PRINCE WILLIAM SOUND AFTER *EXXON VALDEZ* OIL SPILL

HEARING

BEFORE THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

FIRST SESSION

ON

THE ECOLOGICAL CHANGES IN PRINCE WILLIAM SOUND AFTER THE *EXXON VALDEZ* OIL SPILL AND THE USE OF FINES IMPOSED

MARCH 24, 1993

Serial No. 103-10

Printed for the use of the Committee on Merchant Marine and Fisheries

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PRINCE WILLIAM SOUND AFTER *EXXON VALDEZ* OIL SPILL

WEDNESDAY, MARCH 24, 1993

HOUSE OF REPRESENTATIVES,
COMMITTEE ON MERCHANT MARINE AND FISHERIES,
Washington, DC.

The Committee met, pursuant to call, at 9:45 a.m., in room 1334, Longworth House Office Building, Hon. Gerry E. Studds (Chairman of the Committee) presiding.

Present: Representatives Studds, Hughes, Hutto, Pickett, Hochbrueckner, Pallone, Unsoeld, Reed, Lancaster, Furse, Schenk, Green, Hamburg, Eshoo, Cantwell, Fields, Young, Coble, Weldon, Kingston, Castle, Pombo.

Staff Present: Jeffrey Pike, Staff Director; Will Stelle, Chief Counsel; Mary Kitsos, Chief Clerk; Sue Waldron, Press Secretary; Joan Bondareff, Senior Counsel; Elnora Harvey, Staff Assistant; Ruth Ann Freesland, Staff Assistant; Lee Crockett, Professional Staff; Britta Otteson, Sea Grant Fellow; Harry Burroughs, Minority Staff Director, Cynthia Wilkinson, Minority Chief Counsel; Judy Alvarez, Minority Professional Staff; Rod Moore, Minority Professional Staff; Tom Melius, Minority Professional Staff; Rebecca Dye, Minority Counsel; and Margerita Woods, Minority Clerk.

STATEMENT OF HON. GERRY STUDDS, A U.S. REPRESENTATIVE FROM MASSACHUSETTS, AND CHAIRMAN, COMMITTEE ON MERCHANT MARINE AND FISHERIES

The CHAIRMAN. The Committee will come to order. I want to welcome the Secretary. As you can hear, Mr. Secretary, I have pretty much lost my voice which bodes well for the duration of the proceedings. I have been counseled, as I have been so often, to refrain from talking. It is advice we get here often, only this time it is professional rather than citizens. And so I will keep my opening statement to almost nothing as will the distinguished ranking Member, and because of the brevity of your time here, we are going to ask the other Members if they will refrain from any opening statements, at least at this point. We understand the Secretary must leave somewhere in the neighborhood of 10:15 or 10:20. What we are going to try to do, by being brief with our statements, is leave each Member time for at least one question.

Let me just very briefly say that four years ago yesterday probably no one in this room, or almost no one in this room, except the distinguished gentleman from Alaska, who is not here yet, knew where Bligh Reef was. And four years ago today the whole world

discovered where Bligh Reef was. We want to find out today whether Prince William Sound remains, as some would have us think, an environmental catastrophe or whether there has been a remarkable recovery, as others would suggest. And we want to find out whether we are better prepared today to deal with a spill of that magnitude than we were four years ago. We would like to have some idea of what the natural resource trustees plan to do with some roughly $1 billion. Is restoration of natural resources feasible? What does that mean, if it is? Should we look at land acquisition or some combination thereof?

I would ask unanimous consent that my opening statement and those of all Members except the brief remarks of the ranking Member be included in the record, and I recognize the distinguished gentleman from Texas.

[Statement of Mr. Studds follows:]

STATEMENT OF HON. GERRY E. STUDDS, A U.S. REPRESENTATIVE FROM MASSACHUSETTS, AND CHAIRMAN, COMMITTEE ON MERCHANT MARINE AND FISHERIES

On March 23, 1989, only the utterly distinguished gentleman from Alaska and a few hardy souls from his State knew the whereabouts of Bligh Reef.

What a difference a day makes.

On March 24, 1989, we all knew the location of the Reef after the supertanker *Exxon Valdez* found it the hard way and 11.2 million gallons of North Slope Crude oil found its way into the previously pristine Prince William Sound.

Some suggest that Prince William Sound remains an environmental catastrophe. Others, like Exxon—which declined to testify today—would have us believe that the Sound and the Gulf of Alaska have essentially recovered from the spill. The truth, as always, undoubtedly lies somewhere in-between, and it is the truth that we seek today.

In this hearing, the Committee will examine several questions: First, four years after the *Valdez* spill, how are the two-legged, four-legged, finned, and winged critters that inhabit Prince William Sound doing?

We know that the immediate impacts of the spill were devastating; as many as 645,000 birds, 6,000 marine mammals and millions of salmon and herring were killed. Some species—for example, bald eagles and perhaps humans—appear to have recovered reasonably well while others may take many more years to return to anything approaching normalcy, and in fact, are still suffering from contact with lingering oil on beaches, in eelgrass beds, and in the food chain.

We will also examine whether the prevention and response mandates of the Oil Pollution Act of 1990 are in place.

If there was one good thing that came out of the *Valdez* spill, it was opening the eyes of those who didn't understand that it is a whole lot easier to keep the oil in the tanker than to get it out of the water once it is spilled. With that lesson learned, those of us who had spent most of our adult lives trying to pass a tough oil pollution prevention bill finally succeeded with the Oil Pollution Act of 1990.

At the time, the United States was criticized by the rest of the world for going our own way with OPA 90-as it is known to everyone inside the beltway. However, tragic oil spills like that of the *Braer* off Scotland's Shetland Islands, the *Maersk Navigator* off northern Indonesia, and the *Aegean Sea* off the Spanish coast, now have many of those same countries looking to OPA 90 as a model for spill prevention, liability and response standards.

There were also many Alaska specific provisions of the Oil Pollution Act and Admiral Kime and others will tell us how they are working.

The final issue we will look at is the disposition of the nearly $1 billion settlement for natural resource damages paid by Exxon.

This money must not become a slush fund for unending research studies nor should it be used to pay for locally popular projects that have little, if anything, to do with the spill or the Sound. While the trustee system established under the terms of the settlement is cumbersome and exhausting, that system must ensure that the funds are used for their proper purpose—the restoration of the environment damaged by the oil from the *Exxon Valdez*.

Under the previous Administration, colorizing a John Wayne movie qualified as natural resource restoration. Happily, this is no longer the case.

I look to Secretary Brown and the Clinton Administration to make the right decisions—and to make them quickly—on what to do with the restoration funds. I also look to them to let me know whether the current trustee process is working, or has problems that need to be fixed.

Finally, as important as the restoration and recovery of Prince William Sound is to Alaska—and it is vitally important—it also has enormous implications for Santa Monica Bay, Puget Sound, New Bedford Harbor, and wherever environmental damage has been suffered. That the polluter pays for causing damage to the environment is a fundamental principle of both the Oil Pollution Act and the Superfund Law. It is also a relatively new principle at the Federal level, and how it plays out in the context of Prince William Sound will have enormous effects on how it is used in other contexts around the country. Although it is difficult to comprehend, the stakes may be larger than even Alaska itself.

I look forward to hearing the testimony of all of our witnesses today, and especially that of Secretary Brown, who will be making his first appearance before the Committee.

STATEMENT OF HON. JACK FIELDS, A U.S. REPRESENTATIVE FROM TEXAS

Mr. FIELDS. Thank you, Mr. Chairman. I think this is an appropriate hearing, and I am glad that you called it today. I believe that we are going to hear today that we are ready to aggressively respond to oil spills wherever they might occur in this country. There has been a change, and I think the reasons for the change can be directly attributed to the *Exxon Valdez*, the spill itself, the leadership of this Committee, and the activism of ordinary citizens. People can make a difference. The confluence of those forces resulted in the Oil Pollution Act of 1990.

While each of the factors that I mentioned just a moment ago contributed to the development of the landmark environmental protection law, it is, in fact, this Committee who fought for oil spill liability and compensation legislation long before oil spill became household words or front page news. The law was crafted in a bipartisan manner, Republicans working with Democrats and vice versa, and was the product of many years of careful deliberation.

OPA '90 mandated many changes around the country but particularly in Prince William Sound, Alaska. Specifically, the Act mandated that the Valdez vessel traffic system be expanded; required that all single-hull tankers over 5,000 gross tons be accompanied by two escort vessels; required that an automated navigational light be installed at Bligh Reef; and provided for prepositioned oil spill containment and removal equipment with the Sound.

It is my hope that from today's hearing we will learn whether there has been any permanent environmental damage to Prince William Sound, that we will learn how the Trustee Council intends to spend the $900 million in natural resources settlement funds, and, most importantly, how Alyeska and the Coast Guard would respond if another accident like the *Exxon Valdez* were to occur.

And, again, Mr. Chairman, I think it is worthwhile to have this hearing today, and I applaud you for calling it.

[The prepared statement of Mr. Fields follows:]

STATEMENT OF HON. JACK FIELDS, A U.S. REPRESENTATIVE FROM TEXAS, AND RANKING MINORITY MEMBER, COMMITTEE ON MERCHANT MARINE AND FISHERIES

Mr. Chairman, 4 years ago we woke up to the news that the *Exxon Valdez* had slammed into Bligh Reef in Prince William Sound, Alaska. Shortly thereafter,

America woke up to the fact that no one was prepared to effectively deal with such an environmental catastrophe. Today, we will hear that all of that has changed. Today, we will hear that we are ready to aggressively respond to oil spills wherever they occur in this country.

