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Report of the Alaska Oil Spill Commission
Executive Summary

SPILL

The Wreck of the Exxon Valdez
Implications for Safe Marine Transportation

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Anchorage, Alaska

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January 1990

Commission members

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FOREWORD

On March 24, 1989, Alaskans awoke to the shock of disaster. Shortly after midnight, the 987-foot-long supertanker Exxon Valdez had run hard aground on Bligh Reef, spilling 10.8 million gallons of crude oil into the unspoiled waters of Prince William Sound. The worst case had occurred.

This was the threatened tanker catastrophe residents of Prince William Sound had dreaded — but many had come to discount — ever since the trans-Alaska pipeline system was proposed in the late 1960s. A few of those scrambling to cope with the disaster knew something more chilling still. Though nearly 11 million gallons of crude oil already had escaped the fully-loaded *Exxon Valdez*, another 40 million gallons remained on board — and the ship was in considerable danger of capsizing. The spill that became the environmental disaster of the decade easily could have been five times worse.

The system that carried 25 percent of America's domestic oil production had failed. So had the regulatory apparatus intended to make it safe. The promises that led Alaska to grant its rights-of-way and Congress to approve the Alaska pipeline in June 1973 had been betrayed. The safeguards that were set in place in the 1970s had been allowed to slide. The vigilance over tanker traffic that was established in the early days of pipeline flow had given way to complacency and neglect. In the months following the spill, more than 1,000 miles of Alaska's coastline would be sullied by North Slope crude.

Communities touched by the effects of the spill staggered under the damage to land and water upon which they lived or the impact of the massive cleanup mobilization after the spill. Alaskans from walks of life as diverse as the oil industry and subsistence communities struggled with the economic losses, sorrow and dislocations as well as, for some, the opportunities that came with the spill and cleanup. Attitudes toward oil development, the land, the industry and the future were examined and re-examined as Alaskans searched for answers to the question of how things went wrong.

The Alaska Legislature created the Alaska Oil Spill Commission to provide some of the answers. Two months after the spill, the governor appointed an independent panel to study the event and recommend public policy remedies. The commissioners came to their work with broad experience in government and public affairs. Their sole purpose was to learn the causes of this disaster and propose changes that would prevent a recurrence of similar disasters anywhere. The mission was clear: Our report must show a path for Alaska, the United States and the world to a vastly improved system for transporting oil and other hazardous substances in the marine environment.

This disaster could have been prevented — not by tanker captains and crews who are, in the end, only fallible human beings, but by an advanced oil transportation system designed to minimize human error. It could have been prevented if Alaskans, state and federal governments, the oil industry and the American public had insisted on stringent safeguards. It could have been prevented if the vigilance that accompanied construction of the pipeline in the 1970s had been continued in the 1980s.

In 1977, when tanker operations began from Valdez, we thought we had created a system that offered guarantees against most disasters. As chairman of Alaska's Oil Tanker Task Force, I pulled together a team that provided the first full-scale simulation of marine operations ever done for a North American port.

Our simulation model demonstrated to the masters and pilots the conditions that would put their ships on the rocks. Tanker lanes into Port Valdez were set to insure the maximum feasible level of safety in tanker operations. Restrictions were imposed to limit operations in high winds. Agreements between the state, the industry and the Coast Guard established that when ice was encountered, the ships would slow down and proceed at minimum speed in the tanker lanes, rather than proceeding outside the lanes at sea speed, as did the *Exxon Valdez*.

The historical record developed by the commission is clear: The original rules were consistently violated, primarily to ensure that tankers passing through Prince William Sound did not lose time by slowing down for ice or waiting for winds to abate. Concern for profits in the 1980s obliterated the concern for safe operations that existed in 1977.

This disaster could have been prevented by simple adherence to the original rules. Human beings do make errors. The precautions originally in place took cognizance of human frailty and built safeguards into the system to account for it. This state-led oversight and regulatory system worked for the first two years, until the state was preempted from enforcing the rules by legal action brought by the oil industry. After that, the shippers simply stopped following the rules, and the Coast Guard stopped enforcing them.

This past year the Alaska Oil Spill Commission traveled to the coastal towns and villages of Prince William Sound and Southcentral Alaska to hear from the people most affected by the spill. We found communities and individuals whose lives and trust had been destroyed, but who had rededicated themselves to protecting their livelihood on water and land. Walter Meganack, Sr., traditional village chief of the Alaska Native subsistence community of Port Graham offered these words at a conference of mayors from spill-affected communities:

> *It is too shocking to understand. Never in the millennium of our tradition have we thought it possible for the water to die. But it is true. ... what we see now is death. Death — not of each other, but of the*

source of life, the water. We will need much help, much listening in order to live through the long barren season of dead water, a longer winter than before.... We have never lived through this kind of death. But we have lived through lots of other kinds of death. We will learn from the past, we will learn from each other, and we will live.

Port Graham is about 250 miles, by water, from Bligh Reef. To get there, the oil had to travel the length of Prince William Sound, past Green, Story, Knight, Montague and LaTouche islands, out into the Gulf of Alaska and along the rocky headlands of Kenai Fjords National Park. It had to round the corner at the end of the Kenai Peninsula, plastering Elizabeth Island and heading into Cook Inlet and the outer reaches of Kachemak Bay. Moving beyond Port Graham and the surrounding area, the oil fouled beaches down the Alaska Peninsula — in Katmai National Park, along the Shelikof Strait, on Kodiak Island and beyond. As the oil spread so, belatedly, did the impact of cleanup and containment efforts, with an army of workers and a navy of boats to move and house them.

To trace on a map the tortured routes of the oil spilled from the *Exxon Valdez* is to appreciate the vulnerability of every coastline on earth as supertankers of 500,000 deadweight tons and more carry crude oil to market. When the Alaska pipeline was being planned and built, the largest tankers in the U.S. flag fleet were about half that size. The world's oil shipping companies, to the benefit of consumers and corporate shareholders, have created a megasystem that carries oil from wellheads in the far corners of the earth to refineries in its major industrial centers. But this megasystem is fragile. It requires careful scrutiny from outside the industry in design, construction and operation. When it fails, as it has in tanker disasters around the world, entire coastlines are at risk. Had a spill the extent of the *Exxon Valdez* disaster occurred off the United States East Coast, the devastation would have stretched from Cape Cod to Chesapeake Bay.

This is not a fictitious risk. Alaskans assume such risks daily as supertankers carry 2 million gallons of North Slope crude through Prince William Sound and out into the Gulf of Alaska. Other Americans on three coasts face just as ominous a threat as the world tanker fleet delivers 43 percent of all U.S. oil consumption daily from overseas.

What will limit these risks? Obviously, the present system, providing minimum penalties for creating massive environmental damage, has not deterred the industry from putting the coasts and oceans of the world at constant hazard. The system calls out for reform. The mission of this commission is to explain what must be done and why.

Walter B. Parker, chairman
Alaska Oil Spill Commission
January 5, 1990

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INTRODUCTION

The evidence points to eight fundamental conclusions that form the basis of this report:

I. ***Moving oil by sea involves a complex, high-risk megasystem whose breakdown can threaten the welfare of entire coastlines.***

II. ***Risk is unavoidable in modern oil transportation. It can be reduced but not eliminated.***

III. ***Prevention of major oil spills must be a fundamental goal in the oil trade since cleanup and response methods remain primitive and inadequate.***

IV. ***In government as well as industry, enforcement zeal declined, alertness sagged and complacency took root in the years preceding the*** Exxon Valdez ***disaster. Prevention was neglected.***

V. ***Without continuing focus on the safety of the entire system by government and industry leaders, the oil transportation system poses an increasing risk to the environment and people of Alaska.***

VI. ***The State of Alaska has primary responsibility for protecting the resources of the state and the welfare of its people, who bear the risk of unsafe conditions in oil transportation.***

VII. ***Privatization and self-regulation in oil transportation contributed to the complacency and neglect that helped cause the wreck of the*** Exxon Valdez.

VIII. ***The safety of oil transportation demands review and overhaul. Not just new technology, but new institutions and new attitudes in old institutions are required.***

These are the basic premises we believe policymakers should understand in designing remedies for a flawed system of oil transportation.

Tankers carrying North Slope crude oil from the Valdez terminal of the trans-Alaska pipeline had safely transited Prince William Sound more than 8,700 times by the time the *Exxon Valdez* left port at 2112 hours (9:12

"I warned the community that the possibility of an oil spill in Valdez was very high. Given the high frequency of tankers into Port Valdez, the increasing age and size of that tanker fleet, and the inability to quickly contain and clean up an oil spill in open water of Alaska, we felt that we were playing a game of Russian Roulette. We knew 'The Big One' was only a matter of time."

Dr. Riki Ott, Cordova District Fishermen United

House Committee on Interior and Insular Affairs hearing, May 1989

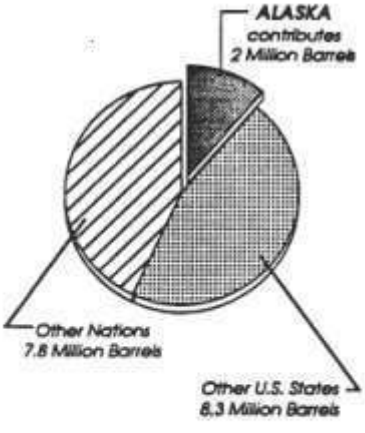
p.m., Alaska Standard Time) on March 23, 1989. This experience gave little reason to fear impending disaster. Yet less than three hours later, the *Exxon Valdez* grounded at Bligh Reef, rupturing eight of its 11 cargo tanks and spewing some 10.8 million gallons of crude oil into Prince William Sound.

No human lives were lost as a direct result of the *Exxon Valdez* disaster, and only one life was reported lost in the massive cleanup effort. Indirectly, however, the human and natural losses were immense—to fisheries, subsistence livelihoods, tourism, wildlife. The most important loss, for most Americans who will never visit Prince William Sound, was aesthetic—the sense that something sacred in the relatively unspoiled land and waters of Alaska had been defiled.

Experienced mariners express astonishment that a modern, well-equipped supertanker ran aground at Bligh Reef. The *Exxon Valdez* was traveling through well-charted waters in conditions of moderate weather and visibility. Bligh Reef was a well-known hazard, and all mechanical and navigational systems on the ship were working properly. Coast Guard Commandant Paul Yost engaged in only slight hyperbole when he said after inspecting the accident scene that his 10-year-old son could have steered the tanker safely through the area.

Yet the events leading to the grounding, and the institutions and procedures reflected in them, revealed a situation where the risk of disaster had increased steadily through years of relatively incident-free tanker trade. Success bred complacency; complacency bred neglect; neglect increased the risk—until the right combination of errors finally led to an accident of disastrous proportions.

U. S. uses 18.1 million barrels of oil every day



The wreck of the *Exxon Valdez* was not an isolated, freak occurrence, but simply one possible (and disastrous) result of policies, habits and practices that for nearly two decades have infused the nation's maritime oil transportation system with increasing levels of risk. The *Exxon Valdez* was an accident waiting to happen, the link that broke first in a chain with many unreliable couplings. The specific lapses that permitted the *Exxon Valdez* to run aground on Bligh Reef are being remedied, but similar circumstances easily could be repeated in some other combination to allow some other disaster. What is required now is comprehensive action to reduce the risk in the system.

At one level it is obvious that a combination of human actions and errors led to the *Exxon Valdez* disaster. Many have been scrutinized in the public record, particularly the proceedings of the National Transportation Safety

Board. Not even the root of this disaster—departing from traffic lanes—was unique: The 1967 *Torrey Canyon* grounding off England took place when the captain left the traffic lanes to save time.

Yet behind all human actions in the Valdez tanker trade, supporting the men and women who load and operate the tankers, is a system—one whose design and function clearly failed that night in Prince William Sound.

The system includes hardware in the form of pipelines, terminals, storage tanks, loading facilities, tankers and all the associated gauges, meters and machinery that operate them. It also involves operating instructions in the form of technical and design standards, international protocols, capacity ratings, terminal procedures, loading instructions, contingency plans, pilotage rules, maritime rules of the road, local navigation regulations, vessel traffic monitoring and economic and career pressures on all participants. Finally, the system involves institutional oversight in the form of corporate management, private insurance systems, state inspection and enforcement, local port management and Coast Guard regulation.

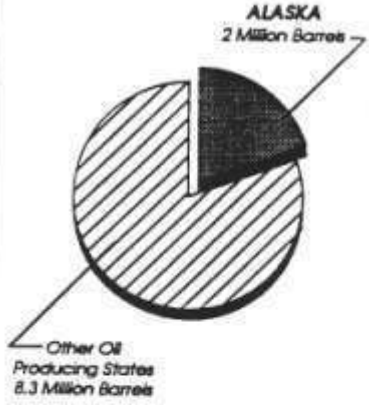
The objective is to move oil safely across the seas regardless of inevitable human error. System design must provide for redundancy—backup systems to prevent error from becoming disaster and overbuilding to provide for wider margins of error. Proper functioning requires constant testing, inspection vigilance, cooperation, discipline, expertise and commitment of organizations at every level of government and industry.

Yet for reasons of maritime tradition, economics, politics, public policy and modern practice, the maritime oil transport system is relatively more error-prone than safety-inducing. Industry tends to measure success as operating the biggest vessel with the thinnest hull and the smallest crew at the highest speed with the quickest port turnaround consistent with meeting minimum government requirements. Efficiency in a competitive world dominated by profit is all important in the oil transportation business, even in the Alaska trade where transportation competition is muted.

A comparison between the nation's passenger air transport system and the maritime transport system is instructive, if not exact. Air transport safety is better reinforced, backed up and institutionally safeguarded than maritime transport.

- Air pilots share responsibility with co-pilots and foster teamwork in the cockpit, while marine masters hold absolute authority,

Alaska produces 2 million barrels of oil every day



"It takes great strength to recognize the reflection in the mirror. Look in the mirror, and dig deep within yourself. Don't create an image that isn't there. Act on what you see. The environment is a reflection of who we are. We can't ignore the reflection we see. We have to live with it—today, tomorrow, and forever."

