REPORT OF THE OCS POLICY COMMITTEE SUBCOMMITTEE TO REVIEW ANALYSES OF THE EXXON VALDEZ OIL SPILL

Approved by the OCS Policy Committee
May 23, 1990

REPORT OF THE OCS POLICY COMMITTEE SUBCOMMITTEE TO REVIEW ANALYSES OF THE EXXON VALDEZ OIL SPILL

Approved by the OCS Policy Committee
May 23, 1990

REPORT OF THE OCS POLICY COMMITTEE SUBCOMMITTEE TO REVIEW ANALYSES OF THE EXXON VALDEZ OIL SPILL

TABLE OF CONTENTS

INTRODUCTION

At its meeting in Vienna, Virginia, in April 1989, the Outer Continental Shelf (OCS) Policy Committee formed a subcommittee to review analyses of the March 24, 1989, EXXON Valdez oil spill and to make recommendations to address the policy implications for the OCS oil and gas program. The subcommittee included representatives from a wide range of States, from industry, and from the environmental community (see Appendix I for a list of subcommittee members).

The Policy Committee of the OCS Advisory Board provides policy advice to the Secretary of the Interior on discretionary functions of the OCS Lands Act including all aspects of leasing, exploration, development, and protection of the natural and mineral resources of the OCS. The Policy Committee includes one policy-level member from each of the 23 coastal States and Pennsylvania who is nominated by the Governor and appointed by the Secretary. There are also 14 discretionary members appointed by the Secretary for their expertise in disciplines affected by the OCS program. The appointments are balanced in terms of background, constituency, points of view, and functions of the Committee. Federal ex officio members come from the Departments of the Interior, Defense, Energy, Commerce, Transportation, and State, and the Environmental Protection Agency (EPA).

Although the oil spilled by the EXXON Valdez was not from the OCS, the spill reinforced public fears about the entire issue of oil and water, including OCS activities. One politician commented, "The distinction between sources of spills is a distinction without a difference in political terms." This appears true of public perception also. Indeed, despite its good safety record[1], the OCS oil and gas program was severely affected by the oil spill in terms of immediate congressional action on moratoria and expressions of public concern. Public calls to halt oil tankering were not nearly so numerous as those to curtail the OCS program.

Contrary to public opinion, however, curtailing the OCS program will reduce neither the amount of tanker traffic in U.S. waters nor the risk of oil being spilled in the marine environment and reaching shore. In January 1990, imports provided about 54 percent of the oil delivered in the U.S., up from 46 percent in January 1989.

---

[1]From 1981 through 1989, over 3 billion barrels of oil were produced from the OCS, and a total of 33,942 barrels were spilled. This is a spill rate of 1 barrel of oil spilled for every 100,000 produced, or .001 percent. A comparable spill rate is not available for imported oil carried by tanker. However, from 1981 through 1989, over 13 billion barrels of oil were imported, primarily by tanker. Tankers carrying both imported and domestic oil spilled 1.03 million barrels of oil during the period 1981 to 1989. Thus, in absolute terms, OCS oil production is a negligible source of oil spills compared to tankers. A related consideration is that the OCS is a major source of natural gas production, providing about 25 percent of the nation's natural gas supply. While natural gas production entails some hazards, oil spills are not among them.

Nearly all of this oil is brought to the United States in tankers. Thus, unless consumption declines or domestic oil production increases, tankered imports will continue to increase, which increases the risk of tanker spills.[2]

The subcommittee reviewed a vast amount of the material available during the year following the spill, from chronologies and daily accounts of the spill response effort to detailed analyses of nearly every aspect of the spill and the response to it. A list of the major documents reviewed is found in Appendix II. The most important of these were the May 1989 report to the President from the Secretary of Transportation and the Administrator of EPA, the January 1990 report of the Alaska Oil Spill Commission, a September 1989 management analysis of the spill by the Center for Marine Conservation, a May 1989 Minerals Management Service (MMS) oil spill response task force report, and the June 1989 American Petroleum Institute task force report on oil spills. The subcommittee met four times over the 13-month period. In addition to reviewing documents, the subcommittee heard presentations from Buck Wynne, Chairman of the Texas Water Commission, on the findings of the Texas Governor's Oil Spill Advisory Committee and from Esther Wunnicke, Vice Chair of the Alaska Oil Spill Commission (created by the Alaska legislature), on that group's findings.

Based on this effort, the subcommittee agreed on general principles that are the foundation for the recommendations in this report. Given that spills will occur even with the best safeguards, the subcommittee concluded that **a credible national spill prevention and response program for both OCS and non-OCS oil spills in the marine environment is needed to create the political climate for a viable OCS program**. Eight essential elements of such a program were identified:

I. A demonstrated commitment to prevent oil spills.

II. A demonstrated oil spill response capability, especially a command/control structure and decision process adequate to insure timely, coordinated response with clear roles and responsibilities for local, State, and Federal Government and the private sector.

III. Adequate characterization of the marine and coastal environment, including both information and analysis, accessible to key decisionmakers.

IV. The capacity to restore economic and environmental resources as quickly as possible if damage occurs.

---

[2]The subcommittee did not address a number of important issues because they were beyond its charge. These include energy conservation, alternative energy sources, and other mechanisms for reducing consumption as well as the economic effects of increasing imports. These issues should be addressed as part of the national energy strategy which the Department of Energy is developing.

V. Appropriate and timely compensation for damaged parties.

VI. A mechanism for research on oil spill impacts.

VII. A meaningful role for all interested and responsible parties, including the public, in as many of these activities as possible, from oil spill prevention and contingency planning to environmental oversight of ongoing operations and participation in clean up and restoration activities.

VIII. Funding at appropriate levels for all of the above.

Recommendations are presented in this report to address six of these eight elements. No recommendations are presented on elements IV and V, and the sources of funding under element VIII are not identified. All of these are covered in legislation pending in Congress and have, in fact, been among the most extensively debated aspects of that legislation. The subcommittee believed it had little to offer on these subjects beyond what has been considered in the development of the legislation. The recommendations included in this report cover oil spill prevention and response issues that either have not received adequate attention in the national debate[3], or matters where our contributions may help to inform that debate.