The reasons for this change can be directly attributed to the *Exxon Valdez*, the leadership of this Committee, and the activism of ordinary citizens. The confluence of those forces resulted in the Oil Pollution Act of 1990. While each of these factors contributed to the development of this landmark environmental protection law, in fact, this Committee fought for oil spill liability and compensation legislation long before "oil spill" became household words or front page news. The law was crafted in a bipartisan manner by this Committee—the product of many years of careful deliberations.

OPA 1990 mandated many changes around the country but particularly in Prince William Sound, Alaska. Specifically, the Act mandated that the Valdez Vessel Traffic System be expanded; required that all single-hull tankers over 5,000 gross tons be accompanied by two escort vessels; required that an automated navigation light be installed at Bligh Reef; and provided for prepositioned oil spill containment and removal equipment within the Sound.

As I mentioned before, this Act has improved oil spill prevention and response throughout the country. I would like to note that because of language I authored, the Coast Guard has prepositioned certain oil spill cleanup equipment at coastal locations throughout this country. I am particularly proud of the fact that the first such equipment was placed last month in Galveston, Texas.

This equipment is essential for Texas and for the rest of the country. While we have to look to other solutions to prevent accidents, this equipment will help prevent an environmental tragedy by ensuring a timely response in the critical early hours following an oil spill. This response capability will be further enhanced once the Coast Guard purchases the two oil spill management simulators for the Texas and Massachusetts Maritime Academies with the $2.5 million we authorized in last year's Coast Guard authorization bill. With those simulators, thousands of cadets and professional mariners will be better able to respond to a spill in Boston Harbor, the Houston Ship Channel, Prince William Sound, or anywhere else.

It is my hope that from today's hearing we will learn whether there has been any permanent environmental damage to Prince William Sound, how the Trustee Council intends to spend the $900 million in natural resources settlement funds, and, most importantly, how Alyeska and the Coast Guard would respond if another accident, like the *Exxon Valdez*, were to occur.

Mr. Chairman, it is, therefore, appropriate that we are holding this hearing today. This is further affirmation of our Committee's commitment to the effective implementation of OPA '90. I join with you in welcoming Secretary Ron Brown, Admiral William Kime, and the other distinguished witnesses. I am sure we will continue to work together to ensure that our nation has a safe and efficient oil transportation system.

Thank you, Mr. Chairman.

The CHAIRMAN. I thank the gentleman. Let me just advise Members that when Secretary Brown departs, Members then may feel free—if the necessity is overwhelming—to deliver brief opening statements for the edification of the Commandant of the Coast Guard. Secretary Brown, we welcome you, sir. It has been a long time since we have seen a Secretary of Commerce here. There are all kinds of good reasons for you to be here. We are very happy to have you, and please proceed.

STATEMENT OF THE HONORABLE RONALD H. BROWN, THE SECRETARY OF COMMERCE

Secretary BROWN. Thank you, Mr. Chairman. This is a new day at the Commerce Department. I look forward to being here many times in the future, and I am very appreciative of your invitation to testify before this Committee this morning.

I am very delighted that my first appearance before this Committee presents the opportunity to discuss the importance of the Commerce Department's National Oceanic and Atmospheric Adminis-

tration. It has great importance to our nation, particularly our nation's environmental agenda.

Let me begin by stating that this Administration has renewed America's commitment to leave our children a better nation—one whose waters, land, and air are unspoiled and whose leadership for sustainable global growth is absolutely unsurpassed. I believe that NOAA, through its stewardship responsibilities, its commitment to the protection, restoration, and sound management of natural resources, and its monitoring and forecasting responsibilities has a bright future in the Department of Commerce and an important role in achieving our nation's environmental agenda.

Mr. Chairman, the primary purpose of this hearing, as I understand it, is to review the aftermath of the *Exxon Valdez* accident, the accident which occurred four years ago today. I would also like to talk for a few minutes about NOAA's important contribution to addressing environmental problems— problems which affect us all. After my remarks, I will ask Steve Pennoyer of NOAA's National Marine Fisheries Service to discuss in greater detail natural resource damage assessment and restoration issues concerning Prince William Sound.

Mr. Chairman and Members of the Committee, the grounding of the *Exxon Valdez,* the largest oil spill in United States history, had a profound environmental and economic effect on our nation. NOAA and its co-Federal and State trustees and academic and private organizations have worked together to respond to the devastation that threatened some of our most pristine wilderness resources. Any who have been there or flown over that area of America, as I have, understands when I use the term "pristine resources"—some of the most beautiful parts of the world that the human eye could ever see.

Although the last chapter has not yet been written on the *Exxon Valdez,* I think we have learned several valuable lessons. Close cooperation between various Federal agencies including NOAA, the State of Alaska, and the oil industry, was important in bringing about an effective response. NOAA's environmental expertise and oil spill response capabilities helped in controlling and assessing damage from the oil spill. Nonetheless, our knowledge of environmental systems is far from complete. In some cases, we learned that the natural resources affected by the spill were more resilient than expected. But other events have taught us that we may not know the full impact of the spill for decades. The settlement and subsequent restoration plan for Prince William Sound and the Gulf of Alaska hold significant promise to ensure that the region's valuable resources will exist for our children and for their children.

I am aware that there has been criticism regarding the progress to date in using the settlement moneys to restore the Prince William Sound region. I share that disappointment, but I also recognize that natural resource restoration is a complicated and time-consuming process. I am, however, committed to expediting the restoration process to the greatest extent possible.

To further the restoration process, I would like to announce, Mr. Chairman and Members of the Committee, that Secretaries Babbitt, Espy, and I, in our role as Federal trustees, have decided and agreed to commit $25 million for land acquisition in the Prince

William Sound region from amounts paid by Exxon to the Federal Government as restitution. These funds will be made available during this fiscal year and will protect fish and wildlife. This is an important first step forward to restore and protect our natural resources damaged by the spill.

The *Exxon Valdez* disaster teaches us one extraordinarily important lesson: Prevention is always better and always easier than cleanup. No matter how well we respond in the aftermath of environmental catastrophes, our energies and efforts always have a greater impact when focused on preventing environmental damages in the first place.

The *Exxon Valdez* oil spill also illustrates the importance of demonstrating that environmental protection and economic growth are mutually compatible. This is the vision of President Clinton and Vice President Gore and the entire Clinton Administration. The contrary notion that our environmental objectives are inherently incompatible with economic priorities is simply wrong.

We are obliged to think seriously and honestly about how we can assure both economic development and sound environmental stewardship. I am aware of the difficult issues that face us when this attempt is made. There are no simple or easy answers. In some cases, solutions may be difficult and expensive. Parties on both sides of issues will have to compromise. This Administration is dedicated to long-term economic growth because we know that a strong economy leads to a better standard of living for all of our people and better national security in an uncertain world, and because we know that only a strong economy can maintain environmental health. We are committed to the best sustainable uses of the earth's resources as population grows, with conservation as a key element of our plan.

The Department of Commerce will play a vital role in bringing the goals of environmental protection and economic growth together. Our approach will be based on the following beliefs: Number 1: Government has a legitimate and major role in harnessing science to help government agencies and private business make the best decisions, so that we can be prepared to compete in the economy of the 21st century. We must use our scientific expertise to help the private sector develop new technologies that preserve our environment. Science can provide tools for remedying environmental degradation. It can also point the way to more economically acceptable approaches to living with nature.

Two examples: Science can help us avoid harming the natural environment. For example, as understanding increases about the complex interrelationships of coastal ecosystems, we can work with industry to develop new technologies for manufacturing and agricultural land use that satisfy environmental and economic objectives.

Science can help us reduce the economic and social costs that result from naturally occurring changes in the environment. Hurricane Andrew is a good example of the risks posed to society by naturally occurring environmental change. Using our knowledge to develop new technologies to provide improved warnings furthers both environmental and economic objectives.

Number 2: We need to recognize that investments in knowledge—our intellectual infrastructure, so to speak—are every bit as important as investments in bridges and highways. We need to apply the best science, information, and technology to developing science-based policy options for some of the most difficult issues we have faced. The success of our national economy will be significantly affected by the quality of today's science and the decisions we make as a nation.

Number 3: I believe we must invest in sound management of our natural resources today. We know that investments made today are far cheaper than paying for cleanup tomorrow. We must do a better job of managing the natural resources on which a great deal of our national wealth is based.

Several examples illustrate the importance of this belief. Investments in our natural resources pay for themselves many times over. The Magnuson Fishery Conservation and Management Act established the most comprehensive marine resource management system in the world. As a result, in 1991, United States commercial fisheries produced $3.9 billion in revenue to fishermen at United States ports.

However, a recent NOAA study concluded that, of the fishery stocks that can be assessed, 67 stocks are overutilized and 28 are underutilized, including skate, dogfish, and Atlantic mackerel. The status of 80 stocks remains unknown, making the needed investment to better manage our fishery resources a dramatic and profound impact. We estimate that the seafood industry has the potential to produce nearly $3 billion in additional growth in the United States economy.

We have established a program in NOAA to assess environmental degradation caused by oil spills and hazardous substance discharges and, where possible, to help restore the environment. The program has been used at various sites throughout the United States where natural resources have been harmed including New Bedford Harbor, the Palos Verdes Shelf off Southern California, and Puget Sound, Washington. We have settlement agreements which provide for the recovery of more than $130 million from responsible parties, and we will use these moneys to help restore the damaged sites and to finance future assessments. These are but two examples of the need for a long-term view, recognizing that investments now will pay off manyfold later.

Number 4: I believe we must take an integrated approach to making sure that all resources are used as efficiently and as effectively as possible. We will take an integrated approach from a scientific and information viewpoint, using all appropriate disciplines and making them all work together. Government will take an integrated approach bringing Federal, state, industry and academia together to respond to the important issues which we face. We need to forge new kinds of partnerships. We need to redefine relationships in a way that is forward-looking.