Dolly Reft, Kodiak native
Alaska Oil Spill Commission hearing, 8/11/89

sharing little command responsibility with other ship officers. Mistakes in the cockpit are more easily challenged than on the bridge;

- Air traffic control is mandatory, and ground controllers share responsibility with air pilots for safety of takeoffs, landings and approaches. There is no equivalent to ground control in marine transport, and vessel traffic systems are typically only advisory;

- The federal government imposes strict standards and enforcement carried out by the Federal Aviation Administration in air transport, while the federal presence is minor and interspersed among other Coast Guard duties in the marine environment;

- Strong international cooperation governs air transport practices, while international cooperation remains weak in the maritime field; and

- Working conditions in air transport are governed by strictly enforced limits on work hours, while overwork and long hours are routinely permitted to create fatigue among crew members in marine transport.

- Airline accident victims are identifiable and directly linked to the business of air travel, while the victims of marine accidents—seamen, fishermen, wildlife—are more likely to be anonymous.

"We in industry cannot assume that all regulation is bad; it's not."

Jerry Aspland, President, ARCO Marine, Inc.
Alaska Oil Spill Commission hearing, 9/1/89

The analogy to air transport is not perfect. The issues described here reflect institutional settings, demands and traditions that go beyond considerations of safety. But two points illustrate the relevance of the comparison.

First, there are approximately 17,000 airline departures per day in the United States. On most days, every single one of these departures safely arrives at its destination. The *Exxon Valdez* was a catastrophic failure—the oil transport equivalent of a major airliner crash. Studies performed for the commission indicate that a catastrophic failure such as the *Exxon Valdez* disaster can be expected to occur in the Valdez tanker trade approximately every 13 years, or about once every 11,600 transits. At a similar rate of catastrophic failure, the air transport system would produce 1.5 airliner disasters every single day, or 550 per year. If an average of 150 people died in each airline crash, such an accident rate would result in the loss of about 82,500 human lives per year—an unthinkable carnage that

is prevented by a tight, safety-reinforcing system of regulation and oversight.

Technological and human systems aren't perfect: Airliners occasionally do crash. But 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. Because of that system, air travel can be considered safe and reliable. Risk cannot be eliminated, but it can be reduced—if we accept the costs involved.

Second, as vessels carrying oil and other hazardous materials impose higher and higher risks upon the world's oceans and coastlines, the environmental and social costs of marine transport accidents increase. The growth of a massive international system of transportation of oil by sea since World War II has not been accompanied by the development of organizations and active constituencies of those affected by the environmental hazards inherent in the trade. Those stakeholders, however, deserve increasing attention, for the risks they suffer are growing as the world's oil transportation system grows. And the marine transport system must become tighter and more safety inducing as the costs of failure grow more serious and more pervasive.

Alaska, like other states, has long relied on the National Contingency Plan to provide the manpower and resources to handle a catastrophic spill. But the *Exxon Valdez* response illustrated the emptiness of the NCP: It failed to provide the necessary resources, and indeed the record of the past decade shows that the federal government has relied on private industry to contain or clean up a major spill. The government provided no resources of its own to handle even moderate-sized spills adequately. Nor is there any indication that either the Environmental Protection Agency or the Coast Guard, the federal administrators of the NCP, made any effort to determine whether the oil industry actually had the capability to clean up a catastrophic spill.

The proposals in this report aim to revive the commitment of the state and nation to tanker safety and response preparedness. The basic premises behind these proposals are highlighted at the beginning of this chapter. The major recommendations for state, federal and industry actions are then divided by subject into seven sections.

The first section includes general prescriptions concerning prevention as a comprehensive policy goal of maritime oil transportation. It focuses on direct citizen oversight, improved industry and government attitudes,

"I think there's probably going to be reluctance from the management agencies that were involved, both at the state and federal levels, to take a hard look at their performance."

Dr. David G. Shaw, University of Alaska

Alaska Oil Spill Commission hearing, 9/21/89

knowledge of risk at all levels and regulatory vigilance as primary building blocks to a safer system.

The second section defines some commitments that must be made by the oil industry to provide better environmental protection, just as it would for human safety.

The third section addresses actions the State of Alaska should take to bolster its oil spill prevention and response systems. It provides insights on the state's relationship with the federal government and ideas on focusing the state's position on oil and gas transportation, expanding its regulatory position, creating interstate compacts, and adding greater local input to decision-making.

Recommendations to the federal government in section four, if adopted, would have considerable impact on tanker safety. Tanker design changes, including double hulls, improved traffic control systems and a increased emphasis on proper manning and crew training are the key elements. If adopted, these could decrease spill probabilities of the *Exxon Valdez* size more than four-fold. If further recommendations for increased federal oversight also were carried out, we could expect a five-fold improvement in oil tanker safety—and therefore a substantial decrease in the present devastation of our coasts and oceans.

"The level of inability to function in chaos that's going on out there is ridiculous. The amount of money that is being spent is obscene."

Dennis Holan, Cordova fisherman
Alaska Oil Spill Commission hearing, 6/28/89

Section five describes what the commission believes should be the government's posture toward future spills—the response mechanisms of state, federal and local governments, and how they might fit together better to prepare for future spills. The private sector is included as a critical element of response, but not as the governing element. The key to a proper response system is speedy mobilization of manpower and resources immediately after a spill. The next element is to insure protection of key environmental areas if a spill cannot be contained. We recommend that the Incident Command System—currently familiar to many federal agencies for emergency response—be put into use widely to respond to natural disasters.

In section six we make recommendations on how to implement an oil spill response and how to integrate the Incident Command System into existing organizations. Our goal is to show how to use existing government systems in the most efficient manner while avoiding the creation of a separate spill response bureaucracy in every government agency concerned with oil spills. We have also emphasized an increased and structured role for local communities both to insure that local resources are available and that rapid mitigation of spill impacts occurs when

necessary. The role of private contingency plans also is defined in this section.

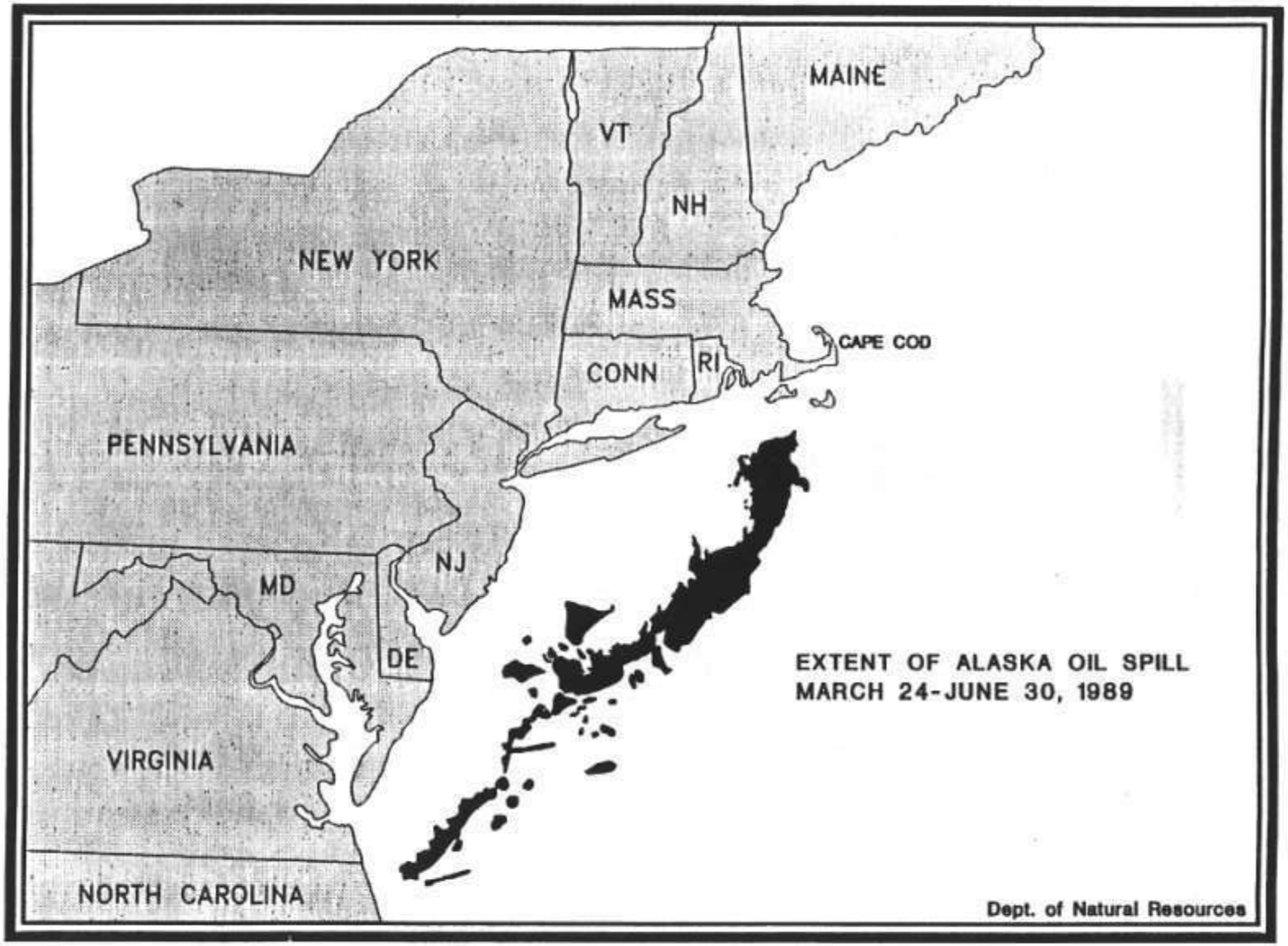
Section seven concludes this report with some ideas for improving research and development efforts toward oil spill prevention and response. We were able to use information gained from around the United States by the General Accounting Office and Office of Technology Assessment in their studies done after the *Exxon Valdez* spill. We also were able to obtain substantial information on advanced technologies in use by the U.S. Navy that were ignored in the *Exxon Valdez* incident. Finally, we have accumulated information on advanced spill response technology in Great Britain, the Netherlands, West Germany, Norway, France and South Africa. Information from the Middle East, the Soviet Union and Japan still remains to be gathered, a task we leave to our successors. In this section we also include our comments on the use of simulators in crew training.

If the commission's labors have been successful, the implementation of its proposals should considerably improve the safety of oil transportation by sea. But implementation rests in forums from the White House to local council halls, corporate board rooms to legislative chambers. Future vigilance rests in the hands of state and federal leaders, industry and public agency officials, terminal operators, tanker officers and crew, technical advisors and, perhaps most important of all, citizens exercising a watchdog presence and role.

"What I'm afraid of is that the commission could end up being in such a defensive mode that it could end up making the world safe for oil spills."

Mike Milligan, Kodiak
Alaska Oil Spill Commission hearing, 8/11/89

THE ALASKA OIL SPILL
March 24 to June 30
Cumulative extent of ADEC oil spill data
National Parks, Forests, and Wildlife Refuges
Alaska State Parks, Game Refuges, and Critical Habitats
Other uplands
Dept. of Natural Resources
GULF OF ALASKA
CHUGACH NAT'L FOREST
VALDEZ
CORDOVA
PRINCE WILLIAM SOUND
ANCHORAGE
KENAI PENINSULA
KENAI NAT'L WILDLIFE REFUGE
SEWARD
KENAI FJORDS NAT'L PARK
COOK INLET
KODIAK
KODIAK NAT'L WILDLIFE REFUGE
STRAIT
SHELIKOF
ALASKA PENINSULA
KATMAI NAT'L PARK & PRESERVE


MAINE
VT
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NEW YORK
MASS
CAPE COD
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RI
PENNSYLVANIA
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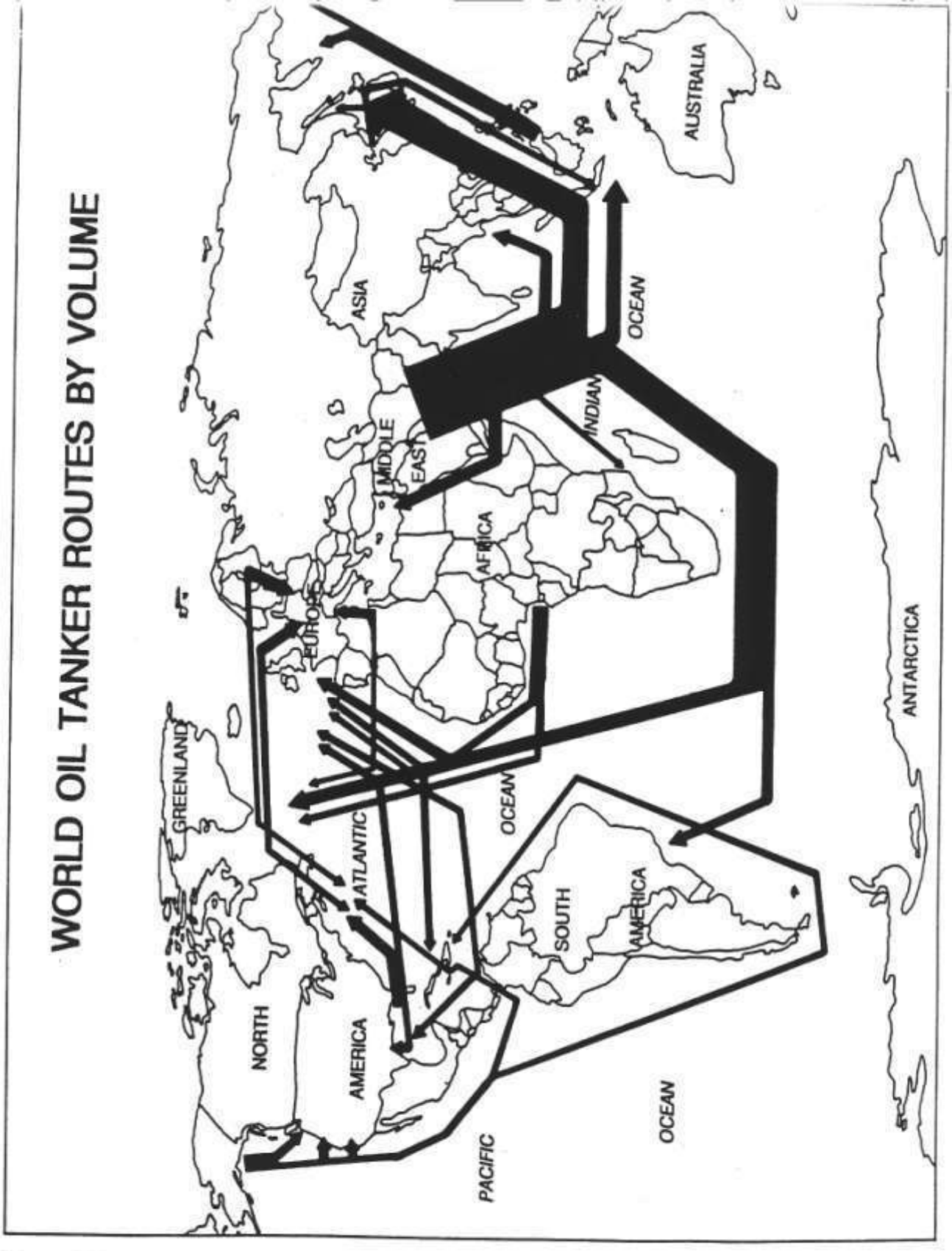
VIRGINIA
NORTH CAROLINA
EXTENT OF ALASKA OIL SPILL
MARCH 24-JUNE 30, 1989
Dept. of Natural Resources


WORLD OIL TANKER ROUTES BY VOLUME
GREENLAND
NORTH
AMERICA
ATLANTIC
OCEAN
EUROPE
MIDDLE
EAST
ASIA
AFRICA
INDIAN
OCEAN
AUSTRALIA
SOUTH
AMERICA
PACIFIC
OCEAN
ANTARCTICA

COMPREHENSIVE PREVENTION POLICY

Prevention is the only way to protect the oceans and coastlines from oil 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.

