REPORT TO THE CONSERVATION AND NATURAL RESOURCES SUBCOMMITTEE COMMITTEE ON GOVERNMENT OPERATIONS HOUSE OF REPRESENTATIVES

Improved Inspection And Regulation Could Reduce The Possibility Of Oil Spills On The Outer Continental Shelf B-146333

Geological Survey
Department of the Interior

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

JUNE 29, 1973

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-146333

The Honorable Henry S. Reuss, Chairman
Conservation and Natural Resources Subcommittee #1502
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

In response to your April 21, 1972, request, this is our report pointing out that improved inspection and regulation by the Department of the Interior could reduce the possibility of oil spills on the Outer Continental Shelf.

Our principal observations and recommendations to the Secretary of the Interior are summarized in the digest.

As your office directed, we have not obtained formal comments from the Department of the Interior; however, we did discuss these matters with Department officials. We understand that your office will make the report available to the Secretary at a later time. We will not distribute this report further unless you agree or publicly announce its contents.

Sincerely yours,

Elmer B. Staats
Comptroller General
of the United States

Contents

ABBREVIATIONS

EPA	Environmental Protection Agency
GAO	General Accounting Office
OCS	Outer Continental Shelf

COMPTROLLER GENERAL'S REPORT TO THE CONSERVATION AND NATURAL RESOURCES SUBCOMMITTEE COMMITTEE ON GOVERNMENT OPERATIONS HOUSE OF REPRESENTATIVES

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D I G E S T

WHY THE REVIEW WAS MADE

The Subcommittee Chairman requested GAO to

--obtain data on certain oil spills on the Outer Continental Shelf (OCS), including that on the responsibility for cleanup, damage, and enforcement actions and

--review the adequacy of Interior's inspection and regulation of Outer Continental Shelf oil operations.

At the direction of the Chairman's office, GAO did not obtain formal comments from Interior; however, it did discuss these matters with Department officials.

The Outer Continental Shelf Lands Act authorizes Interior to lease lands and to regulate oil and gas operations on the Shelf to conserve natural resources.

The Shelf includes all submerged lands beyond State waters, generally beginning about 3 miles from the coastline. (See p. 5.)

The Geological Survey is responsible for inspecting and regulating oil and gas operations on the Outer Continental Shelf.

The President's energy message of April 1973 directed the Secretary of the Interior to triple by 1979 the annual amount of acreage leased on OCS for drilling oil and gas. Because of this, GAO believes the need for improved regulation and inspection of OCS operations takes on added significance.

FINDINGS AND CONCLUSIONS

Data on individual oil spills

Most oil and gas operations are in the Survey's Gulf Coast region. Approximately 1 million barrels of oil are produced daily from about 1,800 structures on about 108,000 square miles.

The remaining 8 percent of offshore oil production takes place in the Pacific region from five structures in the Santa Barbara Channel off the California coast. (See p. 5.)

From March 1971 through February 1972, 26 spills of more than 10 barrels were reported by lessees conducting offshore oil operations in the Gulf area. These spills totaled about 9,600 barrels, including one major spill of 7,900 barrels. (See p. 9.)

No oil spills of more than 10 barrels were reported for the Pacific area during the same period. However, more than 60 natural oil seeps, the most active of which seeps between 50 and 70 barrels daily, have

been identified in the Santa Barbara Channel. (See p. 9.)

Other Federal agencies besides Interior--in particular the U.S. Coast Guard and the Environmental Protection Agency (EPA)--are responsible for removing and preventing oil spills. (See p. 6.)

The Survey, the Coast Guard, and EPA did not incur any direct costs for cleaning up the 26 spills--which was done by the lessees--but they did incur administrative costs of at least $630,000 for monitoring the cleanup and investigating causes of the spills. (See p. 10.)

The agencies do not believe current legislation authorizes them to recover these costs from the lessees responsible for the spills.

Survey and EPA officials informed GAO that no field studies were conducted to determine whether property or environmental damage resulted from 25 spills. Studies were made of the effects of one spill; however, there was some difference of opinion on its long-term effect. (See p. 11.)

Interior recognized that the full impact of oil spills from offshore operations is not adequately understood and therefore, in the fall of 1972, established a project to evaluate short- and long-term effects of such spills.

Enforcement proceedings

The Survey determined that, for the 26 spills, enforcement proceedings under the Outer Continental Shelf Lands Act were not warranted. The act authorizes the Department to fine lessees for knowingly and willfully violating the Outer Continental Shelf rules or regulations, and to cancel leases for not complying with the act, the regulations or lease provisions. These sanctions generally require proceedings in a U.S. district court. (See p. 13.)

Survey officials informed GAO that, since inception of the lease program, no leases had been canceled and fines had been levied only once in 1970, when nine oil companies were fined $2.4 million for failing to install required safety devices.

To enforce its regulations, the Survey has relied principally on written warnings and, in the Gulf Coast region, also on stopping operations.

GAO observed that Survey inspectors in the Gulf Coast region did not always follow prescribed regional enforcement actions and that written warnings by the Pacific region were sometimes ineffective in obtaining prompt correction of deficient equipment.

GAO believes the Survey needs to strengthen its enforcement actions. (See p. 15.)

Inspection of offshore operations

Except for producing wells, the Survey had not issued written policies on the frequency of inspections, especially for drilling of new wells, remedial work on producing wells, and abandonment of nonproductive wells. (See p. 17.)

There has been no problem in achieving adequate coverage in the Pacific region, where relatively few offshore structures are operating. In the Gulf Coast region, where many

structures are spread over 108,000 square miles, the Survey did not inspect structures as frequently as required by standards set by the region or by official Survey policy.

GAO's tests of fiscal year 1972 inspection records in the Gulf Coast region showed:

--Only half of 50 wells started in fiscal year 1972 were inspected during the drilling operation although the region's unwritten policy called for inspecting each well. (See p. 18.)

--Only 4 of 20 structures which began producing in fiscal year 1972 were inspected within 1 month, 13 structures were inspected within 1 to 5 months, and the other 3 had not been inspected at the time of GAO's review, although Survey policy required a complete inspection when production began. (See p. 19.)

--Only 4 of 69 structures producing in fiscal year 1972 were reinspected within the required 6-month interval and the average frequency of reinspections was about 10 months. (See p. 19.)

--Survey reports showed that 468 wells were abandoned during fiscal year 1972 but that only 31 spot checks were made of abandoned wells. Survey officials said they did not have sufficient manpower to inspect abandonment operations but that there was little pollution potential from them; they also said more spot checks had been made than were reported. (See p. 20.)

The Survey's inspection staff has increased from 16 engineers and technicians in 1969 to 47 in 1972. About 60 percent of the inspectors had received some specialized training, but the Survey had no formal training program. (See p. 21.)

Because of the increasing inspection responsibilities and changing technologies in offshore oil and gas operations, the Survey should consider establishing a formal training program for its inspectors. (See p. 25.)

Survey's inspections and inspection reports need to be improved.

--Instructions are needed for partial inspections of drilling operations and for inspections and reports of remedial and abandonment operations.

--Inspectors should be instructed to perform all prescribed inspection steps. (See p. 25.)

Regulation of offshore operations

Within the framework of the Department's general regulations, the Survey's Gulf Coast and Pacific regions issued a series of orders advising lessees and operators of Federal oil and gas leases of certain basic operating requirements.

Besides making inspections, the Survey supervises offshore operations through a system of reporting and investigating accidents and through continuous surveillance flights by helicopters which may discover oil spills needing investigation. (See p. 27.)

As GAO does not have the technical expertise to appraise the adequacy of these regulations, it

--obtained or reviewed opinions of

representatives of public and private organizations concerned with the effectiveness of the Survey's regulatory activities (see p. 29) and

--reviewed results of recent Interior studies to improve Federal safety and pollution control regulations.

A special work group assigned by the Survey to evaluate these studies has already proposed actions to implement the studies' recommendations. These actions should improve Survey's regulation and inspection functions. (See p. 32.)

Also, GAO noted a need for regulating additional offshore operations which have pollution potential but which were not regulated at the time of GAO's review. There is a need for

--a program to control erosion of pipes and other equipment which often cause failure of safety devices and contribute to spills;

--regulations governing remedial work on producing wells, known as workover and wireline operations;

--regulations governing concurrent drilling, production, and remedial operations on a single structure which, according to Survey officials, are dangerous because of the confusion caused in a confined area. (See p. 28.)

RECOMMENDATIONS

The Secretary of the Interior should require the Survey to:

--Emphasize the need for inspection personnel in the Gulf Coast region to apply prescribed enforcement actions for violations of OCS orders unless deviations are authorized under circumstances specified by the region and properly documented in each case. (See p. 16.)

--Reexamine the Pacific region's policy of not halting operations for violations of OCS orders and consider the advisability of shutting down individual wells to encourage the operator to promptly correct deficiencies. (See p. 16.)

--Establish a realistic policy on how frequently each type of OCS operation must be inspected, considering the resources available and the risks of oil spills involved. (See p. 25.)

--Consider establishing a formal training program for the inspection staff. (See p. 26.)

--Issue instructions covering partial inspections and inspection of remedial and abandonment operations. (See p. 26.)