Number 5: I believe we must take a global approach. As the Vice President has written, some of the environmental problems we face are truly global in scale. They are beyond the resources of any single nation. We must undertake international scientific and technological efforts to tackle environmental problems that require a

multinational response. We must move toward a truly global system to monitor changes in our oceans, in the atmosphere, and on our land.

Our efforts to develop international solutions increase our ability to monitor the global environment, because no one country can do this alone. Our leadership in the global arena will also help to develop new technologies and new markets for those technologies.

The good news is that the Administration recognizes what needs to be done and is actively committed to solving the problems which we as a nation and the world face together. I am particularly pleased to have the honor of serving at the Department of Commerce, because I believe that we are the agency of the future—linking environment, technology, and economic growth together.

I could not be more pleased with the outstanding team that we have assembled at NOAA—Jim Baker and Doug Hall and Diana Josephson—which is a group that is fully committed to building an agency prepared for leadership in the 21st century. A key element of NOAA will be the management of natural resources, and my team will have this as a central element of their activity.

Management of natural resources involves knowledge of the earth system and application of new technology. I am pleased to report that we are already developing cross-cutting initiatives in Commerce to make the links between environment, technology, and development a reality. NOAA and other parts of the Department of Commerce will be involved in modernizing our observing systems, developing new environmental technology, and opening up new avenues for access to environmental information.

Mr. Chairman and Members of this Committee, you know that we face very difficult and sometimes controversial tasks. I believe that we in the Commerce Department and in NOAA are ready to face these challenges. I see many opportunities for NOAA to build on its achievements and to be a central agency in the area of environment, development, and management of natural resources.

Finally, Mr. Chairman, I would like to congratulate you on your leadership. Your leadership has been truly extraordinary in this arena and is not affected by your loss of voice this morning. The Committee is crucial in addressing the restoration plan for Prince William Sound and many of the other environmental issues which are at the center of our national agenda. I look forward to working with you and the Members of this Committee on numerous issues in areas critical to the mission of the Department of Commerce and to the future of our nation. Thank you very much, Mr. Chairman.

[Statement of Secretary Brown can be found at end of hearing.]

The CHAIRMAN. Thank you, Mr. Secretary. There is very good news, I think, in what you have to say to us and in the fact that you are here. First of all, I want to congratulate the Administration on your announcement of the $25 million for land acquisition. As you know, the Congress last year, growing increasingly frustrated with the slow pace of getting about the business of restoring the Sound and the surrounding lands, directed that land acquisition be given a high priority. I think this news makes it very clear that the Administration means business, and I think it is a good omen of things to come, and we congratulate you.

In the spirit of what I have asked other Members to do, I am going to ask each of us to refrain and somehow keep ourselves to one question, hopefully a brief one. We will try to get to as many Members as possible while you can still be here.

I have to make another happy observation in the form of a question. It is going to be fairly general. This is my 21st year in the Congress, and I do not remember ever any Secretary of Commerce mentioning fish, never mind skate, dogfish, and mackerel. The Millennium may not be at hand, but it is a good deal closer than it was a little while ago. As you may know, and I know you know because we have discussed this personally, in preceding years our debates with regard to NOAA and the National Marine Fisheries Service within it have asked where else can we find it a home where it might be loved and cared for and respected and protected better than in the Department of Commerce.

Increasingly serious debates really were conducted here, both publicly and privately, about what we will do with the National Marine Fisheries Service. We always have Secretaries of Commerce coming to town every four or eight years that would have to be informed politely that, believe it or not, it is within their domain, and then they forget it. And it is forgotten, and it has had some very bleak years. And in our frustration, those of us who care about its mission, have looked around town for a better home. I think maybe at long last it is at home. I wonder if you could share with us a little bit of your vision of the revitalized Department, as you describe it, of home? Is this now the right home for the National Marine Fisheries Service and for all the broad functions of NOAA?

Secretary BROWN. Well, I certainly can, and I appreciate the opportunity to do that, Mr. Chairman. I feel very strongly that NOAA not only has a home at the Department of Commerce, but it is the best home for it in the Federal Government. It is very much a part of our Department and a very important part. I made that clear to NOAA employees at every opportunity that I have had, both in our auditorium and going up to Silver Spring, where most of the NOAA employees are located. I had the opportunity to be up there a week ago Friday when they were using the Doppler radar and the tremendous human resources there to make an extraordinary prediction about the path of the storm that devastated the East Coast of America.

I think one of my jobs as Secretary of Commerce is to really redefine the mission of the Commerce Department. I believe that mission has lacked clarity in the past and, to many, caused the Department to look like it was a very disparate and disconnected unit. I don't think that has to be the case, and I hope under my leadership it will not be the case.

As far as I am concerned, the mission of the Department of Commerce is to enhance economic opportunity for all of the American people, and that is a very inclusive kind of mission. And NOAA certainly plays a major role in that—in one area, environmental technology. We ought to be commercializing environmental technology. We ought to be exporting environmental technology which helps our economy grow and which helps preserve the ecology of the earth.

And it seems to me much of the scientific research that goes on is crucial to our economic development and economic growth. Fisheries management, as I pointed out in my testimony today, can be extraordinarily important to economic growth in America. All of those issues have not only environmental consequences but economic consequences.

In going through the interview process to put our team together at Commerce and particularly at NOAA, and I have already mentioned three of the individuals who will be a part of our leadership team, I was interviewing an extraordinary young woman for the job of chief scientist of NOAA, and she communicated to me that she was absolutely committed to the environment and issues concerning the environment. And I said, "Well, why are you interested in NOAA rather than some of these other agencies?" and she then proceeded to tell me very clearly. She talked about the role of the Department of the Interior from coast to coast. She talked about the role of the Environmental Protection Agency in regulation. And she talked about NOAA having responsibility for the sun and the atmosphere and the land and the sea, which seemed to me to be a pretty good reason to want to be at NOAA if you care about the environment, because it is everything. It is all-inclusive.

And there are also the economic issues as well, so I feel very committed to NOAA and its mission. We have got an outstanding group of people, many of whom have served for many years. We have brought in a new leadership team so I am confident about the future.

The CHAIRMAN. We have a lot of work to do together, as you know. I hope that will include a major initiative in environmental technology as well. If it weren't for fear of offending the gentleman from Texas, I would observe that happy days may be here again, but I won't say that. The gentleman from Texas.

Mr. FIELDS. Mr. Secretary, let me just say I think I can speak for the Minority in saying that we look forward to getting to know you better. We look forward to working with you in every way possible, and I am sure there will be some disagreements, but when we disagree, we hope we are not disagreeable. I appreciated your broad policy statement today, and from the first question, I understand that we are talking about things other than just the *Exxon Valdez* spill.

It is my understanding that President Clinton has argued for balance in environmental laws, and just a moment ago in your testimony you talked about environmental protection and economic growth not being different, that those are really goals that can be reached in concert. Let me ask you about a specific situation, and that is the Endangered Species Act. As you know, some of us have prepared legislation that we will be offering to deal with that particular piece of legislation.

As an example, in Texas, there was a recent Federal Court decision that said because of a fountain darter being declared an endangered species, that an entire aquifer was an underground stream subject to either State or Federal jurisdiction. The ramifications of that decision are just enormous. San Antonio could lose 30 to 40 percent of its water supply. The farmers and ranchers west of there could have their wells permitted for the first time, could

have the amount of water that they pump limited, and at some point could end up paying for their water. For all of Texas, it means for the first time the rule of capture, the ability to control what is under your property, is completely abrogated.

Now, that is an enormous reaching in that particular decision, and so my question is what exactly does "balanced" mean? Do you think before decisions such as a listing under the Endangered Species Act is taken that there should be some assessment made for job loss and economic impact? Should alternatives be considered? Because in this particular case, you could take that particular species and put those species in tanks, breed them, make them the most prolific species on the planet. And, finally, if a person's property is taken, and they lose the economic viability of their property, should the Federal Government compensate?

Secretary BROWN. Well, thank you for your question and the delicacy in which it was raised. Although I am not totally familiar with the issue that you have presented, I am familiar with the broad concerns about the kind of delicate balance which you make reference to. The Administration doesn't yet have a position on the specific issue, but my colleague, Bruce Babbitt, has really said it best, and I agree with him, and that is, the best approach is probably to keep species from becoming endangered. The best approach is really prevention, and I think we need to look toward that approach in the future.

As to these very difficult issues which we face, it is a matter of balance, and it is a matter of common sense. And, clearly, the issues which you have raised are terribly important, and issues that go to the thrust of the legislation are also important. The President realizes that. I realize that. One of the events that we have coming up in the meeting that I am leaving this hearing to attend is a meeting on the Forest Summit, which is going to take place in early April in Oregon. We plan to use that as an opportunity to talk about how we bring environmental concerns and economic concerns together.

My own judgment is that although we have heard a lot of talk about environmental protection causing job loss, I believe just the opposite is true. I believe that advances in environmental technology, creative ways of dealing with environmental issues can, in fact, increase jobs, increase employment, and increase economic opportunity for the American people. That is not to say that these are not tough issues. That is not to say we don't have to be extremely careful as we deal with these issues, that we don't have to balance economic concerns and our environmental future. I think it can be done. I think it can be done with the right kind of leadership and the right kind of sensitivity and, most of all, by getting folks who are affected involved in the decisionmaking, by not only asking questions but also waiting to hear the answers, by truly reaching out and involving people and engaging people whose lives are affected, and that is exactly what this Administration intends to do.

Mr. FIELDS. Mr. Secretary, I appreciate your comment very much, and, you know, I raise this because you sit at the Cabinet table. When a decision like this means no growth for a major city, it means limits on agricultural production. To me that falls within the realm of commerce, and I just hope that you would be vigilant

at that table in arguing for a balance. And, again, if the objective is to save a species, then we are with you 100 percent. We can do that, but we don't have to destroy our economy and lose jobs in the process.