General Accounting Office data suggest no more than 10-15 percent of oil lost in a major spill is ever recovered. The Office of Technology Assessment estimates that only 3-4 percent of the oil spilled from the *Exxon Valdez* was recovered, despite Exxon's summer-long beach cleanup and oil skimming effort.

The urgency of establishing strong prevention policies for Alaska is also suggested by computer-assisted simulations done for the Alaska Oil Spill Commission by ECO, Inc., of Annapolis, Md. Its report notes that more tonnage of crude oil is shipped through the Valdez marine terminal than through any other port in the United States. Its simulations show that under typical winds and currents a catastrophic spill any time in Prince William Sound can be expected to coat the beaches of much of the sound and the Kenai Peninsula with oil. And its calculations indicate that under policies prevailing at the time of the *Exxon Valdez*, a similar occurrence can be expected in Prince William Sound approximately every 13 years.

Worldwide figures gathered by ECO show that during the past 20 years, tanker spills of the magnitude of the *Exxon Valdez* — more than 10 million gallons — have occurred approximately yearly. Spills of up to 1 million gallons have occurred approximately monthly. As this report goes to print, less than 10 months after the *Exxon Valdez* disaster, the *Khark-5* spill off the coast of Morocco has exceeded 30 million gallons, with the full cargo of 72 million gallons still at risk.

Both the frequency of oil spills and the failure of human capacity to clean them up argue for strong prevention regimes at every level.

"The die is cast, that Prince William Sound is going to recover pretty much at its own rate. And that no matter what we do, the rate isn't going to change a whole lot."

Professor David G. Shaw, University of Alaska

Alaska Oil Spill Commission hearing, 9/21/89

Recommendation 1
Prevention as policy

Prevention of oil spills must be the fundamental policy of all parties in the maritime oil transportation system.

Worldwide experience has shown repeatedly that containing and collecting significant amounts of oil lost in a spill is beyond present technological capability except for relatively small amounts under optimum conditions. Data collected by the U.S. General Accounting Office suggests that no more than 10-15 percent of all spilled oil is ever recovered. Full repair of environmental and ecological damage caused by a major spill is similarly beyond human capabilities. Cleanup and containment technology remains primitive, although recent research and development initiatives offer promise of some improvement. With present technology, natural recovery often is the most effective recourse after a spill hits shore, but generations may lose the advantages of environmental quality during the recuperation.

"The most telling remark, the president of Exxon, Mr. Stevens, said that the contingency plan cannot deal with a spill like this."

Rep. George Miller, California
House Committee on Interior and Insular Affairs hearing, May 1989

These lessons were relearned in the response to the Exxon Valdez spill. Given the increasing capacity of supertankers carrying more and more oil through the world's oceans and the acknowledged shortcomings of cleanup methods, a sharpened focus on prevention is the key to environmental protection and, indeed, the only adequate response to the increasing risk in the system.

Recommendation 2
Changed attitudes

All parties must instill the attitude that spilled oil in the water is unacceptable into the approach of the maritime transportation industry in the United States and abroad.

The shipping industry historically has neglected the environmental costs to the public of oil spills. Maritime losses traditionally are measured only by the financial value of vessel and cargo. Economic calculations have emphasized short-term expenses over long-term protection. Attitudes in regulatory and response agencies, particularly the Coast Guard, tend to reflect a similar disregard for environmental costs. Protecting property has a long legal and practical tradition — witness the Coast Guard's longstanding focus on salvage of vessel and cargo — while protecting the environment still receives too little emphasis. Finally, cost-benefit analyses undertaken by public officials charged with regulating the maritime transportation industry sometimes assume that the costs and benefits accrue to industry alone, thus neglecting the interests of others affected by the risk of accident.

As public concern for environmental protection grows, industry and regulatory attitudes must change. The shipping industry has an incentive

to adopt stronger approaches to prevention as increasingly it is being required to pay for environmental costs previously borne by society.

Because many individuals and communities are placed at risk by modern oil transportation systems, citizens should be involved in oversight arrangements at every level of government.

Recommendation 3
Citizen knowledge of risk

Shipping oil involves inherent risk. The risk cannot be eliminated, only reduced. Citizens deserve to know and make informed social judgments about what constitutes an acceptable level of risk. Reducing the risk involves costs, both public and private. Citizens may or may not be willing to pay the incremental costs of reducing particular risks, but to make informed choices they should be made aware of the tradeoffs involved. Present federal committees for oversight and policymaking are made up of industry and government representatives. There are no equivalent state committees.

"We can't rely on government agencies to be the sole watchdog over industry."

Unidentified witness, Port Graham, Alaska

The nation and the state need strong, alert regulatory agencies fully funded to scrutinize and safeguard the shipment of oil.

Recommendation 4
Regulatory vigilance

The notion that safety can be insured in the shipping industry through self-regulation has proved false and should be abandoned as a premise for policy. Alert regulatory agencies, subject to continuous public oversight, are needed to enforce laws governing the safe shipment of oil.

National and state agencies formally vested with responsibility for overseeing the environmental safety of oil transportation frequently have been complacent. Regulatory authority has been weak, and there has been a dramatic decline in vigilance since 1981. State authority has been further impaired by conflict with federal authority. Funding ordinarily furnished to protection agencies has left broad areas of concern without oversight. Between disasters, appropriations have tended to decline. As federal administrations have changed, funding and commitment have fluctuated as well. Missions have been attenuated by the addition of further responsibilities without further funds, as in the case of the U.S. Coast Guard, whose duties have greatly expanded without a commensurate increase in budget.

"The best way to keep the oil from becoming a problem is to keep it in the ship, because historically ... we clean up very little of the oil. ... So I guess prevention is one of the things that we certainly would look at as the strongest avenue to avoid having a catastrophe."

Commander Dennis Rome, U.S. Coast Guard

Alaska Oil Spill Commission hearing, 8/31/89

In such an environment the nation's maritime oil transportation system becomes more, not less, prone to risk of accident. The nation's regulatory agencies must be committed to the safe shipment of oil and other

hazardous substances, and they must be encouraged by the regular oversight of citizens who have the greatest stake in the relevant environments. Without such an an invigoration of these agencies, accidents such as the Exxon Valdez are bound to increase.

Recommendation 5
Foreign flag spill prevention

State laws protecting the environment from oil spills should be applied to foreign flag vessels equally with other vessels engaged in the transportation of oil.

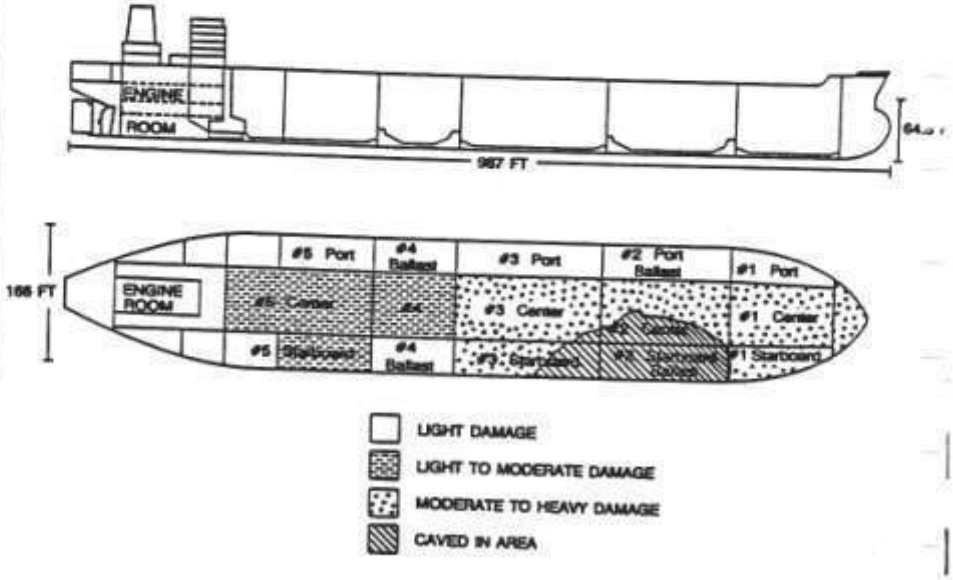
The state has been unduly deferential to constitutional limits supposedly restricting a state's ability to impose containment and cleanup planning and equipment requirements on foreign flag vessels. A changing congressional intent will produce revised judicial interpretations of preemption doctrine. While most vessel design features are subject to exclusive federal rule, the state is empowered to protect its environment by all reasonable, non-burdensome means.

Containment and cleanup planning and readiness regimes established under state authority should apply to barge or tanker traffic under any flag in the waters of a state.

"We should look beyond ineffective sticks and consider some carrots as well. I think we should consider paying the industry to stay ready and to stay on top of technology—with their money, of course."

Professor Steve Colt, University of Alaska
Alaska Oil Spill Commission hearing, 9/21/89

EXXON VALDEZ DAMAGE



RESPONSIBILITIES OF INDUSTRY

Public authority can do a great deal to enforce safety standards in oil transportation, but industry promises, policies and practices are typically the starting point for discussion. Industry bears a heavy obligation to operate safely and responsibly, regardless of the regulatory structure imposed by government.

Alyeska Pipeline Service Company has demonstrated a commitment to safer operations since the spill by establishing new procedures, including escort vessels, new spill response equipment, speed limits for tankers and dictates that tankers stay in designated traffic lanes while pushing through ice. Some of these reforms were more sweeping and costly than required by government.

Private industry's task is to carry oil to market responsibly and efficiently. Government's task is to regulate that trade prudently in the public interest. The obligation to protect the safety of the public and the environment is mutual, and shared by both sides.

"I think it's important to begin a process of informing society about the uncertainty, the risks and the tradeoffs that are involved in most human activities and especially in these kinds of large scale resource development activities."

Professor David G. Shaw, University of Alaska

Alaska Oil Spill Commission hearing, 9/21/89

Recommendation 6
Industry commitment

The nation and the state need a private oil transportation system with management that is committed to environmental safety.

The *Exxon Valdez* incident refocuses attention on industry's obligation to operate safely and responsibly. Decision-making by private industry is the first and, in many ways, most important pressure point for safety in the oil transportation system. Government regulation and public oversight can help safeguard the system, but industry can — and should — move rapidly and effectively on its own to establish procedures to reduce the risk of oil spills.

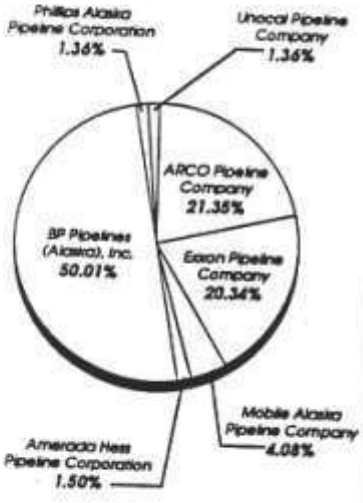
"Each of the various interested parties is trying to pass on their own real or perceived costs to everybody else."

Professor Matt Berman, University of Alaska
Alaska Oil Spill Commission hearing, 9/21/89

Response to the *Exxon Valdez* disaster illustrated industry's ability to mobilize quickly after a disaster. Exxon, though unprepared for a spill so large, responded far more swiftly than any government agency. The company committed vast human and material resources and reportedly spent more than $1 billion to respond to the spill. (Luckily, Exxon was able and willing to bear this expense, but the industry would have had to spend comparatively modest sums to provide stringent prevention measures instead.)

Though the industry's safety record is mixed, by and large it has not been committed to environmental safety. Driven by competition and profit-maximizing goals, the industry has focused on economic efficiency and opposition to government regulation, claiming it could operate with as great or greater regard for safety without regulation. An industry ideology that regulation is a nuisance can drive an industry attitude that the objectives of regulation are also a nuisance.

Alyeska Pipeline Service Company



Source: *Alyeska Pipeline Service Company*

In addition, maritime liability limits and low levels of accountability for oil spills have led to neglect of the interests of those who are not owners of vessels and cargo but whose exposure to risk makes them stakeholders in the system.

Historically, the industry has "externalized" the costs of environmental degradation — that is, shifted the costs to others. As concern about oil spills increases, however, industry will be forced to "internalize" more of these costs as incentive to protect the environment.

Properly motivated and funded, private industry can move more swiftly and effectively than any regulatory agency to correct deficiencies in the oil transport system. A tenacious commitment to environmental protection by industry could do more, quicker than any government inducement. Management and shareholders should insist that the traditions and operating assumptions of the shipping industry reflect this commitment.

Recommendation 7
Best available technology

Government and industry should strive to adopt the best available standard technology in establishing performance standards.