Despite its safety record, the public image of the OCS oil and gas program is that it is as dangerous as tanker transport of oil and that the two are linked much more than the slight overlap that exists now when OCS oil is transported to shore by tankers.[4] Therefore, the Secretary should both address areas for improvement in the OCS program and consider ways to improve the safety of marine transportation of oil in general, to help re-establish the credibility of the OCS program. Recommendations in this report cover both categories. Recommendations on the OCS program are presented first, beginning on page 5. More general recommendations to improve the national oil spill prevention and response system begin on page 12.

While many of the general recommendations may be outside the Secretary's purview, the Committee recommends that he be an advocate for these changes within the Administration. Further, the Secretary should be aggressive in bringing these recommendations to other appropriate groups, including the Congress, the

---

[3]The subcommittee recognized that limited liability and small penalties under the Clean Water Act (CWA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) act as a disincentive to investment in spill prevention. Also, liability is ultimately a public policy issue. In the event of accidents, should full financial responsibility be shouldered by the party responsible, by the full industry, or by all those in society who benefit from the activity or product? Resolution of this issue is key to resolution of the funding mechanism to implement many of the changes needed to improve the safety of oil transportation and the capability to respond effectively to oil spills.

[4]In frontier areas, early production is tankered to shore. If sufficient reserves are discovered, pipelines are laid to move the oil to shore.

States, and industry, to help restore credibility to the OCS program, to protect the many natural resources for which he is responsible, and to help protect the marine and coastal environment. To the extent this report contains useful information and conclusions that may not be readily accessible elsewhere, the Secretary can contribute to improving our national ability to move oil safely and respond to accidents effectively by making these recommendations available to others.

RECOMMENDATIONS

OCS Program

I. A demonstrated commitment to prevent oil spills.

Recommendation 1: NATIONAL POLICY ON OIL SPILL PREVENTION

Prevention of oil spills from exploration, production, and transportation needs to have a higher profile and priority within the Federal Agencies that manage and regulate the OCS program, for the public, for operators, and for the States.

Analyses reviewed were unanimous in their emphasis on the importance of prevention. The report of the Alaska Oil Spill Commission was representative: "Prevention is the only way to protect the oceans and coastlines from spills. Once it reaches the water, spilled oil is extremely difficult to contain and collect, even under ideal conditions. And the conditions under which oil is spilled are seldom ideal."

While the OCS program includes numerous safeguards to prevent oil spills and incentives to encourage operational safety, this area needs a higher priority within government, in the industry, and to the public. The Secretary should direct the Minerals Management Service (MMS) to develop ways to accomplish this. He should also work with other agencies involved in the OCS program, particularly the Coast Guard and the Environmental Protection Agency (EPA), to increase the emphasis on oil spill prevention, especially in transportation, in terms of funding, staffing, and organizational structure.

Recommendation 2: PIPELINE SAFETY

As part of the general analysis of the safety of marine transport of oil, the Secretary should reevaluate the integrity and safe operation of offshore pipelines carrying OCS production and implement necessary improvements.

Currently, regulation of pipelines on the OCS is divided between the Departments of the Interior and Transportation. The Department of the Interior regulates pipelines on leased blocks--for example, those running from a satellite operation to the main platform on the block. The Department of Transportation regulates pipelines that carry production from the platform to shore. Negotiations are underway between the two departments for Interior to take over regulation of all OCS-related pipelines up to the Federal-State maritime boundary. The Department of Transportation would retain responsibility for the safety of pipelines landward from that boundary and onshore. The Secretary should ensure that regulations appropriately protect the integrity and safe operation of such pipelines, especially in mature areas where aging pipelines could pose a problem.

II. Oil spill response capability

Recommendation 3: CONSULTATION WITH RRT'S

The Secretary should consult with Regional Response Teams (RRT's) as part of the review of oil spill contingency plans for OCS operations.

At present, no regular consultation occurs between the Interior Department and the RRT's regarding offshore oil and gas activities. The RRT mechanism may be activated, however, in the event of a spill associated with OCS operations. Involving the RRT in review of oil spill contingency plans might improve these plans and would ensure that the RRT is familiar with them in the event they need to be activated.

While the RRT's themselves are not part of the formal review process for oil spill contingency plans, the Coast Guard does review these plans in most OCS regions. The MMS Pacific and Alaska regional offices send contingency plans to the Coast Guard for review. The MMS Atlantic region has a memorandum of understanding with the Coast Guard which provides that a technical review board including the Coast Guard, MMS, EPA, and the National Oceanic and Atmospheric Administration may be called to review these plans. The last time such a plan was reviewed in the Atlantic, the review board occurred at an RRT meeting. In the Gulf of Mexico region, the Coast Guard receives these plans but generally does not comment on them. Implementation of this recommendation would enable all the Federal and State members of the RRT to review oil spill contingency plans.

Recommendation 4: COORDINATION AND DISSEMINATION OF TECHNOLOGY RESEARCH

The Secretary should ensure that Federal oil spill response technology research and assessment is coordinated. Federal Agencies should agree on who should do what research, should share results, and should not duplicate efforts. Adequate funding for necessary work must be available. A clearinghouse is needed on research and assessment being done by the States, by private entities, and in other countries.

At the time of the EXXON Valdez spill, MMS was the only agency in the U.S. Government involved in oil spill response technology research. Other agencies that had been involved in the past, including the Coast Guard and EPA, had dropped out due to lack of money. After the spill, these agencies began to obtain research funding. To ensure needed research is accomplished effectively, a mechanism should be established to set research goals, allocate tasks necessary to reach these goals among the different Federal Agencies (and the private sector, as appropriate), ensure that adequate funding is available for the total research program, and monitor both the effectiveness of Agency efforts to meet the goals and changes needed to the goals in light of research results.

In addition to Federal research in this area, the American Petroleum Institute (API) announcement of industry's intention to create a Petroleum Industry Response Organization included plans for a $35 million research program on oil spill response technology. API also has a $6 million joint 3-year technology research program with MMS. Several States, including Texas, California, Oregon, and Washington have also expressed interest in funding such research. A number of other countries have ongoing oil spill response technology research and development programs, such as Canada, France, Norway, and the United Kingdom.

Legislation pending in Congress on oil spill liability and compensation addresses this issue. Although the House and Senate bills differ in the details, each would create a national oil spill research and

development program and would provide some mechanism for tracking (Senate) or coordinating (House) such research. The Secretary should urge the President to support this aspect of the pending legislation.

The U.S. Coast Guard is taking the lead in developing a new international treaty to address oil spill preparedness and response, including research and development on oil spill preparedness and response technology. The Secretary should support this effort.