The CHAIRMAN. The Chair asks Mr. Secretary, how much more time can you spend with us?

Secretary BROWN. I can do another—let us say until about a little after 10:20.

The CHAIRMAN. OK. We will just go as quickly as we can in the order. We will call now on Members who were here when the hearing began. We will go back and forth in that sequence. The gentlewoman from Washington.

Mrs. UNSOELD. Thank you very much, Mr. Chairman. Mr. Secretary, I am glad that you are focusing on NOAA also, and perhaps you can give us an indication either now or later as to the individual within your Department who is going to be taking a major role because we in the Northwest would love to start working with you on some of the fisheries issues.

Secretary BROWN. Well, that is the next major appointment announcement that we are going to be making for NOAA. I have had suggestions and recommendations from all over the country, and every time I get a recommendation, then I get about 10 letters on the other side about why this is the worst person in the world that I could appoint as head of our fisheries operation. So we are trying to go about it in a common sense way. We need clear leadership in that area.

I have come to know, in my less than two months as Secretary of Commerce, how difficult and controversial these fisheries issues can be, pitting one State against another. Some of the issues of greater concern to the United States used to be a foreign interest encroaching on our fisheries, and now a lot of it has to do with our internal consideration. So I understand the importance of that job, and we are going to make a thoughtful decision and hope to make it very soon.

Mrs. UNSOELD. Very good. And I agree with your comments that the Endangered Species Act should be the last resort, and the fact that it gets triggered at all indicates that we have had a failure in our other management statutes that created the crises. And I am pleased that you will be joining your other colleagues at the Cabinet level in addressing our problem in the Northwest. I think it is an ideal opportunity for you to find those balances and for you to offer suggestions on the redirection of how we manage our natural resources so that we do so for both sustainable habitat, for life, and also sustainable use of the resource. So I look forward to continuing to work very closely with you.

Secretary BROWN. Thank you. And I will be coming out with the President and Vice President, Secretary Espy, Environmental Protection Agency Administrator Carol Browner, and Labor Secretary Bob Reich sometime in early April. I believe it is the 1st or 2nd of April.

Mrs. UNSOELD. We would like to get you out there on the ground also and look at some of these issues.

Secretary BROWN. Yes. And we are going to do that as well both before and after the Forest Summit.

Mrs. UNSOELD. Thanks. Thank you, Mr. Chairman.

The CHAIRMAN. The gentleman from Pennsylvania.

Mr. WELDON. Mr. Chairman, I thank you. And, Mr. Secretary, it is a pleasure to have you here. It is good to see you. I look forward to working with you. I had the pleasure of visiting—if you call it a pleasure—the Valdez area for a week following the Exxon incident, with my colleague Don Young from Alaska and the two Senators from that state. We were in Homer, Cordova, Kodiak and Tatitlek, where we talked to the people. I think the real lesson we learned was the strength of the Alaskan people in responding to an unbelievable situation that never should have occurred.

One of the concerns that I have relative to the maintenance of the safety of Prince William Sound, and other areas is that we are asking the Coast Guard to continually do more and more in the way of enforcement with less and less. I would hope that this Administration would strongly consider this during budget considerations. It is imperative that the Coast Guard is fully funded so that we don't have another *Exxon Valdez* situation, where the Coast Guard is trying to do more with limited resources. This is very unfair. The same idea also applies to other programs within NOAA.

Mr. WELDON. I do have two points I want to make and one question. The first point is I think that this country is not prepared to handle disasters in general. I say this as someone who has worked this issue for the six years I have been here. I have visited on every major disaster that our country has had and currently chair the Emergency Services Caucus which works on those issues. I have written, along with Congressman Rob Andrews from New Jersey, to President Clinton urging him to establish a presidential task force on emergency preparedness and response. I would ask you to look at this proposal, and, if possible, encourage the President to support that recommendation. We must examine how to reorganize our emergency response system in this country; whether it be for an environmental disaster; a disaster similar to what we saw at the World Trade Center; similar to Hurricane Hugo or Andrew; or the Loma Pareda earthquake. This is a problem that needs to be addressed both from a broad-based standpoint and from a specific standpoint, like the Prince William Sound.

My question relates to the passage of OPA. I was a strong supporter of this legislation and the double-hull provisions. I felt these procedures were necessary and worked aggressively for the passage of that legislation. However, what we have been hearing in recent months, and something I think you will have to address is the fact that several of our domestic marine transporters are reconsidering their role in the market. They no longer want to maintain and operate American-flag vessels because the double-hull provisions in OPA apply to American vessels before they apply to foreign-flag vessels. According to these companies, the foreign-flag vessels must comply with OPA in 1995. As I understand it, the oldest and largest must comply first, but the other vessels will be phased in over a period of time. One company headquartered in Pennsylvania has four large vessels and is now considering selling off all of those vessels because compliance is too costly.

Is the Department of Commerce currently looking at both the economic impact of OPA on the shipping industry and is it examining whether or not this situation is, in fact, occurring. I can't say whether it is or not—I am just reporting to you what these companies are saying. Is the implementation of OPA going to jeopardize the environmental efforts we are trying to accomplish through OPA? Are you considering the impact of transporting products on foreign-flag vessels and foreign-owned vessels as opposed to American vessels once OPA is implemented?

Secretary BROWN. Well, we are looking at it. We haven't reached any conclusion. I think you characterize your reports—the reports that you have gotten—as just reports. They haven't been verified. There are always a lot of charges and countercharges as to what impact decisions have. It is something we are looking at. It is important that we do look at it, because we want to make sure that we are not pulling against ourselves in some of these legislative or regulatory areas. So it is something we ought to take a hard look at.

The CHAIRMAN. I guess the last question goes to the gentleman from North Carolina, Mr. Lancaster.

Mr. LANCASTER. Thank you, Mr. Chairman, and thank you, Mr. Secretary, for your testimony. Like the Chairman, I was pleased to see that the $25 million has been earmarked for land acquisition, but I hope that you will give us a little more detail on what that acquisition entails and whether or not there are other restoration efforts using these restitution funds in the works that you might discuss now or when you might have those plans available for further discussion?

Secretary BROWN. Well, Congressman Lancaster, I am as pleased as you are. I should report candidly to you that this decision was just finalized yesterday. I have had conversations with Secretary Babbitt and Secretary Espy. We have had conversations with the Office of Management and Budget on these issues. I can't give you any further detail at this time. I just wanted to try to set the tone that I think is appropriate and important at this hearing, to make the announcement at this hearing. I think it shows important movement—an important first step, as I characterized it in my testimony. We will be prepared to give you more detail in the very near future.

The CHAIRMAN. Mr. Secretary, we thank you. I apologize. I know that the other members would very much like to have questions for you, but I know your day, like ours, must go on so, again, on behalf of everybody here, we welcome you. We salute the initiative of the Administration, and we look forward immensely to working with you.

Secretary BROWN. Thank you very much, Mr. Chairman. I look forward to working with you and all the Members of your Committee in the months and years ahead on issues that are crucial to our country. Thank you.

The CHAIRMAN. Thank you, Mr. Secretary. While Admiral Kime gets himself and his staff ready, the Chair will observe that Members have been very good and well-behaved, and, therefore, anybody who wishes to make an opening statement for the benefit of the Commandant will be able to do so as soon as we get people re-

shuffled here. I hope you won't be offended. And now I will call on the gentleman for whom, if there were any justice in the world, it would have been his voice that disappeared, the unspeakably distinguished gentleman from Alaska.

STATEMENT OF HON. DON YOUNG, A U.S. REPRESENTATIVE FROM ALASKA

Mr. YOUNG. Thank you, Mr. Chairman. I apologize for being late. There was an accident in this tunnel right over here—a big truck, and we were stuck in traffic for about an hour and a half. But, first, let me compliment you, Mr. Chairman, for having this hearing and for where we are on the *Exxon Valdez* spill. And for the Committee Members, may I suggest I hope you do a lot of legwork in the next two years. It is by no accident that the gentlemen down the hall has renamed his committee the Natural Resources Committee and that I am now the Vice Chairman of the Natural Resources Committee. There is a reshuffling of power structure going on in this Congress to try to eliminate this Committee, which I think is the best committee, the most bipartisan, interested in the fish and the seas and the coast and environment, of any committee on this hill. So when you talk to your friends, keep that in mind because this is going to be attempted. Just remember that, and I want to keep our Chairman where he is at, and maybe if the Lord help us if we have another opportunity we may some day have me sitting in that same chair but not too soon.

Mr. Chairman, I would also like to——

The CHAIRMAN. I would say to the gentleman that spring is coming and with it should come the receding of paranoia, don't you think, to say nothing of delusions?

Mr. YOUNG. I would suggest very definitely there is no paranoia and there is wishful thinking. I would also like to compliment Secretary Brown and the Clinton Administration for the announcement today. I proposed this, as you know, Mr. Chairman—we both did in the energy bill, and it was turned down in the final results. I would also hope that this Committee continue to review whatever the Administration is suggesting—the $25 million of purchasing land and wildlife habitat in Alaska because I think there are three main principles we must stick to. One, in any land the purchasing thereof has to have a willing seller, not because of some interest group. And, number 2, we have to establish the priority of which is the best purchase. I think this Committee must play a role in it. Again, the other committee is going to try to do that.

And I would also suggest as I suggested to the trustees that some of this money—this $25 million—should be invested in some of the communities that are in Alaska that were affected by the spill and a continuing of the environmental cleanup that is outside of the existing spill and the results of it. And I am speaking of some of the areas that have old tank areas—tanks full of fuel that they can't remove and yet are potentially a very, very dangerous problem—potentially spilling into Prince William Sound.