Consciousness of the importance of prevention, spill preparedness and corporate responsibility varies greatly among oil carriers. The blurring of responsibility within each oil company and within the Alyeska consortium, coupled with the independence of each shipping company and its owners, argues for uniform application of standards by government authority.

In the past the oil transportation industry has attempted to reduce virtually every performance standard sought, asking that government impose only minimum standards and claiming that most carriers voluntarily will exceed those minimums. But when accidents have occurred, industry representatives have frequently claimed that it has no obligation to go beyond those minimums. The public no longer should tolerate this double standard — and the conflict should be resolved as soon and as much as possible by the adoption of improved standards of performance by industry.

Recommendation 8
Corporate safety executive

Every company shipping oil through the United States should identify a full-time environmental safety officer empowered to take recommendations to the highest level of the company.

Corporate performance on safety issues can be significantly improved by making safety a specified goal and giving primary responsibility to identified managers charged with increasing awareness at the highest executive level. Such corporate structures operated effectively, for example, during construction of the trans-Alaska pipeline system and should be recreated for operations as the system ages and becomes more prone to risk.

The designated corporate safety officer should be required to report annually to shareholders and the public concerning the safety of the tanker fleet, accidents and near-misses, state-of-the-art technology, and company plans for bringing its fleet into compliance with the most appropriate standards.

Public pronouncements by Alyeska and its owners that the company employed the best available technology and committed adequate resources to safety purposes turned out to be false. These assurances were aided by corporate institutional advertising and a sense of well-being

"The marine industry needs to revamp all personnel training and development programs to meet today's modern fleet demands."

Jerry Aspland, President, ARCO Marine, Inc.

Alaska Oil Spill Commission hearing, 9/1/89

arising from the flow of oil revenue to Alaska's citizens which encouraged an atmosphere of laxity in state oversight of oil transportation.

A report to the public and corporate shareholders should provide accurate information about each shipper's spill prevention plan and preparedness posture to encourage greater corporate accountability for safety practices.

Recommendation 9
Tank farm

Tank farm capacity at Valdez should be increased to meet the original design requirement for maximum throughput.

Limited storage capacity at the Alyeska terminal can create undue pressure on loading and shipping schedules of tankers calling at Valdez. Shortage of storage capacity could lead terminal operators to load tankers under otherwise marginal weather conditions, for example, to avoid an expensive slowdown or shutdown of the pipeline.

It may be that the cost of tank farm construction is high enough that a slowdown or risk of slowdown is a preferred cost. If that is the case, standards for slowdowns and shutdowns should be clearly stated so that safety is not sacrificed to revenue or pipeline flow considerations.

"In boarding both the Japanese vessel and the Soviet vessel I had no problem getting on those vessels, but yet there was a guard at the door of the VECO office when I tried to enter that door. And I started wondering who is really afraid of me."

Rita Turner, Seward
Alaska Oil Spill Commission hearing, 7/14/89

STATE REGULATION AND OVERSIGHT

The State of Alaska carries primary responsibility for protecting the state's public resources. Neither federal nor local authority and self can take the place of strong state regulation of industries that vitally affect the economic and environmental welfare of Alaskans.

State authority must be exerted to protect fish and wildlife resources, to vouchsafe federal regulation, to oversee industry operations, to inform the public of risk, and to insure proper response capabilities in case of accident. State government was not fully prepared in any of these categories before the *Exxon Valdez* disaster.

Alaskans have benefited strongly from the production and transportation of oil in the state, but they have not invested commensurate resources and attention in regulating and safeguarding the operations of the industry. It is incumbent upon Alaskans, through their elected officials as well as their own efforts, to create workable and effective institutions to protect their interests in the production and transportation of oil in the state.

"If you had an enforcement unit in place, staffed by the people who were solely charged with it and not distracted by some of the other responsibilities, that they would be able to take the time to account for what are our main polluters in the state."

Sue Libenson, Executive Director
Alaska Center for the Environment
Alaska Oil Spill Commission hearing, 9/21/89

Recommendation 10
Obligation to manage and protect

The people of Alaska should recognize they are the stewards of vast natural resources that are the mainstay of their livelihood and a national treasure. Among the obligations of state stewardship is the duty to protect these resources as much as possible from harm.

The State of Alaska has not spent an amount appropriate to the job of natural resource management and protection. There are many reasons for this, including low recognition of the magnitude of the task.

Compare the total amount spent by the people of Alaska to manage fish and game resources to that for overseeing the oil industry. Recognizing the importance of fish and game to the state, the people of Alaska have spent substantial sums on regulation, enforcement, research and development, as well as a statewide system of citizen advisory committees. The amount spent overseeing the oil industry and its safety practices, by comparison, is a fraction of that total.

Recommendation 11
Federal preemption

The state should adopt stringent standards regulating the transportation of oil in its own waters without fear of federal preemption.

Alaska has had unsatisfactory experience with federal preemption in the field of tanker safety and local navigational controls, but Congress no longer intends to override more stringent state regulation.

In 1976 the State of Alaska adopted a law giving broad authority to state agencies to oversee and regulate the safety of tanker traffic to Valdez. In 1977 the oil companies responsible for carrying Alaska's oil initiated a lawsuit (*Chevron, et al. v. Hammond*) challenging the state's right to regulate the safety of marine oil transportation on grounds that congressional action and Coast Guard regulation preempted the field. By 1979 the plaintiff companies had gained both a favorable ruling from the U.S. District Court and negotiated concessions from the state. The result was a gutting of key provisions in the legislation.

"I think what's missing here is an attitude among state leaders that the buck stops here, with the people of Alaska and not in Houston or Washington, D.C."

Professor Matt Berman, University of Alaska
Alaska Oil Spill Commission hearing, 9/21/89

Industry encouraged the view that it should be allowed to take care of its own safety matters; that state activity was a needless and obstructionist interference with private prerogative; and that left to its own devices the industry would employ the best available technology with the optimum commitment of resources. This was not remotely the case. The eviscera-tion of the state's regulatory framework and the antiregulatory temper of the times laid a foundation for repeal of the 1976 legislation and a slashing of state budgetary allocations for oversight. As a result, the role of the Department of Environmental Conservation was sharply reduced. The

department's small staff was overwhelmed by technical licensing and permitting activities, leaving no opportunity for the agency to perform its role as overall environmental policy watchdog. Though the state retained certain powers over water quality, the overall effect of preemption through the federal courts was to reduce or eliminate the state presence in the oversight of oil industry affairs and demoralize state personnel engaged in such activity.

In the absence of the state presence, the already weak federal regulatory presence declined further. In 1990 Congress is likely to adopt legislation that would eliminate any presumption of federal preemption in actions taken by the state with respect to safety and response. Thus the way is open for the state to reassert its historic role in resource protection.

Recommendation 12
Oversight council

A citizens' advisory council should be established in the office of the governor and given responsibility for overseeing the safe transportation of oil, gas and other hazardous substances.

No state agency has as its primary mission oversight of environmentally safe transportation of Alaska's resources. Regulatory authority over such transportation is spread among several agencies that do not always coordinate information or resources. The only overall view of the system is exercised by the governor, but he has no single designated officer or council to provide information or maintain consistent oversight.

The state should establish a citizens' advisory council, supported by a full-time executive director and small staff, to provide focus to state oversight. Members should be chosen from among the general public, selected for their concern for environmental safety. The council should have power to subpoena information and witnesses, to inspect facilities, to conduct investigations, and to collect information and statistics on safety.

The council's duties should be to:

- Advise the governor and legislature on the environmental safety of the transportation of Alaska oil, gas and other substances posing environmental risks;
- Advise on potential initiatives in state and federal regulations and at the governor's request, represent the state's interests in the development of multistate compacts and national and international policy;

"What we have is a system driven by the fact the pipeline is pumping 2 million barrels of oil into the sound, and they have to get it out of here. They choose not to restrict it, turn it off, or anything else. The decision to sail or not to sail is not a dispassionate decision based on weather or traffic."

Rep. George Miller, California House Committee on Interior and Insular Affairs hearing, May 1989

"What tends to happen is DEC will get dragged into a septic tank argument and it will drain away as many resources as fighting, for instance, the Alyeska ballast water treatment plant. There's a real problem with priorities within DEC."

Sue Libenson, Executive Director
Alaska Center for the Environment
Alaska Oil Spill Commission hearing, 9/21/89

- Identify unmet needs and recommend priorities, strategies and obstacles to achieving them;
- Encourage coordination of spill prevention and response programs currently spread among several agencies that cumulatively deserve high priority;
- Make budget and resource allocation recommendations;
- Evaluate programs and recommend elimination of marginal activities;
- Recommend changes based on new technologies and scientific impacts;
- Designate advisory panels, if deemed necessary, including appropriate representation, ex-officio, of appropriate departments of the state and municipalities, regional oil spill authorities, representatives of fishing and environmental groups, and shippers, owners and residential groups on the pipeline route; and
- Issue an annual report and safety assessment. Reports to the governor should include regular statistical and special reports on accidents and near-misses, the status of major risks, the performance of state and federal agencies, and long-term options for improving safety.

Recommendation 13
Enhanced regulatory strength

The state should expand and exercise its regulatory authority over environmental safety. Measures voluntarily adopted by industry should be backed up by state regulation. Federal technical standards and safety requirements should not preclude more stringent state standards.

The State of Alaska currently does not exercise its full power under the U.S. Constitution to regulate environmental safety. Recent congressional enactments and judicial decisions make it clear that Congress does not intend that states should hesitate to protect local environments with greater stringency than the minimums established under federal law. The state should have the power, for example, to prohibit vessels from entering or departing Alaska ports and waters under unsafe circumstances.

Regulatory effectiveness also should be improved through assessment of administrative and civil penalties to encourage prevention, no preen-

forcement review of compliance orders, environmental audits, stronger criminal penalties, and statutory provision for citizen lawsuits. Private voluntary prevention measures, though commendable, are often ignored as memories fade unless backed up by state regulations.

Recommendation 14
Strengthened state inspections

The state should renew and strengthen its authority to conduct inspections and spill response drills on vessels calling at Alaska ports and marine terminals.

The Valdez tanker fleet, built in the 1970s is approaching obsolescence. Structural weaknesses, technical malfunctions and other equipment problems can be expected to increase in frequency and seriousness.

Inspections and reports, done in cooperation with the Coast Guard or alone, should include examinations for structural integrity and environmental hazards. Inspection duties may be allocated between the harbor administration office proposed in this report and the Department of Environmental Conservation. State authority should include the power to levy substantial summary civil fines for interfering with inspections or failing to cooperate with response drills.

The lack of any quality control or assurance program on tanker operations from Prince William Sound or Cook Inlet allows serious hazards to arise. Coast Guard authorities already perform inspections on tankers calling at Valdez, but state inspection would provide an added measure of safety. In the past, when the state and the Coast Guard both inspected vessels, the two agencies reenforced each other's effectiveness. When the state was stopped from making inspections on the grounds that the activity was exclusively federal, the quality of Coast Guard inspections declined. Inspection by two governments is not needless duplication but needed redundancy, providing a greater measure of safety.

"We are obligated to provide systems which enhance marine transportation safety, and we do it economically."

Jerry Aspland, President, ARCO Marine, Inc.

Alaska Oil Spill Commission hearing, 9/1/89

The "two-tier" system of quality control was adopted during construction of the trans-Alaska pipeline. The value of the two-tier system has been reenforced by the National Aeronautics and Space Administration experience with space disasters. The official inquiry into the 1986 Challenger space shuttle explosion found that system capabilities had been stretched to the limit in the winter of 1985-86 to support the flight schedule of the shuttle program. System capabilities for shipping oil from Valdez were similarly stretched to accommodate increasing throughput of the trans-Alaska pipeline to 2.2 million barrels per day without increasing other elements of the system, such as tank storage capacity.

When systems are stretched thin, redundancy in oversight and inspection is doubly important to reduce the risk of catastrophic failure.

Recommendation 15
State presence at Alyeska terminal

Government agencies should be given space at the Alyeska terminal to carry out their duties.

State inspection efforts at the Alyeska terminal should be situated so as to maintain a continuing presence, instant response and constant vigilance over environmental safety at the terminal and on vessels calling there. Until the Exxon Valdez wreck, various agency personnel were hampered by lack of quick and easy access to the terminal. Alaska Department of Environmental Conservation officials attempting to inspect Alyeska facilities were told they might be required to procure a warrant, a laborious and time-consuming process. A more cooperative posture by Alyeska staff might result if state personnel were seen not so much as an opposing force, but as a normal and integral part of the operation. Office facilities on-site might normalize relations between government and industry officials so that regulatory activities, which on occasion can be adversarial, need not become unnecessarily antagonistic.

Recommendation 16
State licensing of safety managers

A state licensing system should be established for oil transportation system safety personnel, including pipeline pump station and terminal managers.

Oil transportation safety managers should be required to show educational qualifications or equivalent experience and pass examinations reflecting an understanding of environmentally safe resource transportation in Alaska.

Mariners, captains, engineers and ship's pilots, all water-based transportation managers, already are licensed to encourage safety and public accountability. Similar practices should be established to insure that personnel meet a state standard of professionalism for all important managers in the oil transportation system. Few of the managers brought in to oversee contingency plan development or respond to the Exxon Valdez spill had significant prior knowledge of Alaska environmental laws, resources or local capabilities.

Licensing can significantly help assure knowledge of prevention and response capabilities as well as public accountability. For example, regardless of whether particular conduct may be tacitly approved or

tolerated by an employer, a licensee who falsifies a report, bypasses a required procedure or otherwise violates the professional obligations covered by the license can lose his or her opportunity to engage in the employment.

Recommendation 17
Enforcement in state waters

To the extent it does not already have such authority, the state should seek from Congress authority to require and enforce prevention and response regimes on vessels trading in Alaska or adjacent waters.

Spilled oil recognizes no state boundaries. State jurisdiction is necessary because spilled oil may come ashore or ravage important local fisheries hundreds of miles from the point of the spill. The risk of breakup of a tanker or loss of a barge in the Gulf of Alaska is real. Gulf of Alaska shipping routes should be covered by an adequate regional response developed under the National Contingency Plan and backed by capabilities of the state, the Coast Guard, the carriers and other relevant authorities.