The Administration's efforts in dealing with global climate change may be a useful model for research coordination. In the U.S. Global Change Research Program, a central body establishes policies and goals and determines what individual agencies should be doing to meet them. Also, the Office of Management and Budget prepares a budget cross-cut that identifies how agencies are spending money on this issue, whether it meets the overall goals of the program, and if funding is distributed appropriately. Similar budget cross-cuts have been undertaken for other programs involving a number of different agencies, including Arctic research. The Secretary should investigate whether this approach would be helpful in oil spill response technology research and development and, if so, recommend to the President that it be implemented.

III. Adequate environmental information and analysis

Recommendation 5: ENVIRONMENTAL INFORMATION FOR OIL SPILL RESPONSE PLANNING AND OCS DECISIONMAKING

The Secretary should work with the OCS Advisory Board to reach a better understanding of what constitutes an adequate level of environmental information for oil spill contingency planning and response as well as for all OCS decisionmaking and should ensure that environmental studies to gather such information are funded well in advance of decisionmaking.

Many of the reviews of the EXXON Valdez spill cleanup effort noted the importance of gathering environmental information to assist in planning future oil spill response efforts. For example, Texas noted the importance of weighing the environmental impact of possible shoreline cleanup methods in making decisions about which method to use. Such impact cannot be determined without an adequate characterization of the existing environment. The same can be said of wildlife protection and rehabilitation plans as well as protection and restoration plans for other environmental and economic resources.

Information about the environmental and economic resources of areas that might be affected by OCS activities is important not just for oil spill contingency planning and regulating operations but also for leasing decisions. Disagreement exists about what constitutes an adequate level of information for making decisions at each step of the OCS program. For example, the National Academy of Sciences report, The Adequacy of Environmental Information For Outer Continental Shelf Oil and Gas Decisions: Florida and California "concluded that the available scientific and technical information bearing on potential environmental impacts is currently inadequate for decisions about development and production in all three OCS lease sale areas" considered in the report. They concluded that information for leasing was of varying levels of adequacy for the three areas. A number of States have also expressed concern about the adequacy of environmental information for OCS decisionmaking.

The Secretary should work with the Advisory Board in determining the adequacy of information. Both the Scientific Committee and the Regional Technical Working Groups are already involved in the Environmental Studies Program and thus are appropriate sources of guidance. Although not as

involved in the studies program, the Policy Committee could serve as a forum for ensuring that this question is resolved on a national rather than a State-by-State basis.

Recommendation 6: INFORMATION ON OIL TRANSPORTATION IN LEASE SALE DECISIONS

The Secretary should give a higher level of attention both in planning the leasing program and in individual lease sales to information about the size of the risk to the environment from transporting existing imports of oil into a region and from transportation of OCS production to shore. This information should also receive significantly more attention in public education efforts.

Marine transportation of oil is a major source of risk to the environment, regardless of the source of the oil. Many of the States most concerned about potential damage from OCS activities off their shores also import a significant amount of oil to meet the demands of State residents. The amount of oil that might be produced and tankered from the OCS in these areas is generally quite small relative to these imports. While OCS production in most cases will not occur until some time in the future, if at all, information about the level of risk posed by current crude and refined oil imports as compared to the level of risk from OCS production, as well as how much of the State or regional demand might be met by OCS oil, is useful in assessing the potential environmental impacts and costs and benefits of a lease sale.

The public clearly does not understand or appreciate the incremental risk posed by OCS activities as compared to existing oil imports. Public education efforts are needed to clarify the causes, nature, extent, and significance of these risks.

IV. Capacity to restore resources

As noted in the introduction, no recommendations were developed in this area.

V. Compensation

As noted in the introduction, no recommendations were developed in this area.

VI. Oil spill impacts research

Recommendation 7: OIL SPILL IMPACT ANALYSIS

The Secretary should ensure that, before an exploration plan in a lease sale area is approved, adequate plans, information, and protocols are developed for studying the economic, environmental, and social effects of oil spills, including short and long-term effects and lessons to be learned for dealing with future spills. This should include the steps needed to begin a damage assessment under the CWA or CERCLA immediately after a spill. These should be developed by Interior in consultation with the other natural resource trustee agencies and the RRT and should be included in all oil spill contingency plans for operations in that area.

As with all aspects of oil spill response, impact studies are most effective if they are planned before rather than after a spill occurs. Developing such studies before operations are permitted would enable all parties interested in studies methodology and results to participate in planning, including peer review by qualified scientists. It would ensure that effective studies can begin immediately after a spill occurs so that time-sensitive data will not be lost. "Lessons can be learned in each spill that can be applied to reduce the effects of future spills" (Center for Marine Conservation [CMC] report, p. 47). This recommendation would help ensure that these lessons are not lost.

CERCLA provides that, in addition to cost recovery for response and cleanup actions, natural resource trustees may recover damages for injury to natural resources, including the reasonable costs of assessing such injury. Natural resources are defined by CERCLA to be land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any State or local government, any foreign government, or any Indian tribe. The process for recovering such costs involves:

- Determination that a CERCLA or CWA-covered incident has occurred and that resources of the trustee may have been affected;
- Preparation of a damage assessment plan in coordination with co-trustees, the potentially responsible party, and the public;
- Conduct of the damage assessment, including:
  - determining that an injury has occurred as a result of (in this case) an oil spill;
  - identifying the services provided by the resource and the baseline level of such services, and quantifying the reduction in services resulting from the discharge or release; and
  - determining the monetary compensation for injury.

Plans for conducting a damage assessment, should one be required, should be prepared before a spill occurs. This is important to assure that necessary baseline information is available. Also, parties that will be involved in conducting the assessment are frequently also involved in oil spill response and thus not available for planning meetings. The most efficient way to ensure that the necessary advance planning occurs is on a lease sale area basis, before any exploration plans are approved. Damage assessment plans should be subject to review by all the parties that would be involved in planning for damage assessment activities. Damage assessment plans should also be subject to scientific peer review to ensure their integrity.

VII. Public Involvement

Recommendation 8: CITIZEN ROLE

The Secretary should ensure that people and organizations in areas most likely to be affected by OCS operations, including effects from oil spills, have roles in oversight to prevent oil spills, in contingency planning, and in response.