--Issue regulatory orders to control erosion, workover and wireline operations, and certain concurrent operations from a single structure. (See p. 35.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

Department officials stated that actions were underway to implement most of GAO's recommendations.

CHAPTER 1

INTRODUCTION

Pursuant to the April 21, 1972, request from the Chairman, Conservation and Natural Resources Subcommittee, House Committee on Government Operations, and agreements reached with the Chairman's office, we obtained data on individual oil spills on the Outer Continental Shelf (OCS) from March 1971 through February 1972. We also obtained requested information on the adequacy of the Department of the Interior's regulation and inspection of OCS activities to prevent oil pollution. At the direction of the Chairman's office, we did not obtain formal comments from the Department of the Interior on our report, but we discussed its contents with Department officials.

The Outer Continental Shelf Lands Act (43 U.S.C. 1332) provides that the United States has jurisdiction over OCS submerged lands which consist of all submerged lands seaward and outside of State waters. The OCS generally begins about 3 miles from the coastline of each State and, at its widest point, extends as far as 132 miles into the Gulf of Mexico. The act authorizes the Interior to lease such lands for certain purposes, one of which is to produce oil and gas, and to regulate OCS oil and gas operations to prevent waste and to conserve natural resources. The Department's Bureau of Land Management executes the leases of OCS lands, and its Geological Survey is responsible for regulating oil and gas operations on the leased lands.

The Survey carries out its responsibilities through two offices, one having jurisdiction over the Gulf Coast region and the other over the Pacific region. In the Gulf Coast region, approximately 1 million barrels of oil a day are produced from about 1,800 structures (see p. 8 for an illustration of an OCS structure) on about 108,000 square miles off the Louisiana and Texas coasts. This production constitutes approximately 92 percent of the oil produced on Federal OCS leases. The remaining 8 percent is produced in the Pacific region from five structures in the Santa Barbara Channel off the California coast.

The Gulf Coast region is subdivided into three districts (Districts 1 and 2 in Lafayette, Louisiana, and the New Orleans District in Metairie, Louisiana) which supervise operations in the Gulf of Mexico. The Santa Barbara District of the Pacific Coast region is responsible for operations in the Santa Barbara Channel.

Among other duties, the regional oil and gas supervisors, who head the Survey's regional offices:

--Represent the Secretary of the Interior in dealings with oil companies and the public.

--Inspect oil and gas operations.

--Issue OCS orders regulating operations on the OCS, subject to approval of the Chief of the Survey's Conservation Division in Washington, D.C.

--Suspend any operation which, in their judgment, threatens immediate, serious, or irreparable harm or damage to life, the environment, property, or the oil or gas deposit. They also approve or order suspensions in the interest of conservation.

--Suspend any operation for failure to comply with applicable law, lease terms, regulations, or OCS orders.

--Recommend lease cancellation to the Secretary, through the Survey's Director, whenever a lessee fails to comply with regulations.

In addition to regulating oil and gas leases under the authority of the OCS Lands Act, the Survey and certain other Federal agencies are responsible for removing oil under the National Contingency Plan, issued in August 1971 by the Council on Environmental Quality pursuant to the Federal Water Pollution Control Act (33 U.S.C. 1161). This plan provides for a coordinated response by Federal agencies to polluting spills in all U.S. navigable waters, including offshore waters from the 12-mile limit to the shoreline.

Under the Contingency Plan, the Departments of Defense, the Interior, and Transportation, and the Environmental Protection Agency (EPA) are designated "primary agencies" as they have primary responsibility and resources to promote effective operation of the plan. By a memorandum of understanding dated August 16, 1971, Interior and Transportation have delineated their respective responsibilities under the plan on spills originating from OCS operations:

--Interior's Survey shall have exclusive authority for coordinating and directing measures to abate the source of pollution.

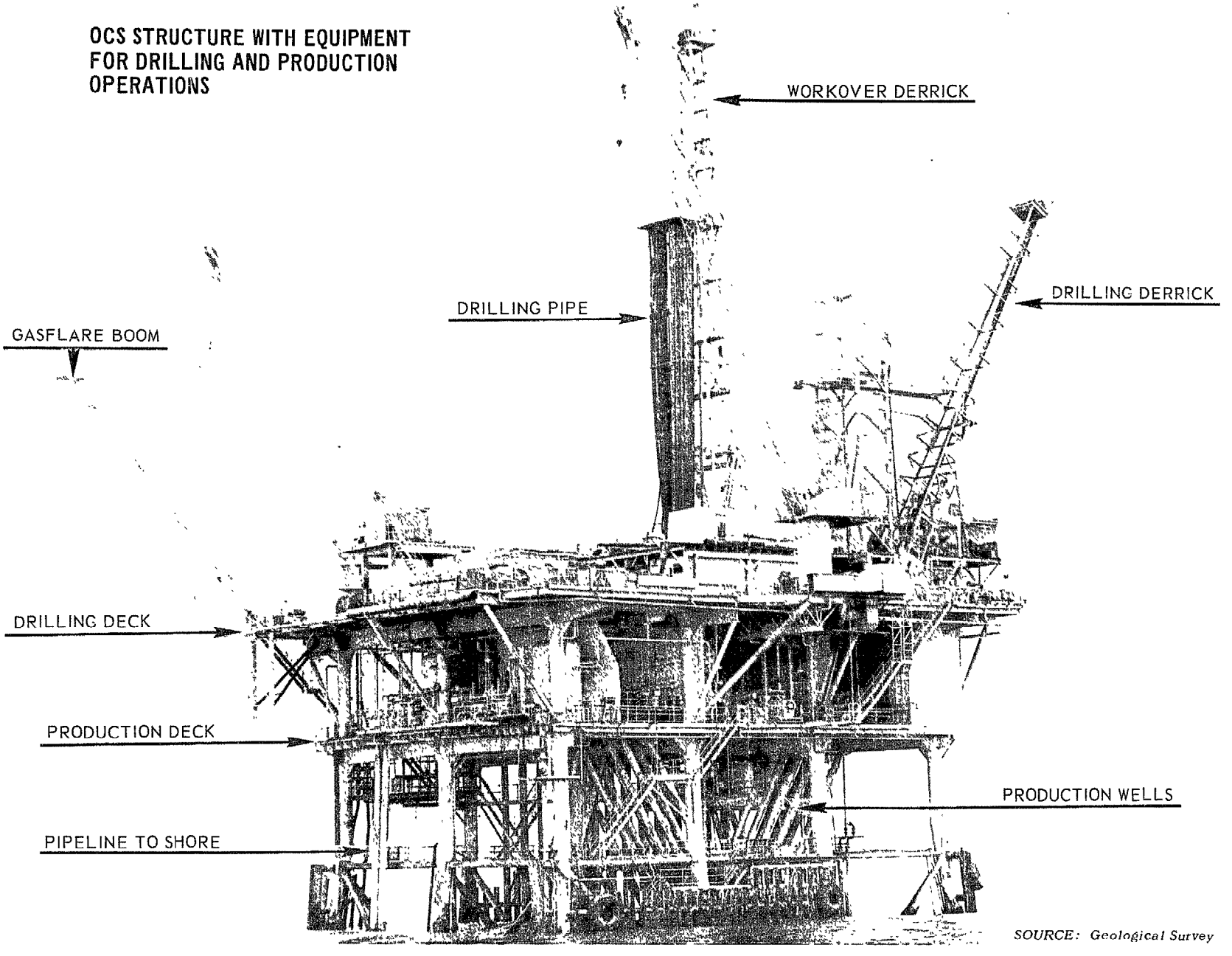
--The U.S. Coast Guard, which is part of the Department of Transportation, shall furnish the on-scene coordinator with authority as provided by the Contingency Plan

and shall coordinate and direct the measures needed to contain and remove the pollutants.

EPA is responsible for assuring optimum national level coordination among Federal agencies. EPA is also responsible for furnishing the on-scene coordinator and assuring regional coordination for removal action in inland navigable waters. Also, EPA provides technical expertise on environmental pollution control techniques, including assessment of damages and environmental restoration.

The President's energy message of April 1973 directed the Secretary of the Interior to triple by 1979 the annual amount of acreage leased on OCS for drilling oil and gas. We therefore believe that the need for improved regulation and inspection of OCS operations takes on added significance.

OCS STRUCTURE WITH EQUIPMENT FOR DRILLING AND PRODUCTION OPERATIONS



SOURCE: Geological Survey

CHAPTER 2

DATA ON INDIVIDUAL OIL SPILLS

The Survey's records showed that, from March 1971 through February 1972, lessees reported 26 spills of more than 10 barrels, all in the Gulf of Mexico. In accordance with the Subcommittee's request, we obtained pertinent information on each spill, including the quantity spilled, the damage caused, the cost of cleanup, and the enforcement actions taken.

The Department's Bureau of Land Management recently concluded that the full impact of oil spills from OCS operations on the environment was not well understood, and it therefore arranged for a special project team to study the problem in detail.

Our review of Survey enforcement actions for violations of OCS regulations showed that enforcement procedures and practices have to be strengthened in several respects.

MAGNITUDE OF SPILLS

From March 1971 through February 1972, the lessees engaged in OCS oil operations on Federal leaseholds in the Gulf of Mexico reported to the Survey 26 oil spills of more than 10 barrels (one barrel = 42 U.S. gallons) totaling about 9,600 barrels.[1] Pertinent information showing date, lessee, location, and estimated quantity of oil spilled is shown in appendix II. The location of each spill is shown on the map in appendix III.