Recommendation 18
Interstate compacts

The State of Alaska should negotiate interstate compacts with other coastal states and provinces for the development of prevention strategies, storage of response capabilities and to effect coordination of assets in case of another major spill.

The western coastal states and provinces may share common environmental concerns about spilled oil. Compact agreements have the force of federal law and may enable these states to create an appropriate regional administration to oversee oil shipping.

Recommendation 19
Maintenance and personnel audits

The state should require maintenance and personnel audits at oil transportation facilities to provide information and pinpoint problems in spill prevention.

Accurate, timely information is central to the exercise of the oversight function and must be available to all government actors in prevention and response. The state can gather information on conditions relating to spill prevention through technical maintenance audits, thereby supporting the work of the state advisory council and regulatory agencies. Technical and personnel audits may be done by outside contract.

Recommendation 20
Marine pilot qualifications

Training and experience standards for marine pilots in Alaska should be upgraded to require actual experience in Alaska operations of vessels at thresholds of 60,000 and 150,000 deadweight tons.

Training and experience requirements have been reduced for pilots of large tankers in Prince William Sound and Cook Inlet since the late 1970s, allowing pilots to qualify for very large ship operations on insufficient experience. While no accidents have been caused by this circumstance, a system with multiple thresholds is inherently safer.

Recommendation 21
State as co-insured

Insurance policies should identify the State of Alaska as an additional insured or named beneficiary.

The shipping industry is responsive to economic incentives. Insurance premiums and premium requirements create incentives. The insurance industry is responsive to the needs of co-insureds. Such practices were required during construction of the trans-Alaska pipeline. There is every reason to revive them.

Recommendation 22
Remote spill response

The state should set rigorous requirements for private oil spill prevention and response capability in remote locations. The state also should develop response plans for major spills and articulate a prevention program from the Aleutian Islands to the Arctic.

Despite the state's obligation to respond to major spills, only if private resources are committed to prevention systems and response can an acceptable reduction in risk be achieved.

Marine traffic in arctic Alaska already poses unacknowledged risk. Fuel provisions delivered by sea and vessels fueled by oil create risks of damage in these hazardous and environmentally fragile waters. Spills are usually impossible or much more difficult to contain and collect in arctic waters. Immediacy of response is the key to cleanup if a spill occurs.

Measures should be undertaken to reduce spill risk in the arctic, including better vessel tracking and contingency plan requirements for all large vessels transiting the arctic, and for smaller vessels carrying oil or major fuel supplies.

Given the high risk involved in arctic oil transportation, the options for developing systematic environmental safety protections for this region should be a priority for scientific authorities.

Recommendation 23
Arctic prevention research priority

The long-term need to develop environmental safety regimes of great stringency cannot be ignored. Development of arctic oil discoveries dependent on maritime transportation should await the preparation of approved systems of oil transportation using experience gained from the trans-Alaska pipeline system. But any increase in traffic simply to accommodate increases in oil production should be accompanied by a major increase in preventive safety.

The state should establish a task force to review the environmental safety of the trans-Alaska pipeline system independently or in concert with a federal counterpart.

Recommendation 24
Pipeline evaluation

More than enough evidence is available regarding sharply increasing risk of a pipeline breach and raising questions regarding government response capability. On the advice of contractors showing evidence of massive corrosion problems with the pipe, Alyeska already has undertaken a review and reconstruction program of the trans-Alaska pipeline system. The state was intimately involved in oversight of the original design and construction of the pipeline. This pattern of oversight should be renewed to protect the same public interests.

The task force should make recommendations to better oversee the long-term safety of the pipeline and gathering system. Specifically, it should review the environmental safety of:

- the trans-Alaska pipeline and gathering system;
- applicable government and private contingency plans; and
- the response plans and capabilities of government agencies.

The commission endorses the concept of a presidential task force on pipeline safety as proposed by Congress and urges that provision be made for state participation.

"The community must be imbedded in the bureaucracy because this is the only way oversight is going to happen. It's the only way that continued community involvement is going to happen. And it's the one way to guard against apathy if you don't have another oil spill for 20 years."

Jim Sykes
Alaska Oil Spill Commission hearing, 9/21/89

Recommendation 25
State harbor administration

The state should create harbor administration offices for Prince William Sound and Cook Inlet to help regulate traffic and navigation and to implement terminal and vessel inspections.

Local oversight of navigation and port operations can improve conditions by bringing local perspectives to bear. A harbor administration office should have the power to:

- Regulate traffic and navigation issues not preempted by Coast Guard regulation to impose more exacting standards in the best interests of the state.
- Advise and oversee the Coast Guard's management of such issues and make recommendations for changes;
- Certify and declare disasters, and order state management of a spill in the port area; and
- Assume functions given under contract by the Coast Guard and participate in joint management arrangements.

The state asserted greater control over harbor activity in the mid-1970s, but conceded its management prerogatives in negotiations leading to a resolution of the Chevron, et al., v. Hammond lawsuit. Pending legislation clarifies congressional intent that the state may undertake safety regulations relating to local harbor conditions, weather and the like, and that the vessel must follow the more stringent rule. Collaboration with federal authority is required to assure that no direct conflict with Coast guard regulations are involved and that optimum safety conditions are observed.

"I would promote that there is a state group that deals with marine transportation, kind of a one-stop shopping group."
Jerry Aspland, President, ARCO Marine, Inc.
Alaska Oil Spill Commission hearing, 9/1/89

In the event of a spill, the harbor administration at Valdez probably would be the headquarters of the on-scene commander carrying out the governor's delegated emergency authority.

Oil transportation in Cook Inlet, a body of water widely noted for its extreme tides, currents, winds and ice conditions, faces a high risk of spills. Though smaller volumes of oil pass through Cook Inlet than Prince William Sound, similar oversight arrangements should be duplicated there, allowing for appropriate variations in representation and the difference in geographic circumstances.

Research done for the Alaska Oil Spill Commission indicates that a major spill of between 300 and 1 million gallons can be expected in Cook Inlet approximately every 2.2 years, a spill of between 1 million and 9 million

gallons about every 24 years, and a spill of 9 million gallons or more about every 66 years. Oversight arrangements should be created to provide appropriate public accountability and awareness of spill risks.

Recommendation 26
Regional advisory committees

A system of regional advisory councils should be formalized under state authority to oversee harbor administration, state and federal regulation and private safety functions.

The people living closest to a danger have the most to risk and are the most likely to insure that readiness and alertness are maintained. As a Prince William Sound resident told the commission, "People take care of the things they love."

Regional oversight councils can both encourage protection of local resources and provide an opportunity to make use of local residents' knowledge of conditions and needs in crafting workable spill prevention and response policies. Regional advisory councils should provide advice to the statewide policy council proposed in this report and respond to its recommendations. A similar council should be considered for permanent oversight of the trans-Alaska pipeline system.

Recommendation 27
Local government representation

Local governments should be represented on the regional advisory councils and the harbor administration.

Local residents complained that their views and knowledge often were ignored. Residents in small villages, in particular, believed they were bypassed despite their great, direct interest in events. Villagers rarely are able to send delegates to advisory boards, even though their lives may be severely traumatized by a spill. Special provisions should be made to assure no neglect of these stakeholders.

FEDERAL REGULATION AND OVERSIGHT

Congress has mandated a comprehensive system to protect the safety of oil and gas transportation, but for lack of enthusiasm and underfunding enforcement has been a failure. The quality of federal oversight of oil transportation in Alaska was typified by the U.S. Coast Guard, whose safety and regulatory efforts gradually declined for most of the decade leading up to the *Exxon Valdez* disaster.

The Coast Guard supported safe traffic monitoring systems and design standards, including double-hulled tankers, when the trans-Alaska pipeline system was approved in 1973. But by 1978, after strong industry opposition to double hulls in international regulatory forums, the Coast Guard backed off its support. The Coast Guard also imposed stringent safety inspections and vessel monitoring practices during the early years of tanker operations after the opening of the pipeline in 1977. Inspection and monitoring efforts waned noticeably after parallel state inspections were stopped in 1979, and gradually thereafter as Coast Guard funding and resources for these activities declined.

Some federal agencies performed admirably in events surrounding the spill — notably the U.S. Army Corps of Engineers and the U.S. Navy in cleanup response efforts and the Coast Guard itself in successful measures to salvage the ship and the unspilled cargo. As a rule, however, federal authority must be reinvigorated in several ways if it is to provide significant leadership in the safety and oversight of maritime oil transportation.

"Figure out what 25 percent of the nation's oil is worth."

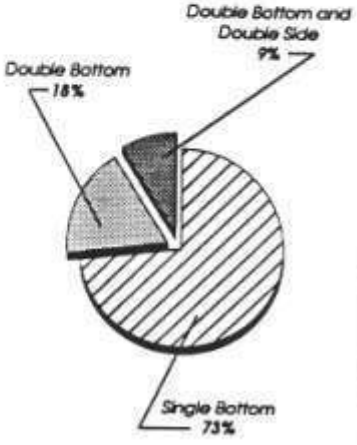
Rep. George Miller, California
House Committee on Interior and Insular Affairs hearing, May 1989

Recommendation 28
Double hulls and vessel design

Double hulls and other technological advances in tank vessel design should be required on an accelerated timetable, including prohibition of nonqualifying vessels, regardless of flag registry, in all U.S. waters.

The loss of oil from the *Exxon Valdez* wreck would have been substantially less if the vessel had had a double hull of appropriate design. A U.S. Coast Guard study undertaken after the accident indicated that up to 60 percent less oil — about 6 million gallons — would have entered the water if the *Exxon Valdez* had been equipped with a double hull. Double hulls already are required for chemical tankers and gas carriers to provide maximum protection to cargo tanks. A study for the Alaska Oil Spill Commission by ECO, Inc., of Annapolis, Maryland, says double hull design "provides the highest probability of surviving damage, either from a collision or grounding, with no loss of cargo."

Hull designs of the 93 tankers registered for Alaska trade.



Technical measures to reduce risk of accident and oil spillage have been advocated by naval engineers and others over the past two decades, but this advocacy has not produced significant voluntary changes in the way the industry does business. Suggestions regarding multiple screws, horsepower enhancement and other design overbuilding proposals to enhance safety have received only a negative response. Required changes are necessary, particularly as the size and carrying capacity of modern supertankers has increased.

Recommendation 29
Mandatory traffic control

Mandatory traffic control systems should be installed in due course in Cook Inlet, Prince William Sound and all waters of the U.S. where an equivalent or greater risk occurs.

Any of several common practices relating to positive vessel traffic control would have prevented the *Exxon Valdez* from straying so far off course as to run aground on Bligh Reef. The wreck would not have occurred if there had been a traffic control system covering operations to Hinchinbrook Entrance, as was promised by owners of the trans-Alaska pipeline system at the time the system was approved. The wreck would not have occurred if Loran C retransmit or radar had provided reliable coverage to Hinchinbrook Entrance, as was promised by the owners. And the *Exxon Valdez* wreck would not have occurred if the Coast Guard had not, according to regular, informal practice, given permission to the vessel to move outside established tanker lanes.

The *Exxon Valdez* wreck would have been less likely if the vessel had been traveling at lower speed and would not have occurred if the captain had

chosen to push through ice in the traffic lanes at low speeds, as was more common practice in the early years of operation of the Valdez terminal.

A mandatory vessel traffic control system operated by personnel more experienced that those now posted to the advisory system would require strict monitoring of a vessel's position in relation to traffic and known hazards and would prevent corner-cutting to save time, a conspicuous cause of the well-known Torrey Canyon disaster.

Recommendation 30
Crew levels

Crew levels on tank ships must be established to reflect manning needs under emergency conditions, not just normal operating circumstances, and must reflect the need to avoid fatigue and overtime among those with responsibility for safe navigation.

Crew sizes and fatigue factors have been subjects of investigation since the *Exxon Valdez* accident. A second qualified officer on the bridge would have made the wreck substantially less likely by increasing the likelihood that the bridge would have been alerted to the ship's errant position, the impact of the automatic steering mechanism, or to alternative last-minute navigation strategies for avoiding the reef, in time to avert the accident. Similarly, the wreck would have been less likely if crew members and ship's officers required to do double duty in Valdez harbor during loading operations had not been subject to fatigue.

A 1984 survey indicated that the ability to make schedules is viewed as the single most important factor in a company's evaluation of a captain's performance. Under such circumstances, a captain is strongly motivated to run whatever crew he has as long and as hard as necessary to meet the required schedule, despite formal duty time limitations. National Transportation Safety Board hearings on the *Exxon Valdez* accident showed that several crew members — including Third Mate Gregory Cousins, who was at the helm at the time of the accident — had worked extraordinarily long hours the day of the wreck. This practice is not rare in the trade.

Crew training standards must be strengthened and retraining and reexamination reviews tightened. Physical standards, in addition to those proscribing alcohol or drug abuse, must be met. A captain having a "predictable" heart attack is of no more use than one under the influence.

"The tradeoff in risk involved with a double hull is that to carry a given amount of oil, you now have to have 60 percent more tankers, and if you do the arithmetic that's the way it comes out."

Frank Iarossi, President, Exxon Shipping Company

Alaska Oil Spill Commission hearing, 9/1/89

Recommendation 31
Coast Guard role

The mission of the U.S. Coast Guard to protect the safety of navigation should be defined specifically to include the safe transportation of oil by sea. Sufficient funding, resources and institutional support should be given to insure the strengthening this purpose.

For reasons that include not just underfunding, but also confusion of mission and an unduly friendly relationship with industry, the Coast Guard has failed the American people in providing oversight of the country's oil transportation system. Enforcement must be strengthened and the penalty structure raised to a point where it weighs in the economic calculations of each company.

While various Coast Guard units have operational responsibilities for tanker safety, the Coast Guard's primary mission is not the environmentally safe transportation of oil by sea. There is a general disposition in the agency to keep commerce moving without regard to all environmental or social costs. This disposition may be in conflict with the need to "follow the book" to insure safety. The lack of particular focus on the environmental risks of oil transport was revealed in the system weaknesses that permitted the wreck of the *Exxon Valdez*.