Citizens can have an important role in oil spill prevention and, should a spill occur, in response efforts. The Alaska Oil Spill Commission report underlined the contribution local citizens can make:

> The people living closest to a danger have the most at risk and are the most likely to insure that readiness and alertness are maintained. (p.29)

That report also noted the potential effectiveness of local citizens in responding to oil spills:

> [L]ocal interests, local knowledge and experience with the ocean often made the community-based work force the most efficient available. (p.49)

Ensuring local involvement in oil spill contingency planning, environmental oversight, and spill response should be a shared Federal-State responsibility. In addition to improving the quality of contingency plans and response capabilities, such local involvement gives citizens a sense of control over the risks posed by OCS activities. In general, people perceive as less risky those activities over which they have some control (such as driving a car without a seat belt) than those over which they have no control (such as airline travel).

The Secretary is encouraged to consider a recent development as a potential model for involving the public. The Alyeska Pipeline Service Company has agreed to pay $2 million annually to a Prince William Sound Residents Committee to monitor the company's marine terminal in Valdez for as long as oil flows through the Trans-Alaska pipeline. Alyeska will follow the recommendations of this citizens' oversight group or respond in writing if it disagrees with a position taken by the group. The committee is composed of 15 members who represent native Alaskans, fishing organizations, environmentalists, and residents of the Prince William Sound region.

Recommendation 9: PUBLIC CONFIDENCE IN OPERATIONAL CONTROLS

The Secretary should inform the public about and request comments on OCS safety and response reviews to increase public confidence in the OCS program.

In April 1989, in response to a Secretarial directive, MMS formed a task force to review current oil spill planning, training, drill, and inspection requirements for OCS oil and gas operations. The results of this task force review were presented to the Secretary in May 1989; copies were provided to the Policy Committee. Updates on progress in responding to the task force recommendations have also been provided to the subcommittee. One area not addressed by either the task force or MMS as a whole in implementing the task force recommendations has been public involvement in this review process. While the safety record of the OCS program is good, public concern about the program needs to be addressed. An internal MMS review concluding that the regulatory program is adequate with some changes is insufficient to restore public confidence in the OCS program. The Secretary should undertake a public information effort to let the States, interest groups, and others know what has been done to date in this area and to request comments on the adequacy of these efforts and suggestions for other actions that could be taken.

Because the public sees it as having a vested interest in the OCS program, the Interior Department lacks credibility in internal oversight matters. The results of the Secretary's internal review as it may be modified by public comments should come from the President and be backed by credible action.

Recommendation 10: TECHNOLOGY TRANSFER BEYOND THE TECHNICAL COMMUNITY

The Secretary should share oil spill avoidance and response technology innovations with the States and the public, and especially with members of

the RRT's. The Secretary should ensure that a public information effort is undertaken on what is being done in oil spill avoidance and response technology research.

The purpose of the MMS Technology Assessment and Research (TA&R) Program is to provide a formal technology base for permitting and regulating OCS drilling and production operations, safety and pollution inspections, enforcement actions, accident investigations, and well control training requirements. These studies help to promote safety and prevent pollution. Because the TA&R program addresses the needs of MMS operations personnel, it is not always viewed as being accessible to the States and the public. The results of TA&R studies are disseminated through biennial program reports, special reports such as the proceedings of a workshop on Alaska Arctic offshore oil spill response technology (April 1989), and periodic technology seminars. The Secretary should ensure that studies results are broadly disseminated in a form that is readily accessible to those outside the technology community. This could be done through publications intended for the general public on research plans and results, a public information effort to publicize Federal and other research efforts, and through open, well-publicized seminars developed specifically for State, local, and Federal Agency officials who deal with the OCS program on a less technical level. As discussed under recommendation 4, wide availability of research results could also help to ensure that research money is spent effectively by reducing the likelihood of duplication of efforts. Better dissemination of research results could also contribute to more informed public debate about the OCS program.

VIII. Funding

Recommendation 11: FUNDING FOR REGULATION OF OPERATIONS, OIL SPILL RESPONSE TECHNOLOGY RESEARCH, AND ENVIRONMENTAL STUDIES

To ensure the good safety record of OCS operations continues, the Secretary should assure that adequate funding is available for the MMS offshore inspection, enforcement, training, and drill programs; the TA&R program; and the environmental studies and assessment programs.

In a time of shrinking Federal budgets and difficult trade-offs, maintaining those programs that ensure safe OCS operations should receive very high funding priority. As the EXXON Valdez spill proved, skimping on safety is a false and potentially disastrous economy.

The need for adequate funding for oil spill response technology research and development is discussed under recommendation 4. Recommendation 5 addresses the need for adequate environmental information available well in advance of decisionmaking. This also requires an adequate level of funding over the long term. The Policy Committee supported full funding for the studies program and for the oil spill response program in a resolution of October 19, 1989, which is found in Appendix III.

General

Action to develop a national oil spill prevention and response program in which the public has confidence is essential to the credibility of the OCS program. Much of what is involved in the national oil spill prevention and response system is beyond the Secretary's purview. He can, nevertheless, serve as an advocate of safety and effective response, raising significant issues and making recommendations within the Administration. Many actions are necessary; the following recommendations deal with those that could make the greatest difference in the safety of marine transport of oil.

I. A demonstrated commitment to prevent oil spills.

Recommendation 12: RESPONSIBILITY FOR MARINE TRANSPORTATION SAFETY

The Secretary should encourage the President to give the Coast Guard a priority mission to ensure the safe transport of oil, just as the Federal Aviation Administration has as its primary mission the safety of air traffic. The Coast Guard should receive adequate funding and staffing to carry out this mission.

As noted in the discussion of recommendation 1, oil spill prevention needs a higher priority within the Federal Government. The Alaska Oil Spill Commission compared the nation's air and maritime transport systems and found that "we have built a system that does not tolerate in air traffic anything like the catastrophic failure rate we can expect in the Valdez tanker trade" (p. 5). If a similar rate of catastrophic failures existed in the two systems, "the air transport system would produce 1.5 airline disasters every single day, or 550 per year. The existence of such a high accident rate is evidence that maritime transportation safety has not received sufficient emphasis. This needs to be corrected. The President should direct the Secretary of Transportation to make maritime safety a very high priority. This priority should be reflected in funding and staffing allocations and in additional tools to carry out this mission.