I would suggest, Mr. Chairman, also we look at the sewer and water capability in some of the smaller villages and maybe have some assistance there. So, again, I want to compliment the Secre-

tary, and I just wish and hope this Committee keeps the finger on the button because this isn't a freebie. This is very serious, and we must continue to do what is right for the environment and the people of that region. I thank you, Mr. Chairman.

[The prepared statement of Mr. Young and other Members follows:]

STATEMENT BY HON. DON YOUNG, A U.S. REPRESENTATIVE FROM ALASKA

Mr. Chairman, four years ago, the unexpected happened: for still unexplained reasons, the *Exxon Valdez* struck a well-marked reef in Prince William Sound and broke open, spilling millions of gallons of crude oil into the waters of my State of Alaska. What followed was confusion, finger pointing, lawsuits, and plenty of television coverage. Yet in the end, as much of the oil as could be was removed, major civil and criminal penalties were assessed against Exxon, and the people of Alaska returned to their daily lives. Our Committee is meeting today, not to look at what happened then, but to see how things are now.

Although the temptation is great to engage in rhetoric, let me remind this Committee of the facts. Not a single life was lost during the accident. The cleanup occurred, although it may have caused more damage to the environment and to workers than the spill itself. The State of Alaska, the Congress, and the oil industry have taken steps to deal with prevention and response to spills and with cleanup coordination. The herring and salmon have returned. The sea otter population in my State is as large as ever.

This does not mean that everything is exactly as it was before the spill. There are questions on the health of certain wildfowl populations, questions, I might add, that have not been answered by the Fish and Wildlife Service's actions in dipping dead ducks in crank case oil and setting them afloat in Prince William Sound. There are questions about how spill cleanups can be accomplished in the future with the least effect on natural resources. These are issues that I hope our Committee will look at objectively and not let emotion get in the way of scientific facts.

Finally, Mr. Chairman, I want to compliment the Coast Guard for the work they have done in the Sound in coordinating the cleanup. And I want to compliment NOAA for its excellent, unbiased scientific work in assessing the effects of the spill and cleanup activity on Prince William Sound. I know that Secretary Brown was not in office at the time the spill occurred, but he should be aware that employees of his agency had a major role to play and played it well.

Thank you, Mr. Chairman.

STATEMENT BY HON. ELIZABETH FURSE, A U.S. REPRESENTATIVE FROM OREGON

Thank you, Mr. Chairman, for giving us the opportunity to review the progress being made in the restoration of the resources affected by the *Exxon Valdez* oil spill. While I am unable to remain here for the hearing, due to other commitments, I am very interested in learning about the projects approved by the Trustees and implemented by Federal and State agencies.

I am especially interested in learning how funds are being spent to restore each of the various damaged resources, including marine mammals, fish, and seabirds. I would also like to be sure the very best restoration science is being used and wonder if there is a role for the National Academy of Sciences or the Office of Technology Assessment to play in assuring this.

We all want to do what we can to see that the trust funds are wisely spent to maximize the restoration effort. Today, I hope to learn more about the means by which the Trustees select the projects they fund and the extent to which the public has meaningful input into their decisions. I look forward to the testimony today which is certain to prove interesting and enlightening. Thank you, Mr. Chairman.

STATEMENT BY HON. WILLIAM J. HUGHES, A U.S. REPRESENTATIVE FROM NEW JERSEY

Good morning, Mr. Chairman, and thank you for holding today's oversight hearing on Prince William Sound—four years later.

As you well know, for some 15 years, Congress worked on developing a national framework to protect our inland waterways and coastal resources from oil spills, and provide compensation to those injured by a spill. However, it was the *Exxon Valdez* disaster in Prince William Sound which finally precipitated the development

of a national policy on oil spill liability, compensation, prevention, and response. I was proud to have played a role in the development of this policy along with many of my colleagues here.

In recent hearings before the Coast Guard Subcommittee we have examined the progress of implementation of the Oil Pollution Act. I have been satisfied that, through the Oil Pollution Act, we have made major strides in increasing protection for our natural resources from oil spills.

Today, I am eager to hear the status of recovery of Prince William Sound and other areas in Alaska that were impacted by the *Exxon Valdez* spill. Particularly, I am interested in learning whether scientific evidence indicates an adverse impact on the salmon populations and, consequently, on commercial, subsistence, and sport fishing. I would also like to know the status of the restoration plans.

Finally, I am interested in knowing how the settlement funds are being spent, if the trustee process is working, what problems have arisen since the settlement, and if claims are being adequately addressed.

Thank you, Mr. Chairman. I'd like to close by welcoming the panel and extending a special welcome to Secretary Brown and Admiral Kime. I look forward to hearing your testimony today.

STATEMENT BY HON. MICHAEL N. CASTLE, A U.S. REPRESENTATIVE FROM DELAWARE

Mr. Chairman, it's hard to believe four years have passed since the *Exxon Valdez* ran aground on a reef in the pristine Prince William Sound. It seems like yesterday that this Nation was stunned by pictures of oil-soaked birds, miles of oil-coated water and blackened beaches.

The tremendous damage caused by this oil spill not only affected Alaska's precious natural resources; it also has had implications from the Federal courthouse to statehouses across this country and even the halls of Congress. This environmental tragedy awoke Congress, states, the oil industry and environmentalists to the need to improve laws relating to oil spill prevention, response, cleanup and liability regulations.

The *Exxon Valdez* spill would be even more troubling if we did not learn from errors and mistakes made. However, I do not believe that's the case. I look forward to hearing the testimony of the distinguished panels before us here today to set forth just how much we have learned in the last four years and about the environmental condition of Prince William Sound today.

STATEMENT OF HON. CURT WELDON, A U.S. REPRESENTATIVE FROM PENNSYLVANIA

Mr. Chairman, I would first like to commend you for holding this very significant hearing today. I would also like to take this opportunity to welcome Secretary Brown. I look forward to hearing your testimony today on this important matter.

As you know, I visited the *Exxon Valdez* spill only hours after it occurred. I not only had an opportunity to assess the damage from the spill but also gained a greater understanding of the need to develop and implement effective oil spill prevention and response procedures.

It was four years ago that the *Exxon Valdez* ran aground, spilling over 11 million gallons of crude oil in Prince William Sound, Alaska, and as a nation, we have learned much from this spill. Only months later did Congress pass the Oil Pollution Act with specific provisions designed to increase protections for Prince William Sound.

Yet, while efforts have been made to improve response procedures in the event of another oil spill, one has to wonder if they are adequate enough. In particular, I look forward to hearing from our witnesses today on what preventive measures have been taken to ensure that another *Exxon Valdez* does not occur; and how adequately the Coast Guard has implemented the provisions contained in the Oil Pollution Act for Prince William Sound.

It was only a few months ago that we were again reminded of the devastation that can result from an oil spill. As we watched the *Braer* break apart off the coast of Scotland, it again proved the importance of effective oil spill prevention and response procedures.

Today, as we review what has taken place over the past four years since the *Exxon Valdez*, I am also particularly interested in learning how effective the cleanup and restoration efforts have been. We all know that extensive wildlife was lost as a result of the spill; however, what species have returned to the area and what efforts are underway to restore and protect this fragile ecosystem.

Again, Mr. Chairman, I thank you for holding this hearing today and look forward to hearing from our witnesses on this very important matter.

The CHAIRMAN. I thank the gentleman. I am advised that Admiral Kime has a time problem as well, so what I am going to do, again, with the forbearance of the Members, is allow the Admiral to make his statement. As I understand it, Admiral, you are going to leave and have questions handled by your colleagues. Is that correct?

Admiral KIME. Yes, Mr. Chairman. I would be pleased to answer any policy questions, but I think we have our subject matter experts here to talk about the detail questions that I think the Committee is looking for some answers to.

The CHAIRMAN. We will quickly do that. Perhaps we can allow you to make your statement, and perhaps your colleagues would like to hear our Members' opening statements, but we will get them in. Admiral Kime, welcome.

STATEMENT OF ADMIRAL J. WILLIAM KIME, COMMANDANT, U.S. COAST GUARD; ACCOMPANIED BY RADM. ROGER T. RUFE, COMMANDER, SEVENTEENTH COAST GUARD DISTRICT, ALASKA; CAPTAIN ROBERT NORTH, DEPUTY CHIEF, OFFICE OF MARINE SAFETY, SECURITY, AND ENVIRONMENTAL PROTECTION; COMMANDER DENNIS MCGUIRE, FEDERAL ON-SCENE COORDINATOR, VALDEZ, ALASKA

STATEMENT OF WILLIAM KIME

Admiral KIME. Thank you, Mr. Chairman. Let me congratulate you on assuming the Chairmanship of this Committee and also Mr. Fields on becoming the ranking minority Member. It is a great pleasure for me once again to appear before this full Committee. I see many familiar faces, and I have had a chance to meet many of the new Members. I look forward to working with you and the entire Committee in the same cooperative, open way that we have in the past.

I too, Mr. Chairman, want to extend my thanks to you for holding this hearing on Prince William Sound and OPA '90. I think it is very appropriate. As others have stated, it is appropriate because this is the fourth anniversary of the massive spill of the *Exxon Valdez* in Prince William Sound. I remember that event very well because I served as the Federal On-Scene Coordinator overseeing the cleanup of that spill for several weeks back in June of 1989.

Also, Mr. Chairman, oil pollution, whether it is prevention or preparedness or response or compensation or restoration is something of vital national interest and I think of vital international interest also. I think it is also appropriate for this Committee to hold this hearing in this room because it is by the work of this Committee in this very room that much of the development of OPA '90 occurred and where much of the oversight of its implementation has occurred and where we hope it will continue to occur in the future.