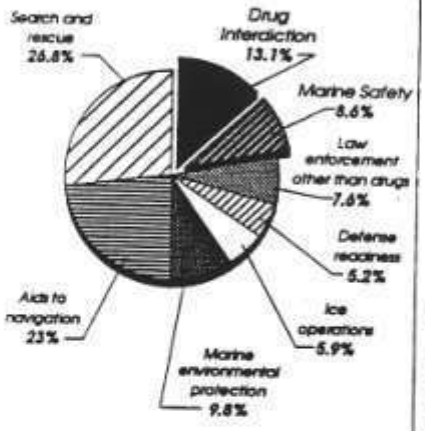
The Coast Guard commandant is selected by the president and accordingly is likely to reflect the philosophical perspective of the times. After President Nixon's declaration of a policy of oil independence, which President Carter pursued through establishment of a Department of Energy, the national mood under President Reagan moved to industrial self-regulation. This mood was reflected in a greater resonance with industry wishes in Coast Guard performance. Relaxed regulation has contributed to a lack of progress in maritime environmental safety. Safety does not do well in a laissez-faire environment.

Underfunding and relaxed attitudes toward regulation increased the likelihood of the *Exxon Valdez* wreck in several ways. The junior Coast Guard personnel posted to Valdez did not think they had the authority to instruct tanker operators in navigation or to require frequent position reporting. Only one Coast Guard employee was on duty at the time of the accident. The wreck would not have occurred if the Coast Guard had prioritized the installation of up-to-date vessel monitoring systems. The wreck would have been less likely if the Coast Guard had exercised strong oversight of crews and manning practices.

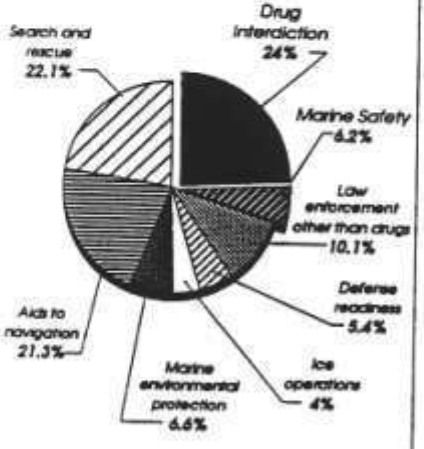
The Coast Guard's power to determine required crew levels is cf little consequence as exercised. The determination is largely a paper exercise in which the shipper submits a proposal that typically is routinely

Coast Guard Budget Comparisons

1982



1989



Source: *The Seattle Times*

approved without inspection, sea trials or a determination of need under foreseeable emergency or unusual conditions.

In the normal course, Coast Guard personnel retire or transfer to the shipping industry in large numbers, particularly at the executive level. It may be that the prospect of working for industry is reflected in the attitude of some Coast Guard personnel. The "revolving door" and the resulting sympathy of interests between regulators and the regulated is a common problem in other areas of government service.

Recommendation 32
Insurance premiums to reflect risk

Congress should revisit the antitrust exemption granted to marine industrial insurance to require that premiums reflect design and operational considerations in accident prevention and pollution abatement.

The shipping industry is responsive to economic incentives. Insurance premiums and premium requirements create incentives. Congress has adopted special provisions concerning the conditions under which marine insurance is exempt from antitrust regulation. Various requirements must be observed as a condition of the exemption. These conditions should require additional features affecting premium structure and loss control to encourage design improvements and operational practices that enhance environmental safety in the shipment of oil.

Recommendation 33
Corporate safety reporting

Congress should require corporations transporting oil or hazardous substances to file environmental safety reports as part of their Securities and Exchange Commission 10K filing. These corporations also should include a separate environmental report card in their annual reports to shareholders.

Safety is a factor in long-term profitability that may be neglected in management preoccupation with annual profit. Safety is a factor of cost and accountability. SEC requirements are intended to inform investors of facts needed to assess risk. A company's record and status concerning environmental safety should be available to inform such assessments.

A company responsible for oil transportation should report to its shareholders on the safety of its operations in addition to their profitability. The report should include an account of accidents, close encounters, technological developments, goals and objectives. This information should also be collected for the government's report.

"A lot of the Coast Guard personnel that came in did not have a understanding or a local knowledge of the area. I think that shoul be ... Local knowledge is going to be a key ingredient."

Jim Butler, Kenai Peninsula Borough

Alaska Oil Spill Commission hearing, 9/7/89

The meaning of corporate democracy should involve full discussion of all matters shareholders may care about. Environmental responsibility is a large part of corporate social responsibility for most large corporations, and certainly for companies carrying oil or hazardous substances. Shareholders should be kept informed of the corporation's stance toward its environmental record.

Recommendation 34
International action

The United States should pursue an aggressive policy in bilateral and international regulatory forums to demand safety improvements. The practice of deferring to international transportation safety standards in U.S. waters should cease. Environmental regimes established by state or federal government should apply to tanker or barge traffic under any flag in U.S. waters.

U.S. law should provide for the protection of U.S. waters, resources and regulatory standards regardless of whether international standards are consistent with them. Trade with the United States is at a high enough volume that this country should set the standard for environmental safety rather than accept a lower standard set by other nations.

Improvements in international safety standards have not been commensurate with growth in maritime oil transportation. The policy of the United States in international forums has been cautious, and forums have been dominated by U.S.-based multinational corporations to the disadvantage of environmental protection. American policy should be reoriented toward leadership in the establishment and maintenance of rigorous standards of safety and environmental protection. The United States should pursue bilateral agreements with its North American neighbors and its trading partners to provide cooperative standards, enforcement and spill response. The need for international spill response systems is shown dramatically by the 30 million-gallon spill from the Iranian supertanker *Khark-5* off the Morocco coast in December 1989. International standards should be viewed as a floor beneath which U.S. requirements will not fall rather than a ceiling above which they cannot rise.

Recommendation 35
Offshore tanker lanes

Tanker lanes should be established to keep tankers and fuel barges in the Gulf of Alaska and North Pacific trade at least 100 miles offshore.

Time is critical in efforts to protect coastlines from oil spill damage. In the event of tanker collision or breakup at sea, sufficient distance from imperiled coastlines can provide time to prepare defenses for key resources or habitats before oil reaches them.

A system of tracking large vessels in the North Pacific should be developed.

Recommendation 36
Tracking vessels in the North Pacific

The technology exists at modest cost to take the "search" out of search and rescue by tracking vessels broadcasting a signal on the high seas. Similar systems are required on all commercial air carriers and should be done for vessels. The system would not only enhance the environmental safety of tankers but also for modest marginal cost would enhance life safety systems in one of the most hazardous areas in the world.

Congress should ask the president to require the administrator of the Environmental Protection Agency and the secretaries of Transportation and Commerce to issue a special report on the safety of oil transportation by sea. Annually thereafter, the Office of Science and Technology Policy or the Council on Environmental Quality should report on progress made by all parties, close encounters and accidents during the year, and emerging issues in the field.

Recommendation 37
Presidential Report

No federal agency has as its primary mission oversight of the environmentally safe transportation of oil. The focus provided by a presidential-level report on the safety of maritime oil transportation would help alert the nation and the federal government to shortcomings in the system, as well as emphasizing the importance of safeguarding this system.

The report to the president should include:

- A history of accidents involving oil, gas and hazardous substances;
- An assessment of current risks and safety practices with reference to national energy policy;
- An assessment of prospects for progress in the enhancement of prevention technologies and techniques;
- An account of the activities of all federal agencies with responsibility for maritime safety, including a report on maritime recommendations of the National Transportation Safety Board, actions taken on them and reasons recommendations may have not been followed;
- An account of penalties levied for violations of oil, gas and hazardous substance transportation safety regulations;

"The few Coast Guard people that I have met in the field are green. I mean, they reminded me of summer hires. They were kids right out of school, and I can't help feeling that the powers that be are up there telling them to get those guys out of here and get this signed off so we can get this paper work, this paper chase done and get on with our business of running government."

Rich King, Upper Cook Inlet fisherman

Alaska Oil Spill Commission hearing, 9/7/89

A specific report on the safety of the trans-Alaska pipeline system, the preparation of which should include adequate provision for state participation; and

- An overview evaluation of the effectiveness of private contingency and public response plans to oil spills in U.S. waters.

The Alaska trade is substantially less than a fifth of the maritime oil transportation system requiring national oversight. Either a strengthened Council on Environmental Quality or a more focused new agency as a watchdog over national environmental protection might better serve the nation's interests in reporting on the protection of the marine environment.

"In spills of this kind the Coast Guard has primary jurisdiction, and it is only when, as I understand the law, only when the responsible party either refuses to clean up or fails to do the job that the Coast Guard has the ability to step in."

Dennis Kelso, Commissioner
Alaska Department of Environmental Conservation
Alaska Oil Spill Commission hearing, 8/31/89

GOVERNMENT RESPONSE POSTURE

Alaska and other states have depended upon the National Contingency Plan to organize catastrophic spill response, but the *Exxon Valdez* incident illustrated the emptiness of its promises. The NCP provided neither the resources nor the manpower for effective action against a 10.8 million-gallon spill.

What is required in a successful oil spill response is to blend the resources of state, federal and industry response teams into an effective organization, and to provide sufficient manpower and resources to make a significant attack on the spill within 24 hours.

The greatest weakness of the NCP, as revealed in the *Exxon Valdez* incident, was that it failed to establish the firm, predesignated working relationships that are vital to a successful emergency response. Yet if that had been accomplished, it only would have revealed the weaknesses in the rest of the plan: lack of matériel, lack of trained manpower and lack of established common goals.

"What really happened here is that the system failed. We were down to the kicker on the football team making the tackle, and no coach wants that."

Vice Admiral Clyde Robbins, U.S. Coast Guard

Committee on Interior and Insular Affairs hearing, May 1989

Recommendation 38
Government in charge

The spiller should not be in charge of response to a major spill. A spiller should be obligated to respond with all the resources it can summon, but government should command that response.

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.

The spiller was obliged to respond to the spill under contingency plans in effect at the time of the *Exxon Valdez* wreck. Neither Alyeska Pipeline Service Company nor Exxon Shipping Company was prepared to respond to a spill of such magnitude. The handoff of spill response authority from Alyeska to Exxon was not anticipated by all authorities and contributed to command confusion. Key decisions, such as the focus on "Corexit," an Exxon dispersant, were unduly influenced by the fact that the spiller was in charge of the spill.

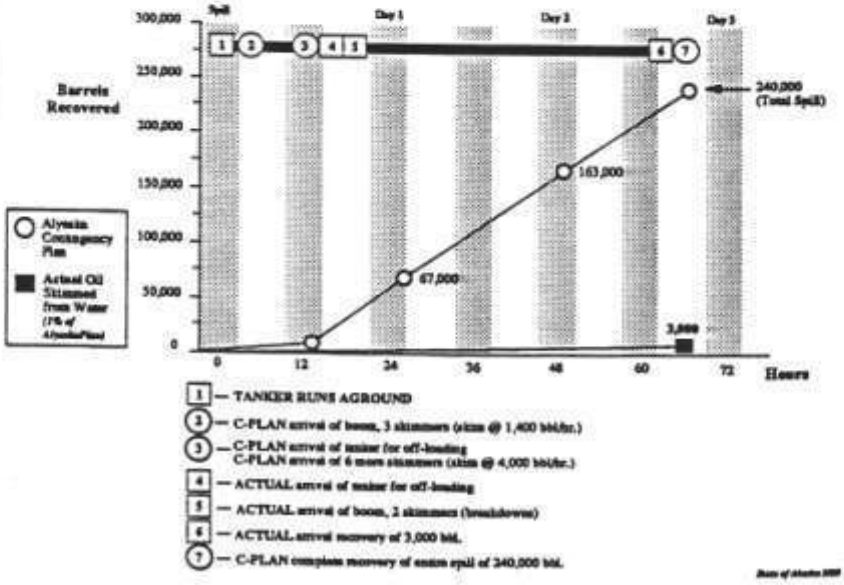
Spill response regimes should provide for government direction of the response effort, with the full participation and resources of both the spiller and government. Small spills, according to DEC regulations, can continue to be handled by the spiller.

"It's just a simple question of who's in charge."

Jim Butler, Kenai Peninsula Borough

Alaska Oil Spill Commission hearing, 9/7/89

Actual Cleanup vs. Intended Contingency Plan Cleanup



Congress should either strengthen the Coast Guard's oil spill response capability or transfer oil spill containment and cleanup responsibilities to the U.S. Army Corps of Engineers.

Recommendation 39
Coast Guard role in response

One of the real and relatively unsung success stories in the response to the *Exxon Valdez* disaster was the work of Exxon and the U.S. Coast Guard in lightering crude oil off the grounded vessel and later moving the ship safely off the reef. That success is a marked contrast to the failure of all efforts to contain and collect the oil that escaped in the accident.

"It's very important that a defined chain of command is recognized. You've got a couple of windows of opportunity in the initial management of a spill. You've got 12 hours, which is one tide cycle, a flood and an ebb. And then you've got, I'd say, four days and then after that it's gone."

Jim Butler, Kenai Peninsula Borough
Alaska Oil Spill Commission hearing, 9/7/89

By tradition and practice, the Coast Guard has developed considerable expertise and experience in salvage and rescue, but comparatively little ability in oil spill response. The Coast Guard is seriously underfunded and underdirected in the 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.

Corps of Engineers and U.S. Navy equipment and workforces were the largest component of public response to the *Exxon Valdez* spill. There is a long history of cooperation between the Corps of Engineers and the Navy. The Navy has long experience in spill cleanup. Approved career patterns in the Corps of Engineers allow the development of career-long expertise and professionalism in a particular specialty. The Corps of Engineers' dredging capacity (which can be converted to skimming and oil recovery) and its nationwide mission involving the movement of water, soils, the management and preservation of wetlands, give it an unmatched spill response presence in all regions of the country.

Transferring spill response duties to other agencies would allow the Coast Guard to focus on tasks it does well—salvage and rescue—while permitting greater expertise of other agencies to be brought to bear on cleanup. Short of a formal transfer of functions, the Coast Guard should consider entering into delegation agreements for spill response functions.

The Environmental Protection Agency is not adequately funded and staffed for oil spill prevention and response. Unless the agency receives sufficient resources, these functions should be delegated to the states or transferred to agencies better able to perform them.

Recommendation 40
Role of Environmental Protection Agency

The Environmental Protection Agency commitment of staff and funding to activities in Alaska does not support the public perception that the

agency oversees protection of the environment. The EPA has no Alaska presence and is unfamiliar with local conditions. The agency performs its mission in Alaska only by delegation; for example, it has contracted with the Bureau of Land Management for spill response duties in the trans-Alaska pipeline corridor.