One step the Coast Guard should take to implement this mission is to require training in oil spill prevention responsibilities for all Federal employees involved in regulating oil transportation. The Coast Guard should also require industry to provide safety programs and training for all those involved in production and transportation of oil, including all levels of management. Establishing oil spill prevention as a priority needs to be reinforced by training for management, regulators, and operators on what is involved in safety and oil spill prevention.

The Coast Guard should also require development of oil spill prevention plans and operations manuals for all activities of the oil trade, including terminals, transfer facilities, and pipelines, as well as aboard tankers. While much of the focus of analysis of the EXXON Valdez spill was on the risks of tanker spills, other facilities used in moving oil to market should also be examined to see how safety could be improved. The report to the President from Skinner and Reilly noted that "At this time, there is no specific requirement for the operators of major oil terminal facilities to develop oil spill contingency plans . . . . That Alyeska is required to by the State of Alaska to have such a plan is atypical. Most other states leave contingency planning to industry on a voluntary basis" (p. 10).

The Coast Guard needs the resources to ensure that oil moves safely by sea. The EXXON Valdez spill demonstrated that regulatory authority without enforcement resources is a formula for catastrophe. The Alaska Oil Spill Commission noted:

> The Coast Guard is seriously underfunded and underdirected in the field of oil spill response. The Coast Guard has been given one mission on top of another--most recently drug interdiction, a critically important task--without proportionate increases in appropriations. Thus the Coast Guard is obliged to do too many things for too many people and is not doing at least this one well. (p. 41)

The Policy Committee has expressed concern about the need for adequate support for the Coast Guard marine safety programs on numerous occasions over the past 12 years. In 1978 and 1989, the Policy Committee recommended to the Secretary that he support adequate funding for the Coast Guard's marine safety programs (see Appendix IV). Committee meetings in March and October of 1986 and in April of 1989 included presentations by the Coast Guard covering marine safety programs. In each instance, Committee members expressed concern about insufficient funding and staffing for these programs. The Committee has, since 1978, advised the Secretary that unless more support was available for the Coast Guard, a significant oil spill would occur that would adversely affect the OCS program. This recommendation is consistent with this longstanding advice.

The Coast Guard should be encouraged to establish a career track for marine transportation safety. The goals of spill prevention and adequate and timely response to spills can be better met with trained professionals and continuity in leadership.

Recommendation 13: TANKER AND TRAFFIC SAFETY IMPROVEMENTS

The Secretary should encourage the Administration to pursue improvements in factors that affect tanker movement in congested and hazardous areas, tanker personnel, and vessel design and equipment. Improvements should be pursued nationally and internationally, and U.S. unilateral action should be considered where prompt international agreement is unlikely.

The Skinner and Reilly report and the API Task Force Report on oil spills, as well as others, noted that improvement in these areas could "make tanker operation more pollution resistant" (API, p.ii). Specific areas described in these reports that should be improved include:

- Navigational controls, including the advisability of mandatory Vessel Traffic Systems, pilotage and escort vessels, and tanker-free or tanker-limited zones;
- Manning requirements, including crew complements; crew licensing, training, and certification; and drug and alcohol testing; and
- Tanker equipment and design, including double bottoms/double hulls and automatic pilot.

These issues are addressed in pending legislation. The Administration should both support legislative efforts toward improvements and undertake necessary regulatory and executive efforts in this area.

II. Oil spill response capability

Recommendation 14: COMMAND OF OIL SPILL RESPONSE

A single Federal or State agency should be in charge of directing the response to major spills, depending on the magnitude, geographical extent, and location of the spill. The spiller should not be in charge of directing the response to a major oil spill. In most cases, response to major oil spills should be under Federal control immediately, with an established process for delegating control to the State as warranted. The Secretary should urge the Administration to support legislation to permit this.

While the party responsible for the spill should conduct the cleanup of a major spill, direction of this effort should be a government responsibility. Legislation needed to give government sole authority for directing spill response should also establish a mechanism for determining, immediately after a spill occurs and automatically, if possible, whether this will be Federal or State government. The Coast Guard, in consultation with the States, should establish criteria as to how the decision is made. In most cases, response to major oil spills should be under Federal control, and the RRT should be activated at the same time. Finally, a definition of what constitutes a major spill for the purpose of asserting government control needs to be developed and agreed to by the States, the Federal government, and industry.

One of the major criticisms of the response to the EXXON Valdez spill was that it was disorganized, particularly in the critical early hours and days; decisionmaking was fragmented; and it was at times difficult to find out who was in charge.

> The Exxon Valdez response could be characterized as confused over the issue of responsibility, and the system currently established by Federal law encourages this situation. The law is not clear about who is to do what. The spiller need do only enough to keep the spill from being federalized to carry out its legal responsibilities. This leads to a situation in which confusion, debate, and discussion take the place of needed quick and decisive actions. Every discussion delays the response, and every delay impairs the response, especially in the crucial early hours and days of the spill. (CMC, p. 218)

While API and other groups also recommended that response to major oil spills be directed by the Federal Government, the Alaska Oil Spill Commission noted that "response should be a cooperative effort of government and industry under the direction of either the state or federal government, depending on which one has the stronger interest or can marshal resources more quickly and effectively" (p. 40). Further,

> There is no indication the federal government is inherently better suited than the State of Alaska to respond effectively to an oil spill in Alaska waters. Indeed, the state often will have more response resources than the federal government as well as greater knowledge base concerning local circumstances. The state's resources and expertise generally will be more readily available in the crucial early hours of a spill. (p. 42)

The coastal States play a critical role in responding to accidents that occur within or adjacent to their coastal waters. Most oil spills in State waters are handled through the State's emergency response system.

The Incident Command System used to respond to disasters such as forest fires should be considered as a model for government response to oil spills. This system relies on a professionally trained cadre of people on call to respond should disaster strike. Although they hold full-time jobs,

generally in other areas, they participate together in regular training and drills and are available to respond immediately when needed. This helps alleviate the problems and inherent inefficiencies of maintaining a standing, dedicated government oil spill response corps that may sit idle for long periods of time.

For oil spills, the Incident Command System would involve a nationwide, interagency team with members from State, Federal, and local government and industry that would operate under the direction of the Coast Guard. The team would be trained and carry out regular drills together. They would be activated to direct response to a major oil spill. Who would carry out the actual response activities under their direction would be decided on a case-by-case basis. The RRT would continue to function as an advisor to the spill commander, who would communicate with the members of the command system.