No oil spills exceeding 10 barrels were reported from OCS operations in the Pacific region during the same period. However, a significant amount of natural seepage had occurred each day in the Santa Barbara Channel. The Survey identified more than 60 natural seeps in the Santa Barbara Channel; the best known and most active is in the Coal Oil Point area, where an estimated 50 to 70 barrels seep each day.

We inquired about the total number of oil spills in and around U.S. waters during 1971. Survey statistics showed that there were 1,283 spills totaling 2,678 barrels from oil operations on the OCS. This amount, plus 39,025 barrels spilled during January through April 1971, makes up part of the

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[1]The 26 spills included one spill of about 52,700 barrels which started in December 1970, extended into April 1971, and discharged an estimated 7,900 barrels during March and April 1971.

52,700 barrel spill included in Survey's 1970 statistics. The Coast Guard reported 8,522 oil spills totaling about 210,000 barrels in and around U.S. waters, excluding the OCS. On the basis of these statistics, spills on the OCS represented 13 percent of all spills and 16.5 percent of the volume of all oil spilled during 1971.

Appendix IV shows data on all oil spills in 1971. Appendix V shows a monthly analysis of oil spills on the OCS reported to the Survey for the 18 months ended June 30, 1972.

FEDERAL COSTS FOR CLEANUP

According to Survey, EPA, and Coast Guard officials, their agencies did not incur any direct costs for cleaning up the 26 spills. These agencies did, however, incur administrative costs for monitoring the cleanup or investigating the causes of the spills. Most of the costs were for transportation and salaries. From payroll, travel, and other cost records, we identified the following costs incurred by these agencies.

Agency (note a)	December 1970 Shell spill	October 1971 Amoco spill	Other 24 spills	Total 26 spills
Survey district offices	$ 89,775	$26,332	$4,274	$120,381
Coast Guard district	443,749	24,341	-	468,090
EPA regional office	36,295	6,262	-	42,557
Total	$569,819	$56,935	$4,274	$631,028

[a]The estimate for EPA does not include costs of $128,933 for contracts to study the effects of the Shell spill. The estimates for Survey include only the costs incurred by the district offices because data on costs incurred by the regional and Washington offices were not readily available.

The OCS Lands Act contains no provisions that lessees shall be liable for damages and cleanup costs arising from oil and gas operations under an OCS lease. However, Department regulations provide that a lessee is responsible for controlling and removing a pollutant arising from drilling or production operations which damage or threaten to damage aquatic life, wildlife, or public or private property.

Officials of the three agencies informed us that the agencies did not recover their administrative costs from lessees because they believed that neither the OCS Lands Act nor the Federal Water Pollution Control Act authorized recovery of administrative expenses if the lessee cleaned up the spill.

PROPERTY AND ENVIRONMENTAL DAMAGE

EPA records show that possible damages from oil spills include:

--Fouling boats and marine structures.

--Creating fire hazards.

--Fouling recreational beaches.

--Damaging bird life.

--Damaging oysters and other shellfish.

--Damaging fish and other fauna.

--Damaging plant life.

Survey and EPA officials told us that no field studies were conducted to determine whether property or the environment was damaged from 25 of the 26 spills. However, studies were made on the effect of the largest of the reported spills, which started in December 1970 on one of the Shell Oil Company's structures and continued through April 1971.

An internal EPA report on the Shell spill showed that oil was reported on beaches and shorelines on at least 26 days, but, as the tides and the winds changed, the oil was removed from the beaches and eventually dispersed in the Gulf. The report stated that visual observations for damage to birds, fish, and wildlife were negative and that reports of a small number of birds being killed by oil were not confirmed as resulting directly from the spill. The report concluded that the only short-term effect of the spill was the loss of use of the beaches while oil was on them and while they were being cleaned.

EPA awarded three contracts to private research organizations to obtain information on the long-term effects of the Shell fire and spill. One of the contractors summarized the results of these contracts in a January 1972 report which concluded that evidence of hydrocarbon in the water column and in the sediments and the damaged gill tissues of bottom-dwelling and pelagic (i.e., oceanic) organisms strongly implied environmental stress from crude oil. Also the report mentioned that

the absence of adult marine crustaceans and settling of larvae indicate a continuing environmental stress in the sediment; however, the large numbers of planktonic (i.e., floating) larvae indicated that marine life in the area may have been recovering.

In August 1972, during public hearings held by the Bureau of Land Management before the December 1972 sale of oil and gas leases off the Louisiana coast, the Shell Oil Company presented critiques of the EPA-sponsored studies by three scientists who were recognized authorities on the effects of oil pollution. The Bureau concluded in its environmental impact statement that the critiques left little doubt that the "integrity" of the EPA-sponsored studies was questionable.

The Bureau's environmental impact statement pointed out that findings from independent studies of nine recent major oil spills varied, from conclusions that no permanent damage had occurred to conclusions that oil had done great immediate and long-term harm.

The statement mentioned the following factors that may act individually or in combination to produce biological damage after an oil spill.

--Type of oil spilled.

--Volume of oil spilled and the area over which it can spread.

--Physiography of the area of the spill, such as the effects of tidal range and currents.

--Weather conditions at the time of the spill. Heavy rains may place a strain on animals in the area by decreasing salinity while, at the same time, unusually high amounts of silt and turbidity in flood runoff waters may increase the rate at which oil settles to the bottom.

--Type of animal and plant life in the area.

--Season of the spill.

--Previous exposure to oil pollution. Animals in areas of natural oil seepage or chronic industrial pollution may have built up tolerances to continual low levels of oil pollution.

--Exposure to other pollutants. If a species is already under stress from one pollutant, a normally sublethal dose of a second pollutant may be lethal.

--Treatment of the spill. The least harmful method is to contain the oil and skim it off the water. Alternatives are available which may cause varying degrees of environmental damage.

The statement concluded that, because continuing objective in-depth studies of the effects of oil pollution in the Gulf of Mexico are sparse, the full impact of oil spills resulting from OCS activity was not well understood. The statement further concluded that detailed studies were urgently needed in those areas which have a long history of leasing and which may be subject to low levels of oil pollution from a series of minor spills.

In response to this need, the Bureau established a project to continually evaluate the effects of oil spills from OCS oil and gas exploration and production in the Gulf of Mexico. This project is being carried out by a team of marine biologists, oceanographers, pipeline engineers, and support personnel who are making studies and compiling data on the short- and long-term impact of oil spills on marine life as well as the environmental effects of pipeline construction resulting from OCS operations. Staffing for this project began in the fall of 1972. Study results were not available when we completed our review in May 1973.

Department officials informed us that studies similar to those in the Gulf of Mexico are being made for the Alaska area and the Pacific and Atlantic coasts. Also, they told us that the Bureau of Land Management has contracted for studies to gather data and analyses to help it administer OCS resources.

ENFORCEMENT PROCEEDINGS

Section 5 of the OCS Lands Act makes any person who knowingly and willfully violates any of the Department's rules or regulations on OCS operations subject to a fine of not more than $2,000 or imprisonment for not more than 6 months, or both. The act also makes the lease subject to cancellation if the lessee fails to comply with the act, the regulations, or the lease.

To cancel producing leases or to fine lessees, the OCS Lands Act requires the Department to initiate judicial proceedings. Nonproducing leases may be canceled by an administrative determination subject to judicial review. An official at Survey headquarters told us that proceedings to cancel a lease or fine a lessee would be initiated only if a "knowing and willful" violation was found.

The Survey determined that in the case of the 26 spills, enforcement proceedings under section 5 were not warranted. Survey officials informed us that, since inception of the OCS lease program, no leases had been canceled for violating OCS orders and the authority to fine lessees had been used only once in 1970 when nine oil companies were fined a total of $2,358,000 for failing to install required subsurface safety devices.

Need for strengthening enforcement action

The Gulf Coast region has established a uniform enforcement policy to apply to all OCS lands in the Gulf of Mexico. This policy prescribes specific enforcement actions for violations of each provision of the OCS orders noted during inspections. The primary enforcement actions consist of writing warnings and stopping operation of specific or all items of equipment until the deficiency is corrected. In addition, the policy provides that the Survey may recommend that the Department's Office of the Solicitor initiate action to have the U.S. District Court fine lessees for failing to correct deficiencies noted during previous inspections. Also, unless the Survey has granted a waiver, a fine may be recommended if the inspector notes that subsurface safety valves have not been installed.

While accompanying Survey inspectors on eight inspection trips of 16 structures in the Gulf of Mexico, we noted that they did not follow prescribed enforcement actions for violations of OCS orders on five of the 16 structures. These violations related to required safety procedures and/or equipment. For example, on one inspection, the Survey technician noted that deck drains used to collect contaminants were not piped to a tank designed to prevent discharge of oil into the water. In this instance, the inspector orally warned the operator, although the prescribed enforcement action called for suspending operations until the deficiency was corrected.

Survey inspectors and headquarters officials informed us that judgment was used in taking enforcement actions against the operators and that the prescribed enforcement action may be altered by circumstances at the time of inspection. We noted, however, that the Gulf Coast region had not provided inspectors any authority specifying the circumstances under which they could alter or waive prescribed enforcement action.