"One of the big problems in this oil spill situation was that for the first couple weeks probably over 50 percent of management energy was spent in organizational determination and role decision."

Dave Liebersbach, Multiagency Coordination Group
Alaska Oil Spill Commission hearing, 8/31/89

The EPA's response to the *Exxon Valdez* disaster was limited, though it did provide expertise in water sampling and environmental analysis. Only a narrow range of approvals and disapprovals of chemical response techniques were asked of the EPA in this incident. But it did not perform well even this limited task due to a lack of adequate testing and a backlog of approval authorization actions.

The EPA had no capacity to propose response strategies to the *Exxon Valdez* wreck, only to pass on the proposals of others. For example, the agency was in no position to propose alternatives to Corexit, Exxon's patented dispersant, or to challenge its use. The causes of this performance lapse include inadequacies in the research and development budget of the agency.

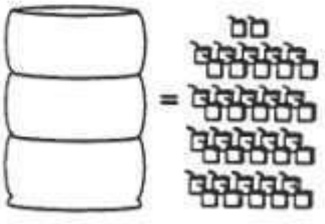
Although it is formally identified as the federal government's lead responder on land spills, the role of the EPA in such events has not been conspicuous. The agency has no capability in Alaska to regulate oil spill prevention or plan for contingencies and has only a limited capacity to respond to a spill by flying people into the state in an advisory role.

Recommendation 41
State takeover of oil spills

The state should empower itself to take over direction of the response to any spill in Alaska waters.

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 a 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.

One barrel of oil = 42 gallons



The state has a constitutional obligation to protect its own resources and the primary responsibility to assist its own citizens. Considering the limited capabilities of federal agencies to respond to a variety of contingencies and the industry's conflict of interest, the state can never rely completely on the United States government or on industry to protect the resources of the state, whether on federal or state lands.

The state's authority should include the power to command the spill cleanup, to apportion scarce public and private resources, and to set in motion an emergency procurement process that will bypass the red tape that was a conspicuous element in the response to the *Exxon Valdez* wreck.

Recommendation 42
State role under federal authority

Even when the federal government maintains authority over a spill, the scheme for direction and command should permit full cooperation with state authorities.

Though primary responsibility for the salvage of vessels and the safety of crews should remain with the Coast Guard, pollution abatement may be left to the direction of state authorities indicating a willingness and capacity to do so with the support of federal resources. In particular, the state on-scene commander should be empowered to give binding directions to a spiller concerning particular response strategies. Community impact functions should be left to the standard emergency response command system.

Recommendation 43
State response depots

The state should establish community-based response depots under the management of the state Department of Military and Veterans Affairs.

A major oil spill is in many respects analogous to emergencies such as floods, forest fires and earthquakes. Persons trained in emergency systems to mobilize a large workforce quickly and with the required urgency tend to be better equipped to respond to a major spill. Those specially trained in environmental protection perform better in advice on establishing goals and objectives and in evaluating the impact of the operation.

A state response committee made up of representatives of the appropriate state and federal agencies should be created to review state response plans and participate in periodic drills.

Recommendation 44
Immediate local response

Local volunteer and part-time spill response units should be established, trained and equipped under the direction of the state Department of Military and Veterans Affairs.

Trained volunteer and part-time spill response units, properly trained, supervised and mobilized, should be prepared to protect critical habitat by keeping oil from reaching the shore or protected areas. The work of

Cordova fishing community mobilizing a "mosquito fleet" to protect fish hatcheries after the *Exxon Valdez* wreck is an instructive example. The local experience, knowledge and equipment of a trained volunteer corps should be put to work to help protect local resources.

Recommendation 45
Comprehensive regional response plans

The state should develop regional response plans reviewed by appropriate regional advisory committees. Private contingency plans should be developed that presume and mesh with the regional response plan.

Regional committees should be made up of local community members, state and federal agencies and industry. They will prepare the regional response plans and participate in drills to insure readiness. When a spill occurs this committee makes decisions regarding the region and reports to the on-scene commander. During the aftermath of the *Exxon Valdez* wreck the best example of a coordinated response was the response in Seward. The incident command system was fully employed and was able to carry out a well-managed, organized response.

These committees need to be predesignated before spills so they can participate in the planning process and be even more effective in responding to spills when they occur.

Recommendation 46
Regional response capability

The regional response capability designated in the regional response plan should be able to respond to a major spill with the speed of a fire department to protect habitat and contain, transform, recover or destroy a major spill before it reaches shore.

Time is the critical factor in all attempts to limit the environmental damage in a major spill by keeping oil off the shore. Regional response organizations must perform swiftly and with clear command and control to maintain the hope of keeping oil off the beach.

Recommendation 47
Emergency economic maintenance

The state should sponsor a system of emergency economic maintenance for persons immediately and seriously affected adversely by a spill.

The financial victims of a spill should not be subject to economic pressures to settle their claims quickly. Victims whose injury is indirect also should receive some early relief. The economic maintenance system should follow the pattern of unemployment insurance but would cover all

classes of people injured by a spill, not just insured unemployed. This program should be funded from spill impact funds.

Concern for fish and wildlife resources was the dominant concern in the response of state agencies and federal environmental agencies. Impacts on people were given relatively lighter attention, despite the toll in human misery on those whose livelihood and way of life had been severely disrupted or effectively destroyed for the foreseeable future.

Exxon did set up a system for the early compensation of claims and settled a large number of them, an activity it was not required by law to undertake. A smaller and less financially capable company may not have been willing or able to provide such a system.

Exxon was able to mitigate claims against it by hiring large numbers of people put out of work by the spill in cleaning up after it. The injured and economically benefited, however, were far from congruent groups. The principal economic beneficiaries of the spill were the two corporations hired by Exxon to manage the cleanup.

Many fishers or other injured parties believed they were disadvantaged in dealing with Exxon on claims.

The private system was incomplete in that many people who suffered severe income loss received no compensation because their claims were not against Exxon or were not legally cognizable. For example, seafood processing workers and crews of fishing vessels that were not hired according to their annual expectation were left to their own resources. Some were successful in obtaining employment with Exxon or its contractors. Others were not.

"I can't quantify the losses that occurred because no in-place, quick studies were made as to what was happening to the economy at that time. We have lost the economic history."

Vince O'Reilly, City of Kenai
Alaska Oil Spill Commission hearing, 9/7/89

"EPA classified Alyeska as a nonprofit organization and based their entire permit on that. When operations at Alyeska were compared to other operations including facilities partly owned by the Alyeska owner companies, it becomes readily apparent that the oil industry is operating under a set of global double standards."

Dr. Riki Ott, Cordova District Fishermen United
House Committee on Interior and Insular Affairs hearing, May 1989

IMPLEMENTING THE RESPONSE

Inevitably, a major spill will occur.

Just as inevitably, there will be surprise and chaos. But unpredicted circumstances and the disarray of managers caught off guard can be sharply reduced if a plan is in place that sets out in a coordinated fashion what people should do in emergency circumstances.

The failure of response to the *Exxon Valdez* disaster was made more poignant by the location of the accident. Bligh Reef is in protected waters, only 25 miles from one of the world's major oil terminals. Most of the cleanup equipment in the state was stored at the terminal, and the weather for the first three days after the spill was extraordinarily good.

Command and contingency plan changes contributed to the chaos. When it became obvious that Alyeska's contingency plan was inadequate, the local response commanders — the Coast Guard captain of the port, the Valdez field office chief for the Alaska Department of Environmental Conservation, and the manager of the Alyeska marine terminal — were replaced, even though they were the most familiar with the spill area and the existing contingency plan. Within 48 hours, the spill was being managed by a Coast Guard admiral, the head of Exxon Shipping Company and the commissioner of the Alaska Department of Environmental Conservation, none of whom had particular knowledge of the area or its response planning. Eventually the Exxon worldwide contingency plan took priority, even though it had no specific relationship to Prince William Sound.

Response to the *Exxon Valdez* wreck revealed confusion and unpreparedness on a massive scale. But because plans do not work perfectly does not mean that they don't work at all. There is no reason why the chaos of the *Exxon Valdez* response should be repeated.

"As regards the cleanup effort and the equipment, I think it would stop the average reader just to read that the equipment that was used in most cases was inadequate. In most cases it didn't work. In a lot of cases the equipment was not in place."

Vince O'Reilly, City of Kenai
Alaska Oil Spill Commission hearing, 9/7/89

Recommendation 48
Incident Command System

A formal command structure, known as the Incident Command System, should be used to direct response to oil spills.

The safety of the crew and salvage of the ship and cargo should be left primarily in the hands of the Coast Guard and the owner. The Incident Command System, which is familiar to many state and federal agencies, appears to be the optimum command and control system for other oil spill response functions. The system allows for training and management by state emergency and environmental authorities to cover three major responsibilities:

- Containment and recovery of the spill on water.
- Treatment of beaches and recovery of oil from the intertidal zone.
- Management of onshore impacts, primarily a responsibility of emergency response authorities.

The local on-scene commander can be predesignated under this system. The function of higher officials such as a federal "czar" should be to see that resources are mobilized and provided, not to replace the on-scene commander. Pre-incident agreements and the Incident Command System should guide the allocation of labor and equipment to communities.

A confusion of command and responsibility handicapped response in Prince William Sound, despite the good faith efforts of all parties. Similarly, a confusion of mission resulted in a division between the very successful focus on the safety of the crew and salvage of the vessel and its cargo and the much less effective effort to contain and recover the oil. Shore operations were often marked by chaos, misallocations of resources and neglect of the interests and wishes of residents.

In almost every command structure surrounding the *Exxon Valdez* spill, the individual most knowledgeable about the circumstances of the spill and theoretically charged with response was quickly replaced by a person who may never have read the local contingency plans. The Coast Guard appears to have rotated personnel through Prince William Sound for the experience.

"The cleanup effort consisted principally of managers, most of whom knew little about the area or environment they're entrusted to restore, fairly rigidly supervising laborers. These same managers, private and public, have discouraged volunteers with local knowledge from helping in the cleanup effort. This kind of centralization works for mobilizing heavy equipment and disposing of hazardous waste, ... but I think it's discouraged the flexibility and creativity needed to pick up oil with the primitive technology that we have in remote areas."

Professor Matt Berman, University of Alaska

Alaska Oil Spill Commission hearing, 9/21/89

A substantive role should be given to the affected communities in any response system.

Recommendation 49
Enlarged community role

Communities in proximity to the spill and in the shadow of the oil were not given a proportionate role in the response system after the *Exxon Valdez* accident. Frequently they were ignored. Often they devised their own strategies for response, for instance acquiring or manufacturing boom by themselves. Yet local interests, local knowledge and experience with the ocean often made the community-based work force the most efficient available.

The state Department of Environmental Conservation should continue to insure spill response capability. For smaller spills this responsibility can be carried out or supported through private contract. In a major spill, where mobilization of private resources and multigovernmental agency response is required, the Department of Military and Veterans Affairs, with the advice of DEC, may determine that the spill be taken over by the state.

Recommendation 50
Allocation of state response authority

Confusion of command in response to the *Exxon Valdez* disaster grew out of the state's failure to focus response activity in a single agency with an operational capacity.

Distinctions were blurred in the *Exxon Valdez* disaster between the system for making decisions and responsibility for carrying them out. DMA is better suited than DEC to carry out operational decisions. DEC is better suited to provide quality assurance auditing functions and to give advice, as is the role of DEC in relation to the private spiller in charge.

Logistic support agencies were not sufficiently utilized in the *Exxon Valdez* spill as a result of a confusion between the decision-making process and execution command.

Responsibility for the management and preparedness of emergency local response activity should be vested in the Department of Military and Veterans Affairs.

Recommendation 51
Enhanced role for Department of Military and Veteran Affairs

Regional depots, now privately controlled under a Regional Response Agreement, should also be managed under the Department of Military and Veterans Affairs or as the department delegates. This may require some redelegation of authority vested in the Department of Environmental Conservation in the last session of the Alaska Legislature.

In their professional training the normal professional complement of the DEC consists of persons primarily trained in the measurement and evaluation of environmental quality. Such personnel are not as well trained in the skills of maintenance and mobilization of a workforce and equipment, communications, procurement and the like.

The personnel of DMA are primarily trained in emergency response, the mobilization of a workforce and equipment, emergency procurement and similar tasks. DMA's management of emergency response gives the DMA a standing outreach into all Alaska communities including personnel, equipment, a command structure, a work force, buildings, planes, vehicles, etc.

The DEC, a regulatory agency, though far better equipped and staffed than EPA, did not have a disaster response capability sufficient to meet a spill of large magnitude.

Recommendation 52
Emergency response funding

An immediate funding mechanism must be available after a spill to allow the earliest commitment of response resources.

Procurement limitation was the first reason the Coast Guard did not take command of the *Exxon Valdez* spill, though other reasons, including presidential directive, followed.

"There was never a question in my mind about whether to incur a commitment or enter a contract because of worries about funding."

Dennis Kelso, Commissioner
Alaska Department of Environmental Conservation
Alaska Oil Spill Commission hearing, 8/31/89

An immediate funding mechanism would permit authorities to contract resources, the mobilization of a workforce, the purchase of supplies, etc. Procurement procedures normally followed to insure accountability make response efforts ineffective under emergency conditions. Until the governor is notified, the on-scene commander should be empowered to authorize the expenditure of funds. When the governor is notified of a spill, the governor should authorize the release of funds and determine their allocations among agencies. Both federal and state contingency fund sources are required for an effective spill response capability.

Public agencies were substantially handicapped by their inability to quickly commit themselves financially. In contrast, Exxon was the most effective responder because its officers on the scene had authority to commit the corporation. The Coast Guard is required to determine whether to federalize a spill based on whether the spiller is doing an adequate job. In fact, the Coast Guard determines whether the spiller can do a more effective job than the Coast Guard. This is almost always the case because the Coast Guard is handicapped by procurement limitations.

The EPA has no significant presence in Alaska capable of responding to a major spill on the uplands, notwithstanding that the response planning assumes the EPA will be in charge. In Alaska, this responsibility has been transferred by contract to the Bureau of Land Management.