The agency responsible for directing oil spill response must have adequate funding and staffing to play this role and must have a presence in areas where they are likely to be needed. Also, all interested parties must participate actively in the development of contingency plans that will be implemented under the direction of a single designated governmental body. The Administration should support congressional efforts to resolve this issue in pending legislation.

Recommendation 15: IMPROVE OIL SPILL CONTINGENCY PLANS

Contingency plans at all levels should be complete and regularly updated and practiced. All responsible and affected parties should participate in development of national, State, local, and vessel- and facility-specific contingency plans.

Contingency plans are the basic resource available when a spill occurs, and they are often inadequate--too much has to be figured out after a spill. This undercuts the value of the plan, because action must be taken the first day to avoid damage. "Time is the critical factor in all attempts to limit the environmental damage in a major spill by keeping oil off the shore" (Alaska, p. 44).

To ensure that "contingency plans . . . leave as little as possible to be decided or designed during an actual spill response" (CMC, p. 235), they should include:

- Clear lines of authority and divisions of responsibility for all aspects of spill response.
- Detailed information on oil spill response equipment and supplies, including where they are located, how to transport them to where they are needed, and technical details on their use. The level of detail should be appropriate to level of plan, with local plans the most detailed.
- Details of recommended and permitted response, containment and cleanup methods and procedures for specific areas and conditions, including preapproval for use of specific products and techniques (dispersants, in situ burning, etc.).
- Provisions for communications in the response effort, including communication among different parts of the effort and between the area affected by the spill and the rest of the State and country.
- A public information plan for catastrophic spills, "both . . . to control misinformation and rumors and . . . to coordinate with all relevant agencies, in order to assist the OSC and give the public a more accurate picture of the response" (Skinner and Reilly, p. 22).

- A list and the precise location of high priority environmental and economic resources to be protected and what steps are to be taken and equipment used to do so. Maps and photographs may be useful in this effort. For example, some States have maps of coastal resources showing their relative environmental sensitivity that could be used in this effort.

- Detailed policies and procedures on wildlife rescue and rehabilitation.

- Details on disposal of waste from the cleanup effort, including preapproved sites for waste storage and disposal.

- Plans for studying the economic, environmental, and social effects of spills, including short and long-term effects and lessons to be learned for dealing with future spills. This should include the steps needed to begin a damage assessment under the Clean Water Act or CERCLA immediately after a spill.

- Standards for what would constitute an adequate cleanup, particularly for high priority environmental and economic resources.

Developing detailed contingency plans can be done most effectively when all parties with expertise and interest in the success of the plans, including appropriate local, State, and Federal Government agencies, participate.

> Oil spill preparedness is a constantly evolving process of incorporating lessons learned from simulated spills and actual incidents. Contingency planning grows from this continuing distillation of experience, shaping new requirements for response training, drills and exercises, and other resources. (Skinner and Reilly, p. 5)

Different people learn different "lessons." Involving as many relevant people as possible in contingency planning ensures that this information will contribute to oil spill preparedness.

The Administration should support congressional efforts to resolve this issue in pending legislation.

Recommendation 16: DRILLS AND TRAINING

Full scale drills, involving everyone in the chain of command and everyone who would be involved in actual response should be required. The Secretary should urge the Administration to support legislation to permit such drills. To prepare for drills and actual response efforts, all appropriate personnel should be fully trained. What is learned from drills should be incorporated immediately into the plans.

While an effective contingency plan is important, equally vital is the capability to implement it. This is accomplished through oil spill drills to practice the actions called for in the plan and through training in how those actions are to be carried out. Those in decisionmaking positions should be trained in organizational aspects of spill response and the parameters of choices for different response techniques, products, and equipment. Technical personnel, both those in charge of work sites and actual workers, should be trained (including through drills) in the use of equipment and materiel. Further, there should be full-scale response drills involving all levels of the organization and all equipment that would be used in the event of a real spill. If the Incident Command System is adopted for responding to oil spills, then all members of the system should train and drill together regularly and should be involved in drills conducted by others.

Training should involve people with prior spill response experience. Also, when spills occur, they should be used to train as many Federal, State, local, and industry staff as possible, including those

from outside the area of the spill. Finally, government and private staff who would be responsible for in wildlife rescue and rehabilitation should a spill occur should be trained and included in oil spill response drills.

The Secretary should direct MMS to consider the applicability of this recommendation to the offshore oil and gas program, particularly in terms of whether operators should be required to demonstrate their oil spill contingency plans before receiving final signoff on such plans.

Recommendation 17: DOD ROLE

The Department of Defense (DOD) should be involved in oil spill preparedness and response under the direction of the Coast Guard.

The EXXON Valdez spill response demonstrated that DOD has resources and expertise that are valuable to oil spill response. "[The Army] Corps of Engineers and U.S. Navy equipment and workforces were the largest component of public response to the Exxon Valdez spill" (Alaska, p. 41). The Navy provided cleanup equipment and vessels and support vessels including landing craft, helicopters, and tow boats, as well as crews. The Air Force also provided substantial amounts of equipment and support, including satellite ground stations, air traffic control units, and aircraft to transport heavy equipment.

The DOD, especially the Navy, is set up and trained to support large scale emergencies under the Disaster Preparedness Organization. The DOD already has agreements in place to support other Federal Agencies on request in emergency response. Further, DOD is included in regional contingency planning to some extent, for spills for which DOD is responsible. Despite this expertise and involvement, DOD is not now adequately included in national contingency planning, although various DOD Agencies may be called on during response efforts, as they were for the EXXON Valdez spill. This should be corrected, and DOD participation in oil spill contingency plans, training, and drills should be part of its peace-time mission.

Recommendation 18: EQUIPMENT INVENTORIES AND STOCKPILES

The Coast Guard should develop, maintain, and make widely available a computerized, international inventory of oil spill response equipment, including information on its location and appropriate use. Stockpiles should include equipment appropriate for the area in question, in amounts appropriate to deal with a worst-case spill, with information on proper use and repair of likely breakdowns. Finally, equipment stockpiles maintained by different groups should be complementary, so they can be used together in the event of a catastrophic spill.

French observers of the EXXON Valdez cleanup effort noted that EXXON acquired a massive amount of equipment, several times the amount in the entire French oil spill response stockpile. Much of it, however, was unsuitable for the situation at hand. The solution is detailed planning that includes acquisition or at least identification of appropriate response equipment and materiel.