The Survey's Santa Barbara district in the Pacific region used only written warnings for violations of OCS orders. We observed that these warnings were not always effective in bringing about prompt remedial action by the operators.

Our analysis of 76 violations[1] in the Pacific region showed that the lessees took from 7 to 19 days to correct 19 of the violations after they had been issued warnings. The remaining 57 violations were corrected in less that 7 days. Under Gulf Coast region policy, all 76 violations would have required the inspectors to halt production until the deficiencies were corrected. For example, the 76 violations included 12 instances in which subsurface safety devices were leaking. These devices were designed to automatically close the well should blowout conditions (high pressure which could cause an uncontrolled flow of oil or gas from the well) be encountered; major pollution could occur if the devices failed. In three instances, the lessees took a week or more to repair the devices.

Survey officials told us that it was the Santa Barbara district's policy not to require shutting down wells on three of the five platforms in an area where natural oil seepage was a special problem. This policy was started after the 1969 Santa Barbara oil spill when a Presidential task force recommended that oil be pumped as rapidly as possible to reduce pressure and thus curtail natural seepage. The task force recommended that this pumping be consistent with safe practices. Also, Survey officials told us that the no shut-down policy would not apply in a very hazardous situation and would not apply to the two platforms outside the critical seepage area.

CONCLUSIONS

Our observations of selected inspection activities showed that inspectors in the Gulf Coast region did not always follow prescribed regional enforcement actions. The Pacific region's enforcement actions consisted of only written warnings and were not always effective in obtaining prompt correction of deficienices.

Although natural seepage may create special problems in OCS operations in the Santa Barbara Channel, the failure of a safety device, unless promptly corrected, could result in a blowout causing greater pollution than the seepage. We therefore believe the Survey should reexamine the adequacy of enforcing OCS requirements only through written warnings and consider the advisability of halting operations, if necessary, on individual wells, as is done in the Gulf Coast region, for correcting equipment deficiencies.

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[1] Includes all violations reported in the two semiannual inspections of the five platforms in the region made in fiscal year 1972.

RECOMMENDATIONS TO THE SECRETARY OF THE INTERIOR

To insure compliance with Department regulations and minimize the possibility of oil spills, the Secretary of the Interior should require the Survey to:

--Emphasize the need for inspection personnel in the Gulf Coast region to apply prescribed enforcement actions for violations of OCS orders, unless deviations are authorized under circumstances specified by the region and properly documented in each case.

--Reexamine the Pacific region's policy of not halting operations for violations of OCS orders and consider the advisability of ordering shut-downs of individual wells to encourage the operator to promptly correct deficiencies.

CHAPTER 3

INSPECTION OF OCS OPERATIONS

The Survey inspects lessees' operations to determine compliance with OCS orders issued by the regional oil and gas supervisors as one method of supervising oil and gas operations on the OCS. Such orders regulate various aspects of OCS operations, particularly the prevention of damage to, or waste of, natural resources and the prevention of injury to persons or damage to property.

As the Subcommittee requested, we inquired into the Survey's inspection program, with particular attention to the frequency of inspections, the number and experience of inspection personnel, and the quality of inspection efforts and reports.

FREQUENCY OF INSPECTIONS

The Survey's inspection program is geared to the four basic types of OCS oil and gas operations.

--Drilling of new wells.

--Operations of producing wells.

--Workover and wireline operations involving remedial work on producing wells, such as repairing and replacing subsurface safety devices and deepening existing wells.

--Plugging and abandonment activities in which nonproducing wells or wells no longer of economic value are plugged with cement and the structure is removed.

The Survey had issued written policies specifying the frequency of inspections for only production operations. Regarding the drilling of new wells, the practices of district offices in the Gulf Coast region varied from the region's unwritten policy on frequency of inspections. In the Gulf Coast region, the district offices decided how frequently to inspect remedial and abandonment operations. The frequency standard established for inspecting production operations was seldom met in the Gulf Coast region.

The frequency of inspections was not a problem in the Pacific region where only five structures were operating in the Santa Barbara Channel. Inspectors in the Pacific region spent a full day, 7 days a week, observing operations on three

of the five structures and at least 1 day a week on the other two structures. Survey officials stated that Survey headquarters directed the Pacific region to carry out daily and weekly inspections.

Improvements needed in Gulf Coast region

Following are our observations on improvements needed in the Gulf Coast region's inspection practices.

Drilling of new wells

The Gulf Coast region's unwritten policy on inspecting drilling operations was that the drilling rig should be inspected at least once during the drilling of each well. During drilling operations, high pressures may be encountered which could cause a blowout from the well being drilled. Inspections are made to determine that drilling operators use required safety equipment and employ methods which help insure safe operations and minimize oil pollution.

The stated policies of the region's three district offices differed from the region's policy. The New Orleans and Lafayette #2 districts required that drilling rigs be inspected about every 2 weeks, while Lafayette #1 required only a monthly inspection; therefore district inspections would not necessarily cover the drilling of each new well.

Our analysis of inspection records on 50 wells[1] in the Gulf Coast region showed that only 25 were inspected during drilling. District officials told us that they were aware of the region's policy of inspecting the drilling rig at least once during the drilling of each well. An official in Lafayette District #1 stated that the drilling rigs could not be inspected more than once a month because of weather conditions and the long distances to the drilling rigs. Officials in the other two districts said that the policy of inspecting the drilling rigs every 2 weeks would be the same as inspecting each well. We noted, however, that the districts' policies were inconsistent with the region's unwritten policy because drilling rigs may complete more than one well between the biweekly inspections.

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[1]The 50 wells were selected by statistical random sampling from the 807 wells started in the Gulf Coast region during fiscal year 1972.

Production operations

The policies on the frequency of inspecting production operations--which were identical for the Gulf Coast and Pacific regions, as stated in their OCS orders approved by Survey headquarters--provided that a complete inspection of a structure should be made when production begins and every 6 months thereafter to insure that the lessees comply with all OCS orders regarding safety standards and pollution prevention.

In the Gulf Coast region, the districts were not making prompt inspections when production began and were not reinspecting production operations as frequently as the OCS orders required. During fiscal year 1972, there were about 100 structures which began production and about 1,800 other structures which had started production in prior years.

Our analysis of the inspection reports for 20 randomly selected structures which began production during fiscal year 1972 showed that 4 were inspected about the time production began and 13 were inspected between 1 and 5 months after production began. The three remaining structures had not been inspected at the time of our review, although they had been producing for about 8, 6, and 2 months, respectively.

Our analysis of the most recent inspection reports for 97 randomly selected structures which started production before fiscal year 1972 showed that, since the OCS inspection program began in October 1970, 69 of these structures had been inspected twice, 21 had been inspected once, and 7 had not been inspected because they had either stopped producing or had been abandoned. The frequency of inspections averaged approximately 10 months and only four of the structures were inspected within the 6-month intervals prescribed by the OCS orders. The frequency of inspection is summarized in the following table.

Time between inspections	Structures inspected twice
6 months or less	4
7 to 8 months	13
9 to 10 months	14
11 to 12 months	28
13 months or more	10
Total	69

Remedial work on producing wells

The official in the Gulf Coast region responsible for supervising the district offices' activities stated that

workover and wireline operations should be inspected as frequently as drilling and production, because oil and gas under pressure may enter the well during these operations and cause a spill.

District officials stated that inspections were not scheduled but were made when these operations were encountered during drilling and production inspections. District officials also stated that no record or report was made of these inspections because the OCS orders contained no requirement governing how these activities were to be carried out. We discuss needed action by the Survey to develop appropriate regulations in chapter 4.

Abandonment of nonproducing wells

Survey officials in the Gulf Coast region stated that inspections of well abandonments were not regularly scheduled but were made on a spot-check basis. These officials told us that the Survey did not have the manpower to inspect the complete abandonment operation because such an inspection takes about 3 days and that there was very little pollution potential from improperly abandoned wells. The only known case of an improperly abandoned well was one which has been leaking small amounts of gas since 1970. Survey officials said that no corrective action had been taken because there was no pollution.

We could not determine how frequently abandonment operations were spot checked because inspection reports were not prepared. Survey engineering reports showed that 468 wells were abandoned during fiscal year 1972, and 31 spot checks were made. Survey officials, however, stated that all inspections of selected aspects of abandonment operations were not included in the reports and that more than 31 spot checks were made during fiscal year 1972.

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Survey officials in the Gulf Coast region informed us that inspectors spent about 85 percent of their time on OCS inspection duties. The officials explained that the frequency of inspections could not be increased without additional inspectors and additional means of transporting the inspectors to the structures. Since October 1970, each district in the Gulf Coast region has leased two helicopters to facilitate access to the many structures throughout the Gulf.

NUMBER AND EXPERIENCE OF INSPECTION PERSONNEL

The following table shows that the number of engineers and technicians who perform the inspections in each district has increased since the 1969 oil spill in the Santa Barbara Channel.