Mr. Chairman, I have a prepared statement. I would like to have that entered for the record and have permission to make some summary remarks. As you said, Mr. Chairman, I will be very brief in my comments talking about OPA '90 in general. I would be pleased to answer questions of a general or policy nature. I have

with me on my right Rear Admiral Roger Rufe, who, having served previously as the Coast Guard congressional liaison leader, is no stranger to many of the Members of this Committee. He is now our District Commander in Alaska and has firsthand responsibility for Alaskan waters.

And with me on my left is Captain Bob North who is the Deputy Chief of the Office of Marine Safety, Security, and Environmental Protection. He has the programmatic responsibility for the implementation not only for the majority of the safety and environmental initiatives of OPA '90 but also a great deal of other legislation. We also have with us Commander Dennis McGuire who is currently the Federal On-Scene Coordinator at Valdez and who is now in charge of the remaining work being done up there.

Mr. Chairman, OPA '90 was the biggest single tasking ever given to the Coast Guard by the Congress. We are involved in 47 regulatory projects, 12 actions or reports, and 5 studies. That is a tasking of about 64 initiatives out of the total of about 95 that the Congress has laid on the Executive Branch. I think a great deal of progress has been made in implementing OPA '90, and some work remains to be done. Some feel it is perhaps going too slowly. Others, I think, feel it is going much too fast. I believe it is going as fast as possible when we consider the complexity of the issues that are involved, and consider the importance, the cost, the diverse interests involved, and the procedures that we are mandated to operate under by law.

Mr. Chairman, since there are so many complex issues that we deal with, the Coast Guard, about a year ago, began publishing on a monthly basis, an Oil Pollution Act of 1990 update. This is being distributed to interested groups on the Hill, in the Administration and the industry, and worldwide. This report provides a tasking-by-tasking summary of what progress has been made and where we stand, and it includes a specific point of contact for each initiative. If new Members of the Committee or others are interested in getting copies of this report on a routine basis, they can be made available. In addition to that, we hold constituency meetings periodically, and I always appear at those to answer any questions that people may have. They are usually conducted at the NASSIF building, the Department of Transportation headquarters.

Let me mention a few significant accomplishments that we have made in implementing OPA '90. The National Pollution Funds Center has been established and is operational, handling claims that result from oil spills against the fund established by OPA '90. It also provides money up front to the states so that they can respond to oil spills with Federal dollars up front. We have created a special regulatory staff to implement the 47 sets of regulations that we are working on. We have established a new Atlantic Strike Team in Fort Dix, New Jersey, giving us a total of three. A National Strike Force Coordination Center has been established in Elizabeth City, North Carolina, to expand the amount of training that we provide not only to our own people but to State and local agencies, and also agencies of the Federal Government with whom we work so very closely.

We have recently delivered prepositioned equipment to the first of 19 sites around the country. All sites will have received equip-

ment by this summer. Hopefully, by early next year all the equipment will be delivered. We have supplied extra response boom to all of our 49 Captains of the Port around the country. We have established regulations for double hulls for both new and existing vessels, both nationally and internationally. And let me speak to the point raised with the Secretary concerning double hulls. The effective date for double hulls for tank vessels entering U.S. waters or our Exclusive Economic Zone (EEZ) is the same, whether these be foreign-flag vessels or U.S.-flag vessels. The phase-out dates for existing single-skinned vessels under OPA '90 and our regulations are the same for foreign-flag vessels and for U.S.-flag vessels.

Now, the international work at IMO is somewhat different. We were successful in convincing the rest of the world to adopt the same requirements as in OPA '90, for both double hulls and the phasing out of single-hull vessels and requiring the same definition of a double hull. But, IMO does have different effective dates. In fact, for existing ships, in some cases, the phase-out date under international agreement is sooner than under domestic law, and there is nothing we can do about that. Once this becomes effective, a U.S.-flag vessel trading to a foreign port will have to meet the more strict of the U.S. or the foreign law. This was brought to the attention of the Congress about a year ago, Mr. Chairman.

We have presented a study of alternatives to double hulls to the Congress and indicated at this time we see no designs that are equivalent or better in all aspects in protecting the environment than a double hull. But, we have left the door wide open for future research and development, which is something that we welcome.

We have completed a Port-Needs Study, looking at 23 ports in the United States to see if we need to initiate new Vessel Traffic Systems or to upgrade the existing systems that we have. There has been talk that we have only presented the study and done nothing to implement. That is false, Mr. Chairman. Let me reflect back almost a year ago to the Coast Guard Appropriations Subcommittee hearings where we testified in great length as to what our implementation plans were, and requested funds to begin implementation of the study. The funds appropriated in FY '93 are currently being utilized, and without prejudging the President's budget, Mr. Chairman, I would say that we hope there will be additional funds in the fiscal year '94 budget to get on with implementing the results of these studies.

In Prince William Sound we have done a great deal. We have upgraded the VTS with better radar to look through the fog, a greater range—10 miles further out, which would include where the *Exxon Valdez* grounded on Bligh Reef. At VTS Valdez, we have assigned additional watchstanders. Pilotage regulations have been put into place. We have initiated a contract for a dependent surveillance system. We have placed wind and speed restrictions on ships transiting Prince William Sound, and, in addition, we have established the new light on Bligh Reef.

In addition to that, we have implemented, for those vessels carrying oil from the Port of Valdez down to the West Coast of the United States, a rather extensive specialized inspection program because of the tremendously rough seas and some of the structural cracking and failures that these vessels have being seeing.

We have also promulgated interim final regulations for vessel response plans. These must be submitted to Coast Guard Headquarters by the 18th of February for vessels to continue to operate, and must be approved and implemented by the 18th of August for them to continue to operate. We have received about 5,300 plans to date. That is about 105 percent of the number that we expected to receive, based on the vessels that are visiting our ports. We are in the process of reviewing them now to make sure that they are in compliance in five key areas. That task will be completed very shortly and the summation of these plans indicated on our computer system.

We have also developed facility response plan regulations for marine terminal responses, and we have received about 2,300 such plan submissions. That is about 70 percent of the number we expected. The reason we haven't received more, I believe, is because of the seasonal nature of many of the terminals. We have established, working with EPA, in the soon-to-be-published revised National Response Plan, organizational procedures to handle a spill of national significance, where we see descending upon the scene, high-elected officials, the media, and local citizens' groups—all deserving and having the right to know what is happening. At the same time, we have the responsibility to clean up the oil spill. I think this new organization draws upon the lessons learned from the *Exxon Valdez,* so that information dissemination and clean-up activities can take place simultaneously. Many of these things were applied successfully in the spill of the *American Trader* that occurred off the West Coast of the United States shortly after the *Exxon Valdez.*

Now, Mr. Chairman, how effective has this been? I think statistics provide us some indication. Obviously, oil spill statistics are skewed by single major incidents, but let me just read what the oil spill statistics in U.S. waters have been since 1986. In '86, 3.1 million gallons; in '87, the same, 3.1; in '88, 4.4; in '89, with the *Exxon Valdez,* 12.7; in 1990, 6.4 million; in 1991, 0.8 million; in 1992, 0.6 million—a tremendous improvement.

Mr. Chairman, much has been done, much remains to be done. My goal and that of the Coast Guard and I think everyone in the Administration working on this issue, is to minimize the probability of a spill and maximize our ability to clean up a spill if it does occur. But, I think we must be realistic. There is no way we can give 100 percent assurance that there will not be more spills. We are a country with five percent of the world's population. We use 25 percent of the world's oil. Most of it is sent by ships. 75 percent is carried in foreign-flag ships. And I would imagine that the amount of oil shipped by vessels will increase in the future.

Mr. Chairman, I appreciate the opportunity to make this summary, and I would be pleased to answer any policy questions and would offer the Committee our two experts to get into the specific details of Prince William Sound.

[Statement of Admiral Kime can be found at end of hearing.]

The CHAIRMAN. Thank you very much, Admiral. We will do a round of policy questions. Actually, you addressed in a general way what I was going to ask you. I know you are familiar with the oped piece of the New York Times last month that was highly critical

of the Coast Guard's implementation of OPA '90, and I suspect you had that in mind with some of your remarks regarding the way in which you have gone about it. I was going to give you an opportunity to say much of what you just said.

You will recall that that piece closed by saying, and I quote, "The Coast Guard isn't entirely at fault." They were kind to you at the end. They said, "The Act has strained its limited resources. Moreover, the shipping industry and the Bush Administration didn't do much to encourage compliance." I think you have spoken at some length and quite convincingly about the ways in which you have gone about doing your business pursuant to the Act, but I wonder if, in your judgment, there are some areas of performance in which the Coast Guard has to date fallen short? And if there are, what do you think they are and why do you think that was and what can we do to improve it?

Admiral KIME. Well, Mr. Chairman, the article was by Mr. Blow, and certainly there was a corresponding article published just recently by Mr. Phil LaRie defending the Coast Guard—something he doesn't always do. Let me say that I think my comments did address the article by Mr. Blow to some extent. Certainly, I think we need to move on with the implementation of the actions that are mandated by OPA '90. We did have two regulatory moratoriums that slowed down the rulemaking process in areas where we did not have a certain date specified in the law. I would hope that the Congress would continue to support the Coast Guard's efforts, specifically in the area of vessel traffic systems. I think these would be most helpful to us.

We are working, in addition to the areas I mentioned, on getting the National Contingency Plan out. It is now undergoing review in the Administration. I think that will be a very important feature for us. The area plans will be out by this summer. I think the support of the Congress and the increased number of exercises that we are conducting will be very, very important in training response personnel.

The CHAIRMAN. Let me just proceed now because I know your time is limited. The gentleman from Texas.

Mr. FIELDS. Thank you, Mr. Chairman. Admiral, I appreciate the speed in which the Coast Guard moved to prepositioning oil spill pollution cleanup equipment in Galveston. Let me ask in a broader sense, where is the remainder of the program? What is the time table?