The French also noted that most of the cleanup equipment EXXON obtained came without either instructions for, or technicians to demonstrate its proper use. Also needed but missing were people or instructions on how to deal with likely equipment breakdowns.

Stockpiles should include containment and cleanup equipment and supplies (such as dispersants, booms, etc.) and equipment and supplies needed to deploy and support containment and cleanup efforts.

Finally, coordination should occur between the Coast Guard and PIRO (and, through PIRO, industry cleanup cooperatives) on the location of equipment stockpiles, to ensure they are complementary and are staffed with trained people to use the equipment. Coordination should also occur among localities so their equipment is compatible. This would enable one locality or group to assist another effectively in the event of a spill.

The Secretary should support Coast Guard efforts in planning or underway in this area.

Recommendation 19: RESEARCH AND DEVELOPMENT NEEDED

Research and development is needed on the recovery, treatment, and containment of spilled oil by Federal and State Governments and by industry, and incentives are needed to encourage testing of new approaches that are developed.

Oil spill clean up and response methods and technologies in the U.S. have changed very little over the years. The observation of the Texas Governor's Oil Spill Advisory Committee was typical of comments on this topic:

> The EXXON VALDEZ oil spill in Alaska, and three additional spills in the U.S., have all illustrated the need for development of new technology to effectively contain and recover oil that is spilled accidentally on water and land. (p. V-9)

Incentives to encourage new approaches to oil spill response could include tests and publications to help the States choose applicable remedies (chemical) or procedures (equipment).

Recommendation 20: EXPEDITE APPROVAL OF NEW OIL SPILL RESPONSE METHODS

The Secretary should work with all appropriate agencies and groups, including the States, to identify the barriers to introduction of new products and techniques to respond to oil spills and find ways to reduce or remove these barriers.

The Texas Governor's Oil Spill Advisory Committee raised the concern that equipment and techniques (such as bioremediation) that now exist are not available for use because of the extensive regulatory hurdles to approval by the Federal Government and the States. Included in these hurdles are limits the current permitting process places on experimentation, which need review. The Alaska Oil Spill Commission noted the need for "a continuing, visible process for study, analysis and application of emerging technology" (p. 57) at both the State and Federal levels.

Uncertainty about whether they will reach market also tends to discourage development of new oil spill response products. Thus, in addition to research and development efforts, regulatory streamlining or at least greater regulatory responsiveness could contribute to increasing the effectiveness of oil spill response.

One important aspect of this effort is the problem of differing standards for permitting among the States and between the States and the Federal Government. These are a disincentive to rapid

development and implementation of new approaches to dealing with oil spills. A way should be found to encourage consistency among the States in this area.

III. Adequate environmental information and analysis

No separate recommendations were developed in this area; however, it is discussed under recommendation 15 on oil spill contingency plans.

IV. Capacity to restore resources

As noted in the introduction, no recommendations were developed in this area.

V. Compensation

As noted in the introduction, no recommendations were developed in this area.

VI. Oil spill impacts research

Recommendation 21: STUDIES OF OIL SPILL EFFECTS

The Secretary should urge the trustee agencies under CERCLA to develop plans for studies that would produce a comprehensive picture of each major oil spill's short- and long-term effects and of lessons to be learned to reduce the effects of future spills. These would be in addition to studies necessary to conduct a damage assessment.

> While oil spills are undeniably tragedies, they are also opportunities. Much can be learned from a spill, resulting in a broad, detailed, and integrated understanding of the effects of spills . . . .
>
> In the EXXON Valdez spill, opportunities for broad scientific research were squandered for two primary reasons. First, there was little or no advance planning for taking advantage of the natural laboratory that a spill provides. Thus few researchers were prepared to conduct the studies that would have been helpful. Second, the mandates of the trustee agencies did not include conducting such studies. Consequently, there was no mechanism for conducting them and no funding. (CMC, p. 233)

The only studies mandated after a spill are those narrowly focused on defining the extent and monetary value of damage caused, for legal use in assessing fines or penalties against a spiller. Thus, the process under CERCLA does not provide the means to gather as much information as is available from a major oil spill. Because such spills are, fortunately, relatively infrequent events, advantage should be taken of them when they do occur to learn as much as possible.

VII. Public Involvement

Recommendation 22: CITIZEN ROLE

The Secretary should encourage the States to give people in areas likely to be affected by an oil spill a role in oil spill prevention, contingency planning, and oversight.

This is parallel to recommendation 8 for the OCS program. Local citizens, such as those organized to deal with the OCS program, should be given a role as watchdogs on marine transport of oil. They need training so they can make useful observations, and they should report to a designated person, agency, or organization. Local observers, who have the most to lose in the event of an oil spill, also have a great interest in identifying difficulties before they become catastrophes and thus could be an invaluable resource in oil spill prevention.

The Prince William Sound Residents Committee discussed under recommendation 8 may be a relevant model for consideration in addressing this recommendation.

Recommendation 23: VOLUNTEERS

Volunteers should have a defined role--including what is appropriate and inappropriate--in oil spill response efforts. A training program for volunteers should be in place for implementation immediately in the event of a spill. Plans for crowd control are also needed.

In the EXXON Valdez spill, as in other major spills reaching U.S. shores, many volunteers came forward to offer assistance. In some cases, their assistance could be a valuable part of the overall response effort. For example, the Cordova District Fishermen United offered assistance to the Coast Guard and Alyeska at 6:30 a.m. on the morning of the spill. Neither organization accepted the offer. Nevertheless, the organization took it upon itself to protect the five salmon hatcheries in Prince William Sound from spilled oil. (CMC, pp. 201-202) This group and other fishermen might have been even more effective had they been trained, supervised, and mobilized as part of the overall response effort. "The local experience, knowledge and equipment of a trained volunteer corps should be put to work to help protect local resources" (Alaska, p. 44). "The availability [of local volunteers] should be factored into contingency plans, and necessary training and equipment staging should be undertaken" (CMC, p. 202).

The issue of liability should be addressed for operations involving volunteers, both in terms of damage caused or unacceptable work performed by volunteers and possible injury to them.

Experience with the February 1990 Huntington Beach spill demonstrated that when a spill occurs near a populated area, plans are needed for controlling people who volunteer but are impediments to the cleanup effort. Both crowd control plans and plans for training and using such volunteers in a productive way should be considered.