Number of Engineers and Technicians by District as of June 30

District	1969	1970	1971	1972
New Orleans				
Engineers	2	2	3	4
Technicians	1	7	7	8
Lafayette #1				
Engineers	1	3	3	4
Technicians	1	6	6	8
Lafayette #2				
Engineers	1	3	3	4
Technicians	4	9	9	11
Santa Barbara				
Engineers	2	2	2	2
Technicians	4	6	6	6
Total	16	38	39	47

All the engineers had college degrees in petroleum engineering, and the technicians had varied educational backgrounds ranging from less than high school to college degrees. Nine of the 14 engineers and 19 of the 33 technicians had attended at least one oil-related specialized training course. Except for two technicians and one engineer, all inspection personnel had 1 to 30 years of oil-related experience. These inspectors had been employed by the Survey for up to 19 years, with an average of 4 years' experience.

The Survey had no formal training program for inspectors in either region. Officials in the Gulf Coast region informed us that training was informal and on the job and that inspection personnel attended technical training courses sponsored by the oil industry, such as training in well control procedures. One such course, sponsored by the American Association of Oil Well Drilling Contractors and conducted by Louisiana State University in Baton Rouge, Louisiana, used a well which had been equipped to simulate a "blowout" condition.

Pacific region officials informed us that no program existed for training personnel or updating their skills in the inspection area, but they acknowledged that in-house training, as well as attendance at technical training courses, would be desirable. They commented, however, that fewer oil-oriented training programs were available in the Santa Barbara area than in the Gulf of Mexico area.

QUALITY OF INSPECTION EFFORTS AND REPORTS SHOULD BE IMPROVED

We accompanied Survey inspectors in both the Gulf Coast and the Pacific regions for 15 days to observe inspections. We noted that the Survey had not established adequate instructions for certain types of inspections. Also in some instances (1) not all of the required inspection steps were performed, (2) uninspected equipment was reported as inspected, (3) items of noncompliance were not noted in the inspection reports, and (4) inspection reports were not prepared for certain types of OCS operations.

Our observations are discussed below for the four types of OCS operations.

Drilling operations

The districts in both regions had procedures for making complete and partial drilling inspections. The instructions covering partial inspections did not adequately set forth the prescribed inspection steps, and inspectors making complete inspections did not follow all required inspection steps.

All four districts used inspection forms which served as instructions and as reports. These forms for complete inspections included essentially all applicable requirements of the OCS orders issued by both regions. The forms used by three of the districts for partial inspections included only the major areas to be covered and required no detailed information about the scope of the inspection. The other district (New Orleans) did not use an inspection form for partial inspections.

An inspector in the New Orleans district told us that he performed essentially the same work for partial as for complete inspections. However, the lack of inspection reports precluded an assessment of the scope of the inspections and the compliance of operators with applicable OCS orders.

Our analysis of 50 reports of complete drilling inspections in the Gulf Coast region[1] indicates that often inspectors had not determined, as required, whether the drilling operations observed complied with the provisions of the drilling plans Survey previously approved. The reports did not show that technical information obtained during the inspections was compared with approved plans for the majority of the inspections reviewed.

For example, operators must submit their "mud program" for each well to the Survey for approval. During the drilling process, a special fluid called "mud," which consists of water, clay, and chemical additives, is forced down through the drill pipe and returned up through the casing surrounding the drill pipe under carefully controlled pressure. This constantly circulating mud acts as a safety device to control the pressure of any gas, oil, or water that may be encountered during drilling. If high pressures are encountered during drilling, the weight of the mud is increased to counter the pressure. This mud pressure prevents an uncontrolled flow of oil and gas from the well--a "blowout." Reports on 36 of the 50 inspections reviewed by us did not show that the mud program information obtained during the inspections was compared to the drilling plan approved by the Survey.

A district engineer told us that the inspectors were generally aware of safe drilling requirements and that the comparison of operations with the approved plan was unnecessary. However, the OCS orders require prior approval of drilling plans and there is no assurance that the plans are followed unless the inspectors compare operations with the approved plans.

Production operations

The Pacific and Gulf Coast regions performed both complete and partial inspections of production operations. The complete inspections covered essentially all requirements included in the OCS orders issued by each region. The partial inspections performed by both the Pacific and Gulf Coast regions afforded basic coverage of general requirements, pollution, and safety systems.

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[1]The 50 reports were not selected on a statistical random basis because the universe was unknown.

Our analysis of selected inspection reports in both regions[1] indicated that all required inspection steps were performed. However, on one of the five inspections we observed in the Gulf Coast region, we noted that control valves on one particular type of equipment were not inspected; the inspection report stated that they had been checked and were within tolerance limits. One of the inspectors told us that these valves were checked only occasionally. Survey officials also stated that an OCS order requires operators to test the performance of control valves periodically. We noted, however, that the inspection report form specifically called for checking these items and, as production operations were inspected on the average only once every 10 months, the valves would seldom be inspected by the Survey.

We also observed that the inspectors did not note all items of noncompliance with OCS orders or, if they did, they did not record them in the inspection reports. For example, we noted a leaking valve which the operator repaired after the inspector brought it to his attention, but this was not entered on the inspection report. Survey officials stated that inspectors did not report violations that they considered minor and that the lessee representatives corrected during the inspection.

We believe that the inspection practices discussed above do not insure strict compliance with safety requirements. In November 1972 the Gulf Coast region issued instructions to the districts reminding them to specifically instruct inspectors to report all violations.

Remedial operations

Because the regions had not issued OCS orders governing workover and wireline operations, Survey inspectors did not have specific guidance for inspecting these operations. Inspectors informed us that their inspections complied with general safety provisions of all OCS orders but that inspection reports were not always prepared.

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[1]We randomly selected 87 reports for inspections performed in the Gulf Coast region in fiscal year 1972, and we reviewed the reports for the 7 inspections we observed in the Pacific region.

Abandonment operations

These operations were covered by a specific OCS order which provided guidance to the inspectors. However, the districts did not regularly schedule inspections of these activities and inspectors did not always prepare reports on inspection results.

CONCLUSIONS

Except for inspections of production operations, the Survey had no written policies on how frequently OCS operations were to be inspected. In the Pacific region, there has been no problem in achieving adequate coverage. In the Gulf Coast region, where many structures are spread over a large area, inspections were not made as frequently as standards set by the region and/or the districts required. Also, the Gulf Coast region had not made production inspections as frequently as required.

We believe that the Survey should establish a policy for how frequently each type of OCS operation should be inspected, considering available manpower, transportation, and the risks of spills involved in OCS operations.

The inspection staff has been increased since 1969. About 60 percent of the inspectors had received some specialized training, but the Survey has no formal training program. We believe that, in view of the increasing inspection responsibilities and changing technologies in OCS oil and gas operations, the Survey should consider establishing a formal training program for its inspectors.

The Survey's inspection efforts and reports need improvement in several respects. We believe that the Survey should:

--Establish instructions for partially inspecting drilling operations and for inspecting and reporting on remedial and abandonment operations.

--Issue instructions reminding inspectors to perform all prescribed inspection steps.

RECOMMENDATIONS TO THE SECRETARY OF THE INTERIOR

To strengthen the inspection of OCS operations, the Secretary of the Interior should require the Survey to:

--Establish a realistic policy on how frequently each type of OCS operation should be inspected, considering the resources available and the risks of oil spills involved.

--Consider establishing a formal training program for the inspection staff.

--Issue instructions covering partial inspections and remedial and abandonment operations.

Department officials informed us that they were taking action to implement our recommendations.

CHAPTER 4

REGULATION OF OCS OPERATIONS

The Interior's regulations governing OCS oil and gas operations are contained in the Code of Federal Regulations (30 CFR 250) and are amplified by OCS orders issued by the Survey's regional oil and gas supervisors and approved by Survey headquarters.

The two regions have issued a series of generally similar orders, advising lessees and operators of Federal oil and gas leases of certain basic operating requirements. Of particular importance for preventing oil discharges are orders #2 on drilling procedures, #5 on installing subsurface safety devices, and #7 on pollution and waste disposal.

Order #2 regulates the drilling of exploratory and development wells. It provides that all wells shall be cased and cemented in accordance with certain specifications; blowout preventers and related well control equipment shall be installed, used, and tested; and a mud control program be required to prevent the blowout of any well.

Order #5 sets forth requirements to prevent blowouts of completed wells. It requires that a remotely controlled subsurface safety device be installed, specifies the installation of such devices for various types of wells, provides for testing and inspecting them, and sets forth other requirements, such as maintaining records and making them available to Survey representatives.

Order #7 establishes pollution prevention requirements pursuant to the Department's regulations in 30 CFR 250.43, which provides, in part, that:

> "The lessee shall not pollute land or water or damage the aquatic life of the sea or allow extraneous matter to enter and damage any mineral- or water-bearing formation."

The order contains requirements for pollution prevention, inspection and reporting, and pollutant control and removal.

In addition to enforcing and determining compliance with its regulations, the Survey's supervision of OCS operations includes a system of accident reporting and investigations and the use of pollution surveillance flights by helicopters.

Because we do not have the technical expertise to appraise the adequacy of these regulations, we obtained or reviewed the

opinions of representatives of certain public and private organizations concerned with the effectiveness of the Survey's regulatory activities. We also reviewed the results of recent studies sponsored by the Interior to improve Federal safety and pollution control regulations.

Also, we noted the need for bringing under regulatory orders certain additional OCS operations which could cause pollution but which were not regulated at the time of our review.

OCS OPERATIONS NOT UNDER REGULATORY ORDERS

OCS orders did not cover the following operations which appear to require regulations: (1) control over the erosion of equipment, (2) workover and wireline operations, and (3) concurrent drilling, production, and wireline operations.

Erosion control

Our analysis of the causes, as shown in Survey records, of the 26 selected spills of over 10 barrels and of a sample of smaller spills showed that erosion of pipes and other equipment was a significant contributing factor. Seven of the 26 larger spills and 4 of 20 smaller spills were attributed to failure of equipment caused by erosion. At the time of our review, the Survey had not issued an OCS order requiring lessees to establish an erosion control program but it was considering a requirement that lessees implement such a program for wells having a history of erosion problems.

That sand erosion is a major cause of failure of safety equipment was recognized by the Survey's work group assigned to analyze three recent studies for improving safety and pollution control. The work group recommended that research to develop reliable sand erosion detectors should be carried out, that appropriate inspection procedures should be established, and that the frequency of replacing equipment susceptible to failure should be determined and included in an OCS order. (See the group's eighth recommendation, "wearout prevention," p. 33.)

Workover and wireline operations

The absence of an OCS order to guide inspectors on workover and wireline operations was discussed in chapter 3. Both these operations could cause pollution because the well is exposed to oil and gas reservoirs, and it is possible for oil and gas under pressure to enter the well and cause a polluting spill.

In June 1971, Survey headquarters directed the Gulf Coast region to conduct several workover and wireline inspections to obtain data for use in developing standardized inspection procedures and OCS orders. However, Survey officials told us that an OCS order would not be issued to regulate these operations until the recent studies for improving safety and pollution control regulations could be fully evaluated.

Concurrent operations

OCS orders in effect at the time of our review contained no restrictions on concurrent drilling, production, and workover and wireline operations on a single structure. Survey officials told us that concurrent operations are dangerous because of the confusion caused by numerous operations in a confined area. They informed us, however, that the Survey was considering a revision to the OCS orders which would prohibit concurrent drilling, production, and workover operations.

COMMENTS BY ORGANIZATIONS CONCERNED WITH OCS REGULATIONS

While representatives of the oil and gas industry stated that the Survey was effectively regulating OCS activities, environmental groups stated that the regulations were inadequate to prevent chronic pollution. A State official responsible for environmental protection stated that chronic pollution was not a serious problem in view of the Survey's regulatory controls. EPA officials mentioned several steps that could be taken to improve the Survey's regulatory activities.

The opinions which we believe are representative of the various positions taken are summarized below.

Industry position

Representatives of the oil and gas industry have on several occasions affirmed the adequacy and their general support of the Survey's regulatory activities.

An article in the August 21, 1972, issue of the Oil and Gas Journal (Vol. 70, No. 34) discussed oil and gas producers' comments on revised OCS orders effective October 30, 1970. The article reported the producers' consensus that the Survey was fair in administering its new rules and that its inspectors were competent. The producers considered some of the periodic inspections as burdensome but acknowledged that they prevented laxity and enforced good maintenance, which not only promotes safety but increases the useful life of equipment. The producers cited the paper-handling chores as more troublesome than the actual inspection of equipment and systems.

A statement by the Chairman of the Offshore Operators' Committee, during hearings held in August 1972 by the Interior, on proposed leasing of offshore Louisiana lands mentioned that the Survey's OCS orders deal with every phase of OCS operations and that the Survey conducts frequent unscheduled inspections on all producing facilities in the Gulf. Also, the statement mentioned that operators are required to report all oil spills, even minor ones, and that the requirement keeps all offshore personnel alert.

During hearings held by the Senate Committee on Interior and Insular Affairs in March and April 1972 on OCS policy issues, a representative of the American Petroleum Institute stated:[1]

> "That the OCS regulations, procedures, and practices have been effective is shown by the very low incidence of serious acts of pollution in offshore operations over the years. The U.S.G.S. [Survey] is doing a commendable job and will not allow unsafe operations."

Position of environmental groups

A representative of the Sierra Club told us that he questioned whether the Survey had adequately studied the environmental effects of oil spills. He referred us to testimony of a Sierra Club representative before the Senate Committee on Interior and Insular Affairs in March and April 1972. The representative stated:

> "The chronic type of oil pollution - the routine leaks, drips and spills that occur daily during operation of wells, pipelines, receiving stations or whenever oil is handled - poses as serious a threat to the marine ecosystem as the occasional major accident.
>
> "This type of oil pollution is impossible to prevent despite new laws and harsher penalties. The Department of Interior has great confidence that new regulations regarding blowout preventers and spill control would assure environmental protection during offshore oil drilling. But what type of regulations do you impose for these daily leaks and spills? * * *" (Record of hearings p. 1187.)

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[1]Record of hearings, p. 709.

The representative of another environmental group, the Ecology Center of Louisiana, doubted the effectiveness of regulations to control environmental damage from oil spills. During the August 1972 hearings on proposed leasing of Louisiana offshore lands, the representative pointed out that, barring major breakthroughs in drilling and transfer technology, there is no reason to expect a reduction of oil spillage as a result of increased enforcement efforts as was anticipated by the Interior in its draft environmental statement.

Position of EPA officials

In commenting on the adequacy of the Survey's regulations and inspections of OCS operations, EPA officials referred us to a recent EPA-sponsored contract study entitled "Petroleum Systems Reliability Analysis," which covers offshore and land-based operations and applies to both EPA's and Survey's responsibilities for reducing oil spills and their adverse effects on the environment. EPA officials stated that this contract study would help EPA develop regulations and would help the Survey upgrade OCS regulations regarding water pollution control.

EPA officials said that they were not completely satisfied with Interior's regulations and inspections on the OCS. They offered the following suggestions:

--More specific provisions could be written into the lease agreements regarding spill prevention and contingency plans in case of spills.

--The number of inspectors in the Gulf Coast region may have to be increased in view of the more than 1,800 platforms operating in the Gulf. More inspectors would be able to prevent more discharges of oil and induce lessees to improve their equipment and procedures.

--Better preventive maintenance could be required of the lessees by (1) asking them to submit a preventive maintenance schedule, (2) prescribing a list of parts needed to periodically repair certain equipment, or (3) issuing a specific enforceable OCS order.

Position of State environment official

During the 1972 hearings on proposed leasing of Louisiana offshore lands, an official of the Louisiana State Wildlife and Fisheries Commission stated that his experience in Louisiana indicated that the problem of accidental spills and fires, while spectacular in some instances, had never really constituted a serious threat to the ecosystem. Also,

experience in Louisiana indicated that low levels of chronic pollution have not seriously affected productivity of the fisheries during the past 25 years. He testified that:

> "The amount and frequency of chronic pollution and accidents can now be expected to be significantly reduced since Federally-supervised inspections of leases and drilling operations on the OCS have been greatly increased since the Santa Barbara and Louisiana oil spills and fire."
>
> * * * * *
>
> "Because of these new enforcement and surveillance procedures with increased requirements for fail-safe operations and better engineering standards, I would suggest that the risk of accidents and of careless chronic pollution has been reduced to a point that OCS production is not a serious hazard to the environment."

STUDIES TO IMPROVE OCS SAFETY AND POLLUTION CONTROL

The Department has sponsored three interrelated studies, which were completed between November 1971 and December 1972, to recommend improved safety and pollution control regulations and procedures for OCS oil and gas operations. The Department is reviewing the results of these studies.

1. One study, conducted by a team of systems analysts from the Survey and entitled "OCS Lease Management Study," was completed in May 1972. The study was to define and recommend a combination of regulation, inspection, enforcement, and other related governmental policies and programs that would effectively insure the safety of life and property and the prevention of environmental pollution from oil spills.

2. A second study, conducted by the National Aeronautics and Space Administration and completed in November 1971, examined the feasibility of applying to offshore oil and gas operations advanced engineering techniques designed to increase the reliability of safety and antipollution equipment.

3. A third study, undertaken by a panel of the Marine Board of the National Academy of Engineering, was published in December 1972 under the title "Outer Continental Shelf Resource Development Safety: A view of technology and regulation for the systematic minimization of environmental intrusion from petroleum products."

The Survey's Director appointed a work group to review the findings of the three studies and to recommend appropriate actions. The work group issued a preliminary report in September 1972 and a final report in May 1973.

The work group presented 15 recommendations based on its evaluation of the recommendations made by the studies.

1. Failure reporting and corrective action--Each operator should be required to establish an internal failure-reporting, corrective-action program, including periodic reports on incidents, problems, and failures that have caused an accident, fire, or oil spill; the factual circumstances on the incident; and the corrective actions taken.

2. Accident investigation and reporting--The Survey's accident investigation reports, prepared under a procedure established in April 1971 for oil spills of 15 barrels and over and certain other accidents, which are not now made public, should be subject to public disclosure to develop public confidence in OCS operations.

3. Information exchange--A system should be established for disseminating information among operators concerning equipment failures and accidents.

4. Research and development--A program should be established, with industry cooperation, to encourage and promote research and development of safety and antipollution equipment and systems.

5. Standards and specifications--Also, in cooperation with the industry, additional or more specific standards for safety and antipollution equipment should be prepared, when needed, and incorporated in the Survey's OCS orders.

6. Systems (hazards) analysis--Lessees should be required to submit a hazards analysis before they are granted approval for platforms, pipelines, drilling, and production operations, and to identify operations and equipment critical to the safety of personnel and prevention of pollution. A phased program requiring hazard analysis on existing platforms should also be developed.

7. Engineering documentation--OCS orders should require certain minimum engineering documentation of structural and equipment design to be available at the operator's onshore engineering office and for review by Survey personnel.

8. Wearout prevention--The research and development program should include development of a reliable sand erosion detector--since sand erosion has been a major cause of failure

of safety equipment--and vigorous test and inspection procedures for sand erosion should be included in OCS orders. OCS orders should also include requirements for frequency of inspection and the frequency of replacement for equipment susceptible to failure due to erosion.

9. Training and certification--The Survey should, in cooperation with the industry, set standards and requirements for training industry personnel which would cover (1) safety and pollution prevention and control and (2) the requirements set forth in Federal regulations and orders. Survey field supervisors and inspectors should participate in the training courses.

10. Motivation program--The Survey should encourage industry to promote a safety and antipollution motivation program for all personnel involved in OCS operations.

11. Lease management program--The Survey's regional office should be staffed with personnel experienced in quality management, should institute program procedures similar to those employed by NASA, and should take other steps to make its operations more effective.

12. Inspection procedures--These should be improved and strengthened by various actions. In particular the Survey should:

--Develop and implement an operating procedure to provide uniform guidance to all concerned personnel.

--Expand the scope of the inspections to include other production operations as new OCS orders are written.

--Continue to review and analyze inspection results to modify inspection strategies and to allocate resources in response to changes in the level of lessee activity and compliance.

13. OCS order development--The Survey should establish formalized procedures for developing and revising OCS orders. In general, the orders should specify the objectives to be achieved and incorporate the standards for achievement by reference.

14. Standardization of forms--Operators should be required to use a form similar to that used by the district offices for accident investigation reports. The form should include more detailed information on cause, corrective action, and action to prevent recurrence.

15. Safety and advisory committees--Industry should be encouraged to establish a committee on safety which could

facilitate communication between the operators and the Survey. Also, the Survey should establish a systems (hazards) review committee, composed of key field personnel, which would review accidents and other unsafe conditions and the adequacy of inspections and regulations.

CONCLUSIONS

The above three studies of offshore oil operations have comprehensively covered industry operations and Government regulatory activities and have resulted in numerous recommendations for improvement. The special work group assigned by the Survey to evaluate these recommendations has proposed implementing actions for these recommendations. Such actions should improve the Survey's regulation and inspection functions. As pointed out in chapters 2 and 3, we believe that the Survey should especially emphasize prompt and effective enforcement action for violations of its regulations and strengthening its inspection efforts.

RECOMMENDATION TO THE SECRETARY OF THE INTERIOR

To bring under regulatory control all OCS operations which are within Survey's jurisdiction and which have potential for causing pollution, the Secretary of the Interior should require the Survey, as part of its implementation of the three studies' recommendations, to issue OCS orders for the control of erosion, workover and wireline operations, and concurrent drilling, production, and wireline operations. Department officials informed us that they are taking actions to implement our recommendation.

CHAPTER 5

SCOPE OF REVIEW

We made our review at Survey headquarters in Washington, D.C.; at its regional offices in Los Angeles and New Orleans; and at its district offices in Santa Barbara, New Orleans, and Lafayette.

We reviewed legislation, regulations, policies, procedures, and practices pertaining to the control of oil operations on Federal leaseholds on the OCS.

We reviewed Survey records on inspection, accident investigations, and other regulatory activities; we accompanied Survey inspectors to offshore drilling and production sites to observe their inspection activities; and we interviewed Survey officials at headquarters and field installations.

We obtained comments and data from EPA and U.S. Coast Guard headquarters and field offices regarding their responsibilities involving OCS oil operations. Also, we reviewed or obtained comments by representatives of certain public and private organizations concerned with Federal regulations of OCS operations.

NINETY-SECOND CONGRESS

Congress of the United States
House of Representatives
CONSERVATION AND NATURAL RESOURCES SUBCOMMITTEE
OF THE
COMMITTEE ON GOVERNMENT OPERATIONS
RAYBURN HOUSE OFFICE BUILDING, ROOM B349-B
WASHINGTON, D.C. 20515

April 21, 1972

Mr. Elmer B. Staats
Comptroller General of the United States
General Accounting Office
Washington, D.C. 20548

Dear Mr. Staats:

The Interior Department issues and administers leases for oil production on the Continental Shelf.

In a recent letter to our Subcommittee concerning the Coast Guard's actions under the oil pollution section of the Water Quality Improvement Act of 1970, Secretary of Transportation Volpe said that "the great majority" of oil spills "were from structures on Federal and State leaseholds in the 3- to 12-mile belt beyond the territorial sea which, by virtue of the definition of 'offshore facility' in section 11(a)(11), are structures...not subject to the Act." Secretary Volpe said there were 231 oil spills from such "structures" in 1970. His letter did not include spills which occurred from structures on Federal leaseholds on the Continental Shelf beyond the 12-mile boundary of the Contiguous Zone.

In a letter of April 3, 1969, to the Chairman of the House Public Works Committee, the then Under Secretary of the Interior commented on the pending oil pollution legislation. In regard to Federal leaseholds on the Continentas Shelf, he said (Cong. Rec., April 15, 1969, p. 9018):

> "In addition, the [House] bill does not cover the discharges of offshore facilities located on the Outer Continental Shelf. The Committee report indicates that this omission results from the fact that this Department advised your Committee that we believe we have adequate authority to require Federal lessees on the Outer Continental Shelf to remove discharged oil and to pay the United States for any cost it may incur in the removal of the discharge without any dollar limitations or findings of fault.'

Mr. Elmer B. Staats April 21, 1972

We request that the General Accounting Office conduct an investigation concerning the following matters relating to each oil discharge from a Federal leasehold on the Continental Shelf during the period January 1, 1970 to April 1, 1972:

(a) the date of each discharge;

(b) the identity of the lessee and the location of the offshore facility from which the discharge occurred;

(c) the estimated amount of oil (in gallons) discharged;

(d) the dollar amount of the costs incurred by the United States, acting through the Interior Department or any other agency, "in the removal of the discharge", and the amount thereof recovered by the United States;

(e) what steps the Government is taking to recover any such unrecovered cost from the lessee; and

(f) the nature and extent of damages inflicted by each such discharge on fish and shellfish resources and on public and private property, and an estimate of the dollar amount of such damage. If any such damage was inflicted on Federal property, what efforts were made to obtain recompense, how much was obtained, and from whom?

In general, we would like to know how, and to what extent, the Interior Department is exercising the "authority" referred to in the Under Secretary's letter of April 3, 1969. We would also like to know in the case of each discharge, what the United States has done, or plans to do, to institute enforcement proceedings against the lessee under section 5 of the Outer Continental Shelf Lands Act (43 U.S. Code 1334).

Following the disastrous discharge of oil off Santa Barbara, California, in 1969, the Interior Department took steps to improve its regulations and inspections aimed at preventing oil discharges from Federal leaseholds on the Outer Continental Shelf. As part of this investigation, we request that you determine whether, in practice, these regulations and inspections, including related procedures, are adequate. We would also appreciate your examining the procedures, extent and frequency of inspections, the number and experience of personnel used for such inspections, and your appraisal of the quality of their inspection efforts and reports.

Mr. Elmer B. Staats April 21, 1972

We request that the GAO provide to us a report of your findings and recommendations.

Please advise us how long it will take the GAO to complete this investigation and provide a report to us. We would appreciate having the report as early as possible.

Sincerely,

HENRY S. REUSS
Chairman
Conservation and Natural Resources
Subcommittee

APPENDIX II

INFORMATION ON 26 OIL SPILLS

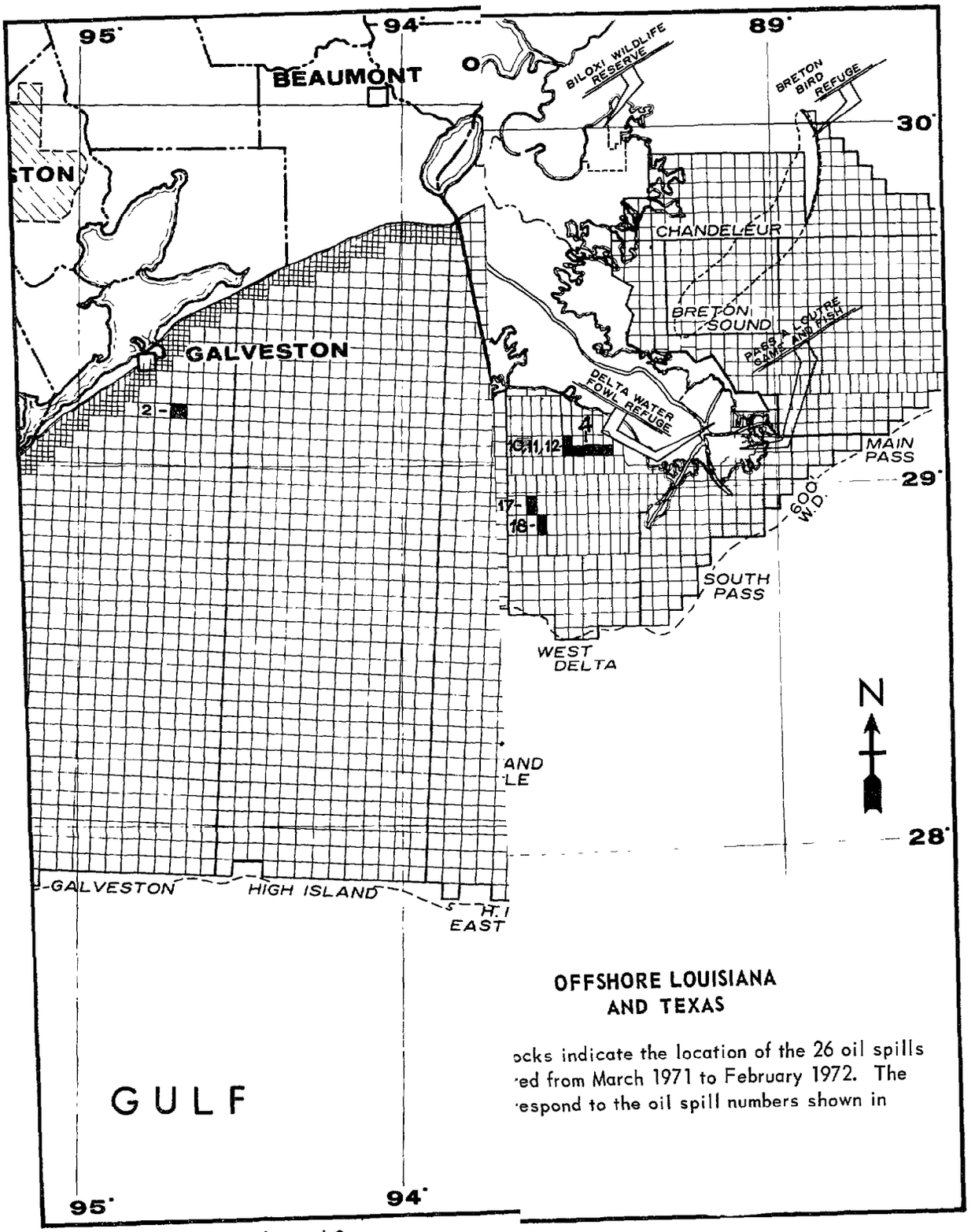
EXCEEDING 10 BARRELS

MARCH 1971 THROUGH FEBRUARY 1972

Date	Location (all in Gulf area)	Estimated quantity (barrels)	Lessee
1. February 14, 1972	Ship Shoal	30	Union Oil Company of California
2. December 9, 1971	Galveston	50	Chambers and Kennedy
3. December 17, 1971	Eugene Island	80	Gulf Oil Corporation
4. November 14, 1971	West Delta	70	Chevron Oil Company
5. October 16, 1971	South Marsh	20	Gulf Oil Corporation
6. September 21, 1971	Ship Shoal	15-30	Shell Oil Company
7. August 13, 1971	South Timbalier	50	Placid Oil Company
8. July 20, 1971	South Pelto	100	Chevron Oil Company
9. July 5, 1971	Ship Shoal	32	Kerr-McGee Corporation
10. June 21, 1971	West Delta	25	Humble Oil and Refining Company
11. June 28, 1971	West Delta	15	Humble Oil and Refining Company
12. June 29, 1971	West Delta	20	Humble Oil and Refining Company
13. June 9, 1971	Ship Shoal	20-30	Union Oil Company of California
14. June 26, 1971	Ship Shoal	20-25	Union Oil Company of California
15. May 27, 1971	Grand Isle	50	Continental Oil Company
16. May 26, 1971	Ship Shoal	50-100	Union Oil Company of California
17. May 1, 1971	West Delta	14	Continental Oil Company
18. May 29, 1971	West Delta	135	Humble Oil and Refining Company
19. May 15, 1971	Ship Shoal	50	Union Oil Company of California
20. May 16, 1971	Ship Shoal	15-25	Pure Transportation Company
21. May 26, 1971	Ship Shoal	10-15	ODECO
22. April 5, 1971	Ship Shoal	200	Amoco Production Company
23. March 26, 1971	South Timbalier	25	Chevron Oil Company
24. March 23, 1971	Ship Shoal	25	Shell Oil Company
25. October 1971	Eugene Island	400-450	Amoco Production Company
26. March and April 1971	South Timbalier	[a]7,905	Shell Oil Company
Total quantity of oil spilled (note b)		9,571	

[a]This spill started in December 1970 and, until stopped in April 1971, discharged an estimated 52,675 barrels as shown in Survey's records. These records show estimated spillage of 1,115 barrels in March 1971 and 6,790 barrels in April 1971. EPA estimated that between 94,930 and 131,772 barrels were spilled. The primary reason for the difference is that Survey estimated a reduction in the flow of the wells because of bent flow lines and partially closed storm chokes whereas EPA did not make this assumption.

[b]Includes maximum quantities spilled.



OFFSHORE LOUISIANA AND TEXAS

ocks indicate the location of the 26 oil spills
ed from March 1971 to February 1972. The
espond to the oil spill numbers shown in

Source: U.S. Geological Survey

SOURCES OF OIL SPILLS

IN AND AROUND U.S. WATERS

IN 1971

	Incidents		Volume	
	Number	Percent of total	Barrels	Percent of total
A. VESSELS:				
1. Dry cargo vessels	271	2.8	9,957	3.9
2. Tank ships	386	3.9	39,649	15.8
3. Tank barges	828	8.4	28,520	11.3
4. Combatant vessels	261	2.7	10,496	4.2
5. Other vessels	388	4.0	4,289	1.7
	2,134	21.8	92,911	36.9
B. LAND VEHICLES	77	.8	2,410	1.0
C. ONSHORE FACILITIES:				
1. Refineries	188	1.9	52,542	20.9
2. Bulk storage facilities	296	3.0	10,633	4.2
3. Waterfront transportation facilities	382	3.9	14,618	5.8
4. Nontransportation facilities	450	4.6	10,380	4.1
5. Other land transportation facilities	22	0.2	3,809	1.5
	1,338	13.6	91,982	36.5
D. OFFSHORE FACILITIES (not including OCS facilities)	2,381	24.3	15,324	6.1
E. OFFSHORE FACILITIES ON OCS	1,284	13.1	41,703	16.5
F. MISCELLANEOUS	239	2.4	1,453	.6
G. UNKNOWN ORIGINS	2,353	24.0	5,941	2.4
Total	9,806	100.0	251,724	100.0

Source: The number of oil spills shown above were obtained from Coast Guard statistics except that item E was obtained from Geological Survey statistics. Item D differs from the Coast Guard's statistics because it was adjusted by the Coast Guard to eliminate spills included in Geological Survey statistics. Item E is adjusted for the Shell Oil Company spill, starting in December 1970 and ending in April 1971 and included in Survey's 1970 statistics, which discharged an estimated 39,025 barrels during January through April 1971.

APPENDIX V

SPILLS REPORTED BY LESSEES TO THE SURVEY FROM JANUARY 1971 THROUGH JUNE 1972

Month	Gulf Coast region: Number of spills, in barrels, attributed to OCS operations: Less than 1	1 to 3	4 to 6	7 to 10	More than 10	Total	Spills of unknown origin	Pacific region: Number of spills, in barrels, attributed to OCS operations: Less than 1	1 to 3	4 to 6	7 to 10	More than 10	Total
Jan. 1971	110	28	8	1	1	148	160						
Feb. 1971	76	22	7	1	0	106	57						
Mar. 1971	85	25	2	0	2	114	82			(a)			
Apr. 1971	75	39	1	0	1	116	85						
May 1971	67	35	8	3	6	119	81						
June 1971	62	16	3	2	5	88	77						
6-month subtotal	475	165	29	7	15	691	542	9	1	3	1	0	14
July 1971	50	19	4	2	2	77	64	0	0	0	1	0	1
Aug. 1971	69	14	5	2	1	91	85	1	1	0	0	0	2
Sept. 1971	93	21	3	2	1	120	48	2	1	0	0	0	3
Oct. 1971	98	12	2	2	2	116	73	0	0	0	0	0	0
Nov. 1971	77	11	7	4	1	100	32	0	0	0	0	0	0
Dec. 1971	51	6	4	2	2	65	34	0	0	0	0	0	0
6-month subtotal	438	83	25	14	9	569	336	3	2	0	1	0	6
Jan. 1972	62	19	0	2	0	83	32	3	0	0	0	0	3
Feb. 1972	81	4	2	0	1	88	29	0	0	0	0	0	0
Mar. 1972	76	17	11	1	2	107	66	0	0	0	0	0	0
Apr. 1972	79	16	5	0	0	100	59	0	0	0	0	0	0
May 1972	71	18	3	0	0	92	83	0	0	0	0	0	0
June 1972	72	16	1	3	2	94	45	0	0	0	0	0	0
6-month subtotal	441	90	22	6	5	564	314	3	0	0	0	0	3
Total	1,354	338	76	27	29	1,824	1,192	15	3	3	2	0	23

[a]No data on the number of spills for this 6-month period were available. The totals were estimated by Survey officials in the Santa Barbara District.

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