Recommendation 53
Local service impact funding

A declaration of emergency should trigger the ability of the governor or other appropriate officials to release funds collected from state oil revenues to cover all impact costs, including economic maintenance programs and local impacts which become an extra burden on local services, whether provided by state or local government.

Indirect government service costs can be as important as direct spill expenditures in meeting a spill emergency. Local governments in particular were hard hit by lack of funding for increased burdens which hit everything from phone service to mental health during the crisis following the *Exxon Valdez* spill.

Exxon released some funds to communities for service needs, which it was not obliged to do. But the availability of such funds should not depend on the policy of the spiller.

Recommendation 54
Full-cost reimbursement

As a prevention incentive, existing regulations should be broadened to insure that tin future spills the state can recapture all expenses directly or indirectly incurred by the state, its subdivisions and private parties to whom the state owes reimbursement or who have benefited under the state's oil spill disaster economic-maintenance program.

Disagreement on reimbursable costs that resulted in an economic loss to the state resulted in the cancellation of a contract by which, on the pipeline route, DEC exercised EPA authority over spills, all to the detriment of environmental protection.

Reimbursability became a criteria for state response in the *Exxon Valdez* spill, to the detriment of the environment and people injured by the spill.

A fund should be created in state government to help local governments cover public spill costs caused by oil and hazardous substance releases that cannot be charged back to responsible parties.

Recommendation 55
Private contingency plans

Private parties carrying oil must have a state-approved plan of response to spills of all sizes, including a worst-case scenario, that can be used under either private, federalized or "Alaskanized" spill response.

The state requirement that Alyeska's contingency plan respond to the "most probable" spill, however, put a lid on expectations about response to a worst-case spill. Alyeska did not prepare beyond the state's minimum standard and did not advocate a higher one.

The risk of a catastrophic spill cannot be reduced to zero as long as oil is carried in large quantities. But the interval between spills can be lengthened and the impact mitigated.

Under known and approved technology, it is also incorrect to assume during contingency and response planning that nearly all oil will be recovered. Under extreme circumstances of weather and location, no oil may be recovered. Here the emphasis should be on critical habitat protection.

In reviewing plans for unfavorable circumstances, DEC should determine a standard of "good effort" rather than one based on a fully successful result.

We know of no effective way to prevent major damage once oil reaches the intertidal zone and shore. To be most effective spill response must be immediate to keep oil from spreading or reaching shore and critical habitat. In the case of a spill near shore, it is not the magnitude of the response over time but what is done in the first few hours that offers the most protection.

Exxon Corporation ultimately marshaled an impressive array of resources and spent great sums of money in the *Exxon Valdez* cleanup. As each hour from the time of the wreck passed, however, the worth of each resource commitment and dollar rapidly declined. After two days, the spill managers were effectively incapable of preventing the spill from reaching shore and destroying major habitat areas.

Though containment and cleanup actions were undertaken at great cost and eventually with massive participation by many parties, containment was fundamentally flawed and failed as a result of insufficient resources being applied too slowly to prevent the oil from hitting the beaches.

The lack of resources was compounded by the absence of a standardized system of information transfer in the first few hours and confusion in the

"The seven oil companies who own Alyeska broke a contract with the U.S. government and the people of the state of Alaska. Simply put, Alyeska was unprepared to deal with an oil spill of this magnitude, as they promised they would be, and they failed to react quickly during the critical early hours of the spill to minimize environmental damage, as they are mandated to do."

Dr. Riki Ott, Cordova District Fishermen United

House Committee on Interior and Insular Affairs hearing, May 1989

command and response system that resulted in decision-making and mobilization lapses in the first critical hours.

Beach treatment, a major investment by Exxon, was too late to touch more than a small percentage of the spill. Large quantities of oil remain in the substrata of beaches and continue to exact a toll on the biosphere. Technologies used to get large quantities of substrata oil out tend to take a high toll on the environment. Assessment of beach condition in Prince William Sound is problematic since the treatment had a cataclysmic effect, if not on the magnitude of the oil, on intertidal life.

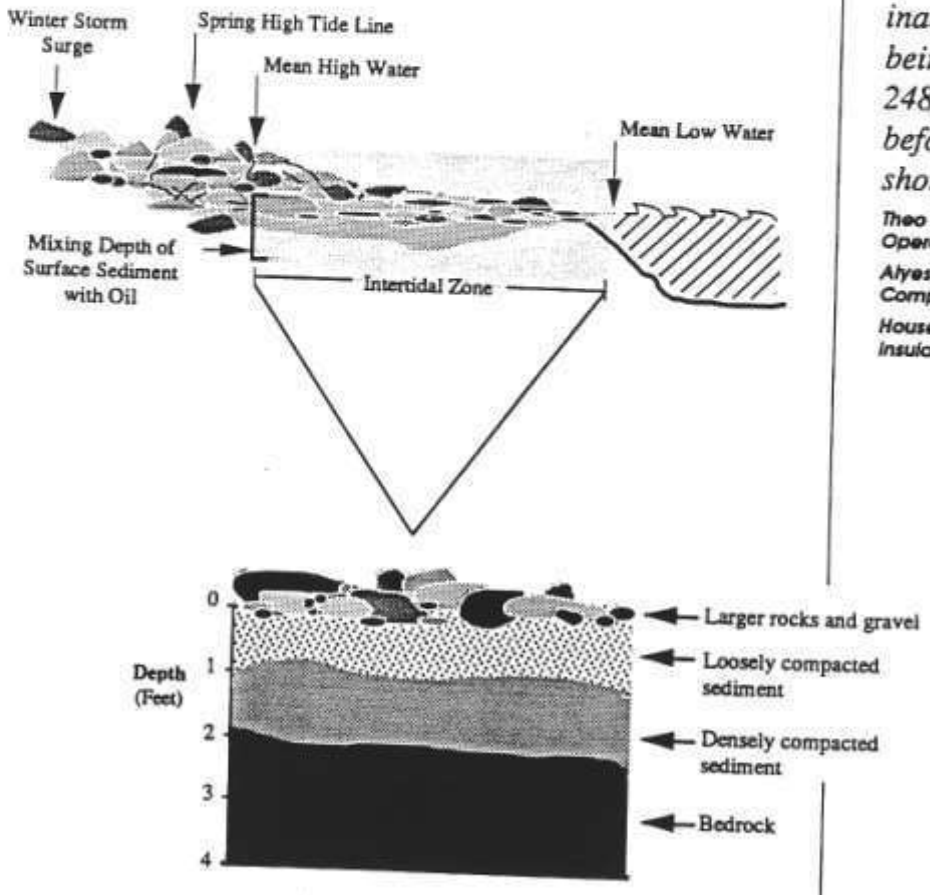
"Clearly from our understanding of what the state expected from us and what the people of the state expected from us, we had a good plan and we executed it. The problem many times is that people automatically assumed that adequacy or inadequacy hinges on being able to pick up 248 or 262,000 barrels before it gets on the shore."

Theo L. Polasek, Vice President of Operations

Alyeska Pipeline Service Company

House Committee on Interior and Insular Affairs hearing, May 1989

Typical Beach Profile in Prince William Sound



RESEARCH & DEVELOPMENT

The *Exxon Valdez* disaster has awakened industry, government and public interest in oil spill research. The May 1989 report to the president on the *Exxon Valdez* by Transportation Secretary Samuel Skinner and Environmental Protection Agency Administrator William Reilly bluntly concluded that "oil spill cleanup procedures and technologies are primitive." That view was echoed by the American Petroleum Institute, an industry group that issued a report calling for new private investment in research and development of spill response methods. Federal agencies are preparing research and development initiatives in spill response techniques, technology, training and deployment systems. There is also increasing interest in coordination and collaboration with other countries, particularly Canada, to provide faster progress, faster dissemination of research results, and less unnecessary duplication of effort.

Legislation now pending in Congress provides for the establishment and funding of oil spill research and development programs. One proposal would create a Prince William Sound Oil Spill Recovery Institute to identify and develop the best technology for dealing with spills in arctic and subarctic marine environments. Another would establish a minimum of six regional centers to address research needs.

Government-supported research and development should insure that public priorities are met, that government agencies expected to direct future oil spill response will be knowledgeable about new technologies and techniques, that regulation is appropriate and effective and that up-to-date response capabilities are maintained. Coordination and cooperation in research and development programs is in the interest of all concerned.

Alaska's interests in oil spill research should focus on specific Alaska marine habitats, the characteristics of oil and dispersant methods in arctic and subarctic waters, prevention research and training programs to ensure that Alaska response authorities will be fully prepared to understand and cope with future spills.

"We therefore are guinea pigs within a giant experiment, where facts are made to fit the hypothesis made. In our frustration of our loss, we fight an invisible enemy, and suffocate in the air polluted with politics."

Dolly Reft, Kodiak native
Alaska Oil Spill Commission hearing, 8/11/89

"It's embarrassing to know that the level of our technology of this great country is what it is when I see out there that the most effective thing is an oil absorbent pad."

Dennis Holan, Cordova fisherman
Alaska Oil Spill Commission hearing, 6/28/89

Recommendation 56
Knowledge transfer

The United States, the State of Alaska and Canada should establish cooperative research programs to develop and disseminate knowledge on oil spill prevention and response.

Despite two decades of rising public concern for the environmental consequences of oil spills, research on the subject is still in its infancy. Prevention systems are haphazard. Spill response technology is untested and underdeveloped. Research investment is low, and institutional commitment to this field is scarce.

"Cost avoidance also occurs through the efforts of managers of all agencies to try to control information in order to keep other people from finding out whether you might be able to do a better job. Public policy can improve organizations so that they do what we want."

Professor Matt Berman, University of Alaska

Alaska Oil Spill Commission hearing, 9/21/89

For a variety of reasons — including, predominantly, ignorance — the latest technologies were not used in the *Exxon Valdez* cleanup. Much of the available cleanup equipment had not been tested in the various circumstances facing cleanup crews. Due to caution or uncertainty, untested techniques were not quickly implemented.

The response effort was handicapped by the absence of a rapid, accurate and comprehensive system, available to all, for information on local conditions, habitat, fish and wildlife, currents and weather.

The primitive state of development of both prevention and response methods holds out some hope that, given sufficient investment, dramatic strides will be made in a short time.

Research dedicated to improving the state of knowledge in oil spill prevention and response should be undertaken to remedy information gaps. Among the topics that should be pursued are the relevant regional geography, environmental assets, weather, technological systems and basic research on the behavior of oil in water. Information management should be included in the agenda for response and contingency plans. Resources should be committed to ensure adequate information systems and services in emergency response efforts in the future.

Recommendation 57
State research center

The state should establish, in the University of Alaska system, an institute for research on oil spill prevention and response policy, technology, testing and evaluation.

An Alaska-based institute should be created and encouraged to strengthen its programs through consortium agreements with other institutions studying the safe transportation of hazardous substances. Research topics should include locality-specific investigations of marine habitat and the impact of oil, as well as prevention policy and response technology. The

institute also could develop and administer education, training and safety licensing programs for participants in oil transportation and handling. The institute's efforts should be coordinated with similar programs developed under federal authorization. Its functions should include making recommendations to appropriate authorities regarding changes in standards and requirements in oil and gas and hazardous substance transportation.

The research program should be established independently of the that conducted in support of fault-oriented litigation. Research since the *Exxon Valdez* wreck has been noticeably distorted by its litigation orientation.

"There is no mandate to a government body that when an incident like this occurs they shall go gather data. There's no mandate in place and there's obviously no funding for that mandate."

Vince O'Reilly, City of Kenai
Alaska Oil Spill Commission hearing, 9/7/89

Recommendation 58
Pretesting

Authorities responsible for testing and approval of response technologies such as dispersants, coagulants, burning and bioremediation should evaluate and decide whether to preapprove these technologies more rapidly.

Parties responding to the spill were handicapped to varying degrees by a lack of scientific knowledge concerning what was available, the properties and effectiveness of various technologies under varying conditions, and the lack of prior approval of response strategies. Those responsible for containment and cleanup were not fully advised on state-of-the-art methods or regularly provided with appropriate technology.

The system for testing and approving new response technologies is haphazard and slow and should be improved. Many emerging technologies hold promise, but they were untested and undeveloped at the time of the *Exxon Valdez* wreck.

"Perhaps for the first time in history, the consequences and costs associated with major failures are greater than the value of the lessons we learn from those failures."

Professor Todd LaPorte, University of California
Alaska Oil Spill Commission hearing, 8/4/89

The U.S. Navy's use of coagulants in containing and cleaning up shipboard fuel spills — fully tested for Navy use but no other — was of particular interest to the commission. The commission also was intrigued by reports of proposed vessel-based coagulant systems capable of jelling cargo in the vicinity of a breach and of vacuum-based systems for containing oil in a damaged vessel. Such avenues of development call for early and thorough exploration for possible use.

Key public agencies, notably the federal Environmental Protection Agency and the state Department of Environmental Conservation (both of which are involved in Regional Response Plans and the oversight of industry contingency plans), are charged with approving or disapproving response technologies for oil spill cleanup. A continuing, visible process for study, analysis and application of emerging technology is required.

Recommendation 59
Tanker simulator training

The West Coast states should create a training center using simulators to advance the knowledge of masters, mates, pilots and shipboard bridge crews in the operations of very large vessels in West Coast ports.

There is currently no place on the West Coast where mariners can receive real-time simulation training in the bridge operations of very large ships. Maintaining an adequate pool of ships' officers and pilots fully trained in up-to-date circumstances will enhance safety and efficiency in the maritime industry.

"We need to establish a prize for invention of technologies that work. Organized research to produce information that would help achieve the goal of minimizing social costs isn't really being undertaken."

Professor Matt Berman, University of Alaska
Alaska Oil Spill Commission hearing, 9/21/89

"I am skeptical that there will be as much scientific value gotten out of this situation as would otherwise be possible. That's partly because the work is confidential and partly because the work is focused on determining the extent of environmental injury, which is not the same as understanding in ecological or social terms the impact of this event."

Professor David G. Shaw, University of Alaska
Alaska Oil Spill Commission hearing, 9/21/89

Note: Those who wish to review in more detail the factual circumstances explored by the commission and the options considered and rejected in choosing these specific remedies will find explanations in a longer report still to be published and in the specific studies accepted by this commission from its contractors.