VIII. Funding

Recommendation 24: FEDERAL FUNDING FOR PREPAREDNESS ACTIVITIES AND OIL SPILL RESPONSE

Federal funding, whether that funding come from appropriations or other sources, should be available for preparedness activities, response, and emergency assistance.

Preparedness activities that should be funded include:

- Development of complete, detailed contingency plans at the Federal, State, and local levels.
- Staffing for Federal, State, and local agencies in charge of and with a major role in oil spill response.
- Research and development.
- Training and drills.

Response activities include:

- Acquisition of equipment and supplies needed to respond to a worst case scenario oil spill and the means to deploy or use them. This includes booms, skimmers, dispersants, vessels, aircraft, and communications equipment.
- Rescue and rehabilitation of wildlife threatened or damaged by an oil spill.
- Damage assessment research mandated under CWA and CERCLA.
- Studies of short- and long-term effects and lessons for dealing with future spills that go beyond damage assessment studies.
- Immediate aid to the local population affected by the spill.

Federal funds for these activities should be available to ensure that they are carried out effectively and consistently nationwide. Further, Federal contingency planning requirements should include States' compilation of natural resource inventories, establishing priorities for resource areas to be protected, access points and location and quantity of other types of support services, etc. They also require preparation of regional/local contingency plans, and identification of local response personnel and training of such personnel. These requirements should be implemented with a funding mechanism similar to the Coastal Zone Management Act, where the States apply for money to carry out specific tasks and must meet certain criteria for funding. The Federal Agency in charge would review State applications and performance to ensure tasks are executed consistent with approved plans.

Appendix I

MEMBERS OF THE SUBCOMMITTEE TO REVIEW ANALYSES OF THE EXXON VALDEZ OIL SPILL

Robert Grogan	Alaska, Chairman
Charles Groat	Louisiana
Burr Heneman	Center for Marine Conservation
Eldon Hout	Oregon
Patricia Hughes	Massachusetts
Mark McClellan	Pennsylvania
Henry Niehaus	Conoco, Inc.
Thomas Rollins	Rollins Resources

Subcommittee to Review Analyses of the Exxon Valdez Oil Spill
Major Documents Reviewed

Actions in Response to EXXON Valdez Oil Spill, periodic report prepared by the U.S. Department of Energy; latest report, March 15, 1990.

The American Petroleum Institute Task Force Report on Oil Spills, June 14, 1989.

Coping With An Oiled Sea: An Analysis of Oil Spill Response Technologies, Office of Technology Assessment, March 1990.

Draft Policies: The Oregon Ocean Resources Management Plan, Oregon Ocean Resources Management Task Force, October 1989.

The EXXON VALDEZ Oil Spill: A Management Analysis, by Richard Townsend and Burr Heneman for the Center for Marine Conservation, September 1989.

The EXXON VALDEZ Oil Spill: A Report to the President from Samuel K. Skinner, Secretary, Department of Transportation and William K. Reilly, Administrator, Environmental Protection Agency, May 1989.

Nestucca Oil Spill: On-Scene Coordinator's Report, Washington State Department of Ecology, August 1989.

Oil Spill Planning, Response Requirements, and Practices for Outer Continental Shelf Oil and Gas Operations, Report of the Oil Spill Response Task Force, Minerals Management Service, May 1989.

Pennsylvania's Viewpoints on Spill Prevention and Response Readiness, October 1989.

Pollution en Alaska: Accident de l'Exxon Valdez--Mission d'assistance pour le nettoyage du littoral, 19 avril 1989 - 8 mai 1989, Centre de Documentation de Recherche et d'Experimentations sur les Pollutions Accidentelles des Eaux. July 1989.

The Role of Insurance for the Preparedness and Response to Oil Spills: Liability and Compensation Issues, prepared for The Alaska Oil Spill Commission by The Mitigation Assistance Corporation, December 1989.

Spill: The Wreck of the Exxon Valdez--Implications for Safe Marine Transportation, Report of the Alaska Oil Spill Commission, January 1990.

Texas Governor's Oil Spill Advisory Committee Status Report, October 1989.

Whereas, the Environmental Studies Program (ESP) is an important element of the National OCS Program; and

Whereas, the results of scientific investigations funded by the ESP provide information critical to OCS decision-making; and

Whereas, the Secretary of the Interior has committed the Department to expand its efforts on improving the technology for containment and clean-up of spills; and

Whereas, the OCS Policy Committee believes that both of these programs are important to the OCS Program; and

Whereas, the Scientific Advisory Committee has recommended that the funding for the ESP remain intact, and that no funds be re-programmed to fund other efforts;

Now therefore, be it resolved that the OCS Policy Committee recommend that the Secretary of the Interior retain full funding for the ESP and allocate separate monies for the spill technology program from within the Department.

Resolution Re: Funding of the U. S. Coast Guard

Whereas, the OCS Advisory Board has frequently expressed its concerns regarding the possibility of conflicts between Exploration Production facilities located on the OCS and shipping traffic proceeding through areas where such development is occuring, and

Whereas, the OCS Advisory Board was previously by resolution urged the Secretary of Interior to support in every way possible efforts to assure adequate funding of the U.S. Coast Guard;

Now Therefore Be It Resolved that the OCS Advisory Board restates its support for increased funding for the Coast Guard to enable it to meet its responsibilities on the OCS in a manner consistent with its long history of effective action in preventing accidents and in responding to emergencies when they occur; and

Be it further resolved that the OCS Advisory Board wishes to stress to the Secretary the importance it places on appropriate action by the Secretary to facilitate adequate funding of Coast Guard activities on the OCS.

Submitted by

s/ Hal Scott

Hal Scott

2/29/78

RESOLUTION

Whereas, the OCS Policy Committee has periodically directed its attention to the role the U.S. Coast Guard plays in the safe conduct of offshore oil activities and the transportation of crude oil and petroleum products; and,

Whereas, the committee has in several instances expressed to the Secretary of Interior, its concern that inadequate funding and staffing of the Coast Guard would ultimately result in unnecessary loss of life and property and damage to the environment;

Now therefore be it resolved, the OCS Policy Committee, in light of the oil spill in Prince William Sound, urges the Secretary to convey to the President our conviction that the risks associated with continued inadequate funding and staffing of the Coast Guard place the entire national OCS program in jeopardy and recommends an immediate thorough review of such.

Passed on April 19, 1989