Admiral KIME. Mr. Fields, we will be delivering equipment to the other 18 sites beginning right now. All of the sites will have equipment by this summer, and all of the equipment will be delivered sometime early next year. This is just a case of the manufacturer. This is not something off the shelf that you get at Sears. It has to be specifically tailored and manufactured, and any delays are because the manufacturer just can't work any faster than he is right now.

Mr. FIELDS. Is there training ongoing at this particular moment for the use of that equipment, or do you actually have to have the equipment in place to provide some of the training needed?

Admiral KIME. No. Our people constantly receive training supervised in great part by the National Strike Force Coordination

Center in Elizabeth City, North Carolina, that I mentioned. So I don't think there is anything unique about the types of boom and the Vessel of Opportunity Skimming System and the inflatable barge that is being supplied as part of this equipment. So I think that when the equipment is there, certainly, we will be able to use it, but I think you touched on a very important point. It is very vital that we continue to exercise this equipment, not just by ourselves but in concert with the industry and the local officials and other Federal agencies, to make sure that if a spill does occur, the equipment is available, in good condition, and we know how to use it in a cooperative way.

Mr. FIELDS. I think it is very important, and, of course, you know when we talk about training, oil spill simulation is important. And under sections 5005 and 5006 of last year's Coast Guard Authorization Act, your agency was required not only to preposition oil spill cleanup equipment but also to purchase a marine oil spill management simulator, both for a Texas center and for a center in Massachusetts. And I have been advised that legally the Coast Guard does not have any discretion on whether or not to spend those funds. Since I believe that this is the type of expenditure that is essential for a safe oil transportation system, when do you think those funds will be spent and the simulators purchased?

Admiral KIME. Well, Mr. Fields, certainly the Coast Guard is committed to executing funds appropriated to it by the Congress in the way directed by the Congress, and sometimes we get conflicting signals between the authorizers and the appropriators which puts us between the proverbial rock and a hard spot. We are working very, very hard right now to try to solve that issue. Specific funds were not appropriated for the simulators. Our acquisition budget is broken into three categories—ships, aircraft, and other equipment, with other caveats placed on it, and without changing the law, we cannot reprogram across-categories—something that we have asked the Congress to authorize, to give us more flexibility.

However, faced without that flexibility right now, we are looking within the "Other" category to see if there is something that could be reprogrammed, and that would probably have to come from oil spill equipment that is being purchased if there is some that we could not purchase within this fiscal year because of the same delivery problems I mentioned to you. We believe we have found equipment that would fit this category. We are working with the staff in the Department of Transportation now to see if we can come forward with the reprogramming resolution.

I appreciate the work of both you and the Chairman in talking to our Appropriations Committee Chairmen, both in the House and the Senate, and the ranking minority Members, and I hope you would also be supportive, Mr. Chairman, in recognizing that while this was not the number 1 priority of the Coast Guard, we are trying to meet this, and that we hope that in the reprogramming process we don't lose the funds that we are identifying for reprogramming and you not get your simulator.

Mr. FIELDS. Well, I can appreciate that, Admiral, but as you can imagine, this is a priority for myself. I can't speak for the Chairman.

The CHAIRMAN. Oh, yes, you can.

Mr. FIELDS. I can speak for the Chairman then, and say that it is a priority for not only myself but the Chairman because we think that this particular simulation equipment is necessary for the preparation and the training to prevent future oil spills. So much of the testimony that we will hear today and have already heard centers around prevention. We think this is extremely important.

Admiral KIME. Well, we consider it important too, Mr. Fields, and as I said, we will be coming forward with the reprogramming request, but I want to solicit both from you and the Chairman your continued support with our Chairmen and the ranking minority Members on our Appropriation Committees in the House and the Senate without whose action we believe we cannot legally spend the money.

The CHAIRMAN. The appropriate flanks will be protected, I believe, as we come to this thing.

Admiral KIME. Thank you.

The CHAIRMAN. We will make sure we use the lights now if we can. The gentlewoman from Washington.

Mrs. UNSOELD. Thank you, Mr. Chairman. I had the opportunity following the spill to visit one of the islands in the vicinity there. It was mostly rocks, but it was labeled cleanup completed. I do not know why but, obviously, they were still very slimy several months later (and they still are today). The question that I have, and I appreciated your responses on your need and the improvements that have been made in prevention, preparedness, response, and cleanup, but I am concerned about the cleanup part of it because it seems to me that much of what we did was probably a waste, and some of it was more harmful than good. What have we learned about cleanup, and what is being done to develop new technologies? What of the microbes, the bacteria that seemed to have some promise? Just exactly what do you see us moving toward?

Admiral KIME. We believe that we do need to improve our arsenal of cleanup capabilities, and I don't think we should restrict ourselves to any particular types of new methods or improving existing methods. OPA '90 does address this. It directs a research and development program. The Coast Guard has consistently included in its R & D budget, that has been approved by the Administration and appropriated by the Congress, moneys to do such things. I think we need to be able to improve mechanical cleanup capabilities—that is, oil skimmers.

We have to look at things such as bioremediation, the bugs eating the oil. I think we have to look again at dispersants. I think we have to look very carefully at what types of very intrusive cleanup we do such as digging up beaches, washing rocks, whether we want to at the same time use either high pressure cold water treatment or the type of treatment that has been credited with causing damage to the critters between the high and low-water mark and that is the 140-degree 100-PSI hot water pressure wash. All of these things need to be looked at very carefully.

I think also, we have to recognize what existed at the time, and I think hopefully we can all learn a lesson from that. This became a very emotional issue. People were demanding very rapid action expecting things to be done, looking for quick cleanup so that you could not hold up rocks like that and show people, as the TV cam-

eras for the networks kept showing the same scenes over and over that had occurred the very first day of the spill. That brought a lot of pressure on people to use techniques like this, and I hope that there would be a balance in the demands of people to see quick cleanup and balance that with the desire to do an environmentally cost-effective cleanup. I think those things are all important.

Yes, there are areas where there are rocks like that below the surface that need to continue to be cleaned up, and that is being looked at, and has been continually. But for the most part, that is not the condition that exists in Alaska today, and I have been back several times since that fateful summer of 1989.

Mrs. UNSOELD. Well, you mentioned several things that should be done in the future, but what are we doing four years later? What is the course of action to improve our understanding and our technology in handling it?

Admiral KIME. Obviously, research is going on into better ways of cleaning up oil, but in addition to that, I think we have increased the amount of resources that we have available. I talked about some of the things the Coast Guard was doing. We are requiring industry to be able to respond by the 18th of August to a significant spill. In the case of Prince William Sound, you have seen a tremendous effort in prevention, and I think every piece of testimony for this hearing that I have read says prevention is the most important thing, and I agree with that. But having said that spills sometimes will occur, a great amount of equipment has been stockpiled in the Prince William Sound area, a great amount of training has been conducted in Prince William Sound, and the organization's ability to respond to a spill like that has been improved greatly.

Mrs. UNSOELD. In the Alaska legislature, an ex-Arco employee who is in the legislature is sponsoring House Bill 238 which would limit the ability to use the 470 Fund for restoration purposes. What effect do you think that that will have on the overall restoration of the area, and is the Coast Guard taking a position on that piece of legislation?

Admiral KIME. I am not familiar with the legislation that you mentioned, on restoration, except for providing funds for immediate initiation of restoration from the oil pollution fund where that is necessary; that is the only responsibility the Coast Guard has in the area of restoration. I would defer to my colleagues and the panel that follows us to answer that question.

Mrs. UNSOELD. OK. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. Before I call on the gentleman from Alaska, let me observe, Admiral, that you may have noticed a considerable coming and going of Members here this morning. I think every single Member of this Committee has about five major simultaneously conflicting obligations, including particularly the distinguished gentleman from Louisiana, the Chairman of the Coast Guard Subcommittee, Mr. Tauzin, whom, as you very well know, is engaged in a series of comprehensive oversight hearings of OPA '90. We are relying on him to do that work in great detail with great distinction. And I know that all Members are somewhat embarrassed and frustrated by the fact that we cannot be more than

three places at once, so bear that in mind as people come and go. The gentleman, unspeakably distinguished as he is, from Alaska.

Mr. YOUNG. Thank you, Mr. Chairman. First let me compliment the Coast Guard. I think they and NOAA were the one bright spot in the Exxon tragedy, and Dr. Kennedy who is in the audience who really can answer some of the questions from the lady from Washington about what is happening because both of you were, I think, very professional in presenting your efforts to not only the cleanup but some of the scientific facts.

But, Admiral, I would like to ask, very slowly go through what is new in Prince William Sound as far as prevention because that is the key because you read it real fast there.

Admiral KIME. I have a tendency to do that, sir. Let me slow down just a little bit. First, let me also second your praise for Dr. Dave Kennedy. I think he has done a magnificent job during the cleanup and continues as the head of the NOAA Scientific Support Coordinators.

Many things have been done. First, the Vessel Traffic System. Additional supervisors and watchstanders have been put on watch. In addition to that, all vessels are plotted. In addition to that, we have installed a second radar of a different band that will see through weather conditions—differing weather conditions. The two radars are now giving us better coverage, and we have also extended our coverage 10 miles south of Bligh Reef, where the incident occurred.

In addition to that, pilotage regulations are now in place. Based on agreements with the State of Alaska, a pilot who holds a Federal pilot's license pilots the vessel from Valdez down to a point about 10 miles south of Bligh Reef, at which time there must be two officers on the bridge at all times until the vessel gets past Seal Rocks, which is outside the entrance to Hinchinbrook. In addition to that, the vessels are escorted by two tugs. One contains pollution response equipment, and this is in the event of any kind of mechanical malfunction that we might see on the vessels.

In addition to that, we have let a contract with Raytheon for the establishment of a dependent surveillance system. What that is is we will use the Differential Global Positioning System, the satellite system developed by the Department of Defense, and by making some modifications on the ground ourselves, we can bring the accuracy with the base signal down to about eight to ten meters. That signal will be picked up by the ship. The ship will then determine its position by a black box and transmit that to the Vessel Traffic System in Valdez, giving us a check on the radar input. This gives us specific coverage of all tank vessels in the entirety of Prince William Sound.

Mr. YOUNG. Admiral, it was very important to me to go through those steps because we really concentrated now on prevention in Prince William Sound. But even with doing that, twice now I believe in the last three years we have had to use the tugs because of loss of power in going through Narrows. Is there any way to check on these vessels? And I am an old pilot myself and a captain of a ship, and I don't think I ever lost power on my engines. Now, is there any way to—why has that happened? Thank God the tugs were there because if they hadn't been there, we would have had

problems. Is there any review of the capability of the ship prior to leaving that dock loaded with oil?

Admiral KIME. Well, there have been seven incidents since the *Exxon Valdez*, two of which involved the use of tugs. Some involved false indications of problems. The rudder angle indicator was indicating that the rudder was not tracking when the rudder really was. Two involved power failures. Others involved problems with the steering engine itself. Certainly these vessels are inspected very, very carefully, and we are looking constantly to see if there are any regulations necessary for us to implement to make these vessels operate more reliably.

The other thing though, I think, is the degree of maintenance that we would expect that the owners would exert on these vessels. Most of the vessels coming into Prince William Sound are, in fact, U.S.-flag vessels. We would hope the owners and the classification societies, along with the Coast Guard, would exert diligence in the training of their people, the inspection and maintenance of the equipment, all of which, I think, is very, very important.

Mr. YOUNG. Good. And, Mr. Chairman, I know I am about out of time, but as far as OPA, it came out of this Committee. We are going to offer some amendments. I am sure you are aware of one or two of them. Very frankly, I have had some cases where I have had fishing vessels that have gone aground, never spilled a drop of oil, and been fined $10,000 by the Coast Guard. This causes great concern. I can understand if they spill oil, but if they don't spill oil, we ought to reward them instead of punishing them.

I hope as time goes by and this through Chairman Tauzin that we can have your input because I don't think it is a perfect bill. I think we have some fine-tuning to do. As anything comes out of the committee, we don't always make the right decision. So as that goes forth, we want your input. And I again want to compliment the Coast Guard. You are one of our favorite operations in Alaska, and we are going to do everything we can to make sure that this President fully funds the Coast Guard so I don't have to hear about George Bush anymore. Thank you.

Admiral KIME. Thank you, sir. We certainly would look forward to working with you for the technical correction to the Act that you spoke about.

The CHAIRMAN. And without objection we won't hear about President Bush anymore. The Chair is going to attempt to follow the Byzantine rule of keeping track of Members [a] who were here when the hearing began and [b] thereafter in their order of arrival. And, therefore, I am going to call on the gentleman from Texas, Mr. Green. Mr. Green, believe it or not, you are next.

Mr. GREEN. Thank you, Mr. Chairman, and I am glad you were able to keep track of the roll. Obviously, Admiral, I represent an area in Houston. In fact, my only military installation is a Coast Guard facility on the Ship Channel, and so I don't have to worry about it being closed because I would expect we would always, as long as we have traffic on the Houston Ship Channel, have a Coast Guard station there.

The experience of the *Exxon Valdez*, and I was up there a year later, can be translated to what we see happening every day in the Gulf of Mexico and particularly in the Houston Ship Channel. And

we have had some spills although, thank goodness, they have been off the coast enough where we were able to contain them and not necessarily reach port. And I appreciate the experience that our Alaskan neighbors have had so we can respond to those. I guess my concern is that the—I am glad the spill equipment is stationed in Galveston now that we have—but I am also concerned that the volumes that we have coming into the ports, whether they be Valdez or Houston or anywhere else, and to make sure that that heightened awareness continues not just within a year or two after the spill, and I am looking forward to working with the Coast Guard to make sure that happens at least in the area that I represent.

Admiral KIME. Sir, let me tell you that the heightened awareness that we all have, certainly in the Coast Guard, is going to continue. I think the *Exxon Valdez* incident caused an awakening to the dangers of oil pollution in this country, and no one has gone back to sleep. I think we have all stayed awake. Certainly the Coast Guard is going to continue to, as I said in my opening remarks, pursue the implementation of all the requirements of OPA '90. And once they are implemented, we are going to monitor them to make sure that they remain effective.

Mr. GREEN. Thank you.

The CHAIRMAN. The gentleman from Pennsylvania, Mr. Weldon.

Mr. WELDON. Thank you, Mr. Chairman. Admiral, I appreciate your responding to the concerns that I raised previously. I just want to again clarify this matter for the record. What you are saying, in fact, is that there are no differences at all between the compliance dates under OPA for American manufacturing flag vessels versus foreign manufacturing flag vessels, be they ships or barges. Is that correct?

Admiral KIME. As far as entrance and operation in the EEZ and the navigable waters of the United States, that is correct.

Mr. WELDON. That is a very important point because we are getting hit—at least I have been hit by what, in fact, may be misinformation as you have outlined here for us today. I want to make sure that this is a part of the record. I appreciate your responding to that.

Admiral KIME. It is very easy to make that other assumption because of the effective dates of some international agreements that would apply for foreign-flag vessels on the high seas and in other countries. And I think that is where the confusion is.

Mr. WELDON. I would appreciate it if we could communicate that to the major shippers in this country so that they understand that there are, in fact, no differences. My second point addresses the *Exxon Valdez* spill. One of the major concerns that I remember experiencing while I was up there, was that the response procedures appeared to be an on-site experimentation, and research and development effort about how to effectively clean up the oil spill. What we were told was that the response procedures and the sophistication of the cleanup technologies were not far enough along, indicating that we did know what were the best procedures. In fact, there was a debate, as I recall, over whether or not to skim or use coagulants, or do open burning. How much progress have we made in the last four years? So this will not be the case in the event of another

oil spill? Do we really know the best way to respond to an oil spill now? Have we put enough money into research?

Admiral KIME. I believe that this is an area where we need to do more; both in developing new techniques, and in better utilizing the techniques we have. I think we need to come to grips with the use of techniques such as dispersants, and I think we must have agreements in place, very clearly stated before an incident occurs. Once one occurs, it is not the time to try to get agreement between all the parties. You will miss the window of opportunity to use them.

In situ burning—to try to burn oil in place before it gets on shore—is something we have been working very hard on. We are working with the State of Alaska, and with industry in the State of Alaska in trying to conduct a test burn. Last year, we were not able to get a permit from the Environmental Protection Agency to conduct such a test. We are working right now with the Russians. We hope to finalize in the next several weeks a plan enabling us to conduct a scientific test on in situ burning. This test would not only measure how effective it was in getting rid of the oil on the surface but what happens to the oil in the water column; what impact does it make on the environment; what are the effects of smoke; and concerns of that nature. I think that is something that must be done.

Let me indicate also that there is set up by OPA '90 an interagency coordination group, for research and development. The Coast Guard chairs that group. We are working very, very carefully as we develop new techniques to make sure we don't duplicate efforts. We have also in the United States co-chaired with the IMO the first of, what we hope will be, a series of international meetings on research and development to try to extend this concept internationally. I understand the next meeting of this type will be held outside of the United States.

I think that we need to have more skimmers. We need to have better skimmers. We need more boom. We need better boom. I think in Prince William Sound more than anyplace else, we have been able to supply that. We need to coordinate the organization for a spill cleanup of a significant magnitude such as the *Exxon Valdez*. That is the purpose of the Spill of National Significance organization. This will be an annex to the new National Contingency Plan. We would expect a three-star Coast Guard flag officer there to be in charge overall, supplemented by people from the EPA, NOAA, and others at various levels. This would allow the OSC to handle necessary aspects of the spill, such as bringing in additional equipment, additional people, and at the same time allowing the professionals on-scene to get on with the cleanup as quickly as possible.

Mr. WELDON. Thank you. I would appreciate it if you have any other recommendations on what we need to do to improve our response procedures, that you would submit these for the record. I am going to ask this of the other panel as well. It is important that we continue to further enhance R & D and to gain a consensus on the best methods of cleanup. I would appreciate your comments on that. One final question which I would like to ask briefly. From what I can tell, I think you have responded very aggressively and

satisfactorily to the prevention and the ability to deal with another incident that occurred in the Prince William Sound area.

I am wondering, however, since we know that several environmental catastrophes that have occurred throughout the world were originally caused by fires and/or explosions on board the vessel, as opposed to a collision or going aground, what additional steps, if any, have been taken specifically to include fire suppression in response procedures. May these be necessary in the Prince William Sound area? Are there additional firefighting vessels currently in place up there? Do we need to require that additional measures be taken to ensure that a fire-related incident does not occur?

Admiral KIME. I would like to ask Admiral Rufe to answer that.

Admiral RUFE. Part of the response posture that has been put in place by Alyeska includes a number of vessels including the *SERVS* vessel that was mentioned by the Commandant earlier, that escorts the ladened tankers to sea. In addition, the tugs that also accompany those vessels are outfitted with fire monitors. These escort tugs are in position to suppress a fire in the event a fire did break out.

Mr. WELDON. These vessels are not specifically fire boats, are they? They are simply monitors and have a 1,000 gallon pump or something similar to that on that vessel?

Admiral RUFE. That is right.

Mr. WELDON. So there are no other special precautions which have been taken——

Admiral RUFE. Or tugs with fire monitors aboard that would do that.

Mr. WELDON. