroleum dock for vessels and the three pipes used to move petroleum between the dock and storage area are transportation-related and are the responsibility of the Coast Guard. The storage area with three storage tanks and pipes between storage tanks within a containment berm is non-transportation-related and is the responsibility of EPA. The pipes between the first valve ashore

GAO Diagram of Simplified Petroleum Facility



and the containment berm generally were uninspected by a federal agency.

We randomly selected 12 of 55 petroleum complexes in Philadelphia and 11 of 167 complexes in New York to determine the risk of water pollution posed by these intrafacility pipes that generally are not inspected by a federal agency. Pipes at 17 of the 23 facilities had not been inspected. To get a better understanding of the characteristics of uninspected intrafacility pipes between docks and storage areas, we examined data on these pipes at facilities in Philadelphia. The results of our analysis are shown in the following table.

Table 3: Uninspected Pipes at Philadelphia Waterfront Facilities

We found that uninspected pipes at these facilities numbered from 1 to 25 per facility, were from 300 feet to 4 miles long, and were from 8 to 36 inches in diameter. The average age of the pipes was 30 years, with the oldest being 45 years old. The average distance to the water for pipes at their closest point to the water

GAO Uninspected Pipes at Philadelphia Waterfront Facilities

	Average	Range
Number of pipes	10	1 - 25
Distance not tested (feet)	5,821	300 - 20,970
Diameter of largest pipe not tested (inches)	23	8 - 36
Age of oldest pipe (years)	30	12 - 45
Closest distance to water (feet)	72	7 - 300
Possible gallons lost per minute	10,807	2,772 - 18,900

was 72 feet, and the range of gallons possibly lost per minute ranged from about 2,800 to 18,900 gallons.

Our review of these data as well as facility maps and piping system diagrams showed that pipes such as these generally pose a significant pollution risk for several reasons.[3] Most of these pipes are more than 10 years old, and some are buried. Older buried pipes are particularly vulnerable because technology to adequately protect them from corrosion has been developed only within the last 10 years. Furthermore, the cycles of pressurization the pipes undergo when oil is transferred under pressure may weaken them. Failures can result in relatively large spills. For the pipes we examined, up to 56,700 gallons could spill in the 3 minutes it could take to reach the shutdown valve.[4] Short distances to the water allow little time for emergency workers to intervene, especially since most facilities are on terrain sloping toward the water.

Two recent spills demonstrate what can actually happen when uninspected pipes between the dock and storage areas break while transferring oil under pressure.

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[3]To assist us in our analysis, we used a consultant, Engineering Computer Optecnomics, Inc., of Annapolis, Maryland. The firm has expertise in contingency planning for oil spills, as well as in response and prevention.

[4]To calculate the size of potential spills, the industry, according to our consultant, assumes that an emergency shutdown valve is located so that a person can reach it within 3 minutes.

-- A spill occurred in Philadelphia in January 1990 during a transfer of crude oil from a tank vessel to a tank farm about one-quarter of a mile inland. A 30-inch underground pipe burst 25 feet inland, saturating the surrounding soil. The total amount of oil spilled was not reported, but an estimated 250 gallons eventually leaked into the Delaware River from the saturated soil.

-- A spill occurred in Tacoma, Washington, in January 1991 when an uninspected 16-inch underground pipe ruptured while transferring crude oil from a ship to a tank farm about a mile away. The resulting 600,000-gallon spill was one of the largest in the state's history. According to EPA's estimate, 1,500 to 3,000 gallons leaked into a tributary leading to Puget Sound.

If the Coast Guard's oversight were extended to them, such pipes would have to be inspected annually. The Coast Guard requires pipes to be tested to ensure that they do not leak under a static liquid pressure of 1-1/2 times the maximum allowable working pressure.

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To conclude, Mr. Chairmen, our work showed that water pollution by oil remains significant and noncompliance with federal regulations to prevent oil pollution continues to be high in the four ports we visited. Additionally, the impact of the Coast

Guard's efforts in reducing the risk of oil spills is unknown because the agency does not compile and analyze inspection and spill data needed to make this determination. Further, the Coast Guard was not inspecting portions of intrafacility pipes that transport oil between docks and storage tank areas. Coast Guard headquarters officials now acknowledge this responsibility

During our review, Coast Guard officials concurred with all of our findings and conclusions. In addition, as a result of our report, the Senate Appropriations Committee directed the Secretary of Transportation to report to it and the House Appropriations Committee no later than February 1, 1992, on steps taken to strengthen the Coast Guard's waterfront facility inspection program.

This concludes my prepared remarks, Mr. Chairmen. I will be pleased to respond to any questions you or other Members of the Subcommittees may have at this time.

ATTACHMENT I

RECENT GAO REPORTS AND TESTIMONIES RELATED TO OIL POLLUTION PREVENTION

INLAND OIL SPILLS: Stronger Regulation and Enforcement Needed to Avoid Future Incidents (GAO/RCED-89-65, February 22, 1989)

PIPELINE SAFETY: New Risk Assessment Program Could Help Evaluate Inspection Cycle (GAO/RCED-89-107, March 7, 1989)

Adequacy of Preparation and Response Related to Exxon Valdez Oil Spill (GAO/T-RCED-89-59, August 10, 1989)

COAST GUARD: Adequacy of Preparation and Response to Exxon Valdez Oil Spill (GAO/RCED-90-44, October 30, 1989)

COAST GUARD: Federal Costs Resulting From the Exxon Valdez Oil Spill (GAO/RCED-90-91FS, January 26, 1990)

COAST GUARD: Preparation and Response for Oil Spills in Philadelphia and New York Ports (GAO/RCED-90-83, January 26, 1990)

WATER POLLUTION: Alyeska's Efforts to Comply With Reissued Ballast Water Treatment Permit (GAO-RCED-90-124, May 8, 1990)

POLLUTION FROM PIPELINES: DOT Lacks Prevention Program and Information for Timely Response (GAO/RCED-91-60, January 28, 1990)

COAST GUARD: Millions in Federal Costs May Not Be Recovered From Exxon Valdez Oil Spill (GAO/RCED-91-68, March 5, 1991)

COAST GUARD: Oil Spills Continue Despite Waterfront Facility Inspection Program (GAO/RCED-91-161, June 17, 1990)

TRANS-ALASKA PIPELINE: Regulators Have Not Ensured That Government Requirements Are Being Met (GAO/RCED-91-89, July 19, 1991)

COAST GUARD: Oil Spill Liability Trust Fund Not Being Used to Pay All Allowable Costs (GAO/RCED-91-204, August 12, 1991)

COAST GUARD: Coordination and Planning for National Oil Spill Response (GAO/RCED-91-212, September 25, 1991)

ATTACHMENT I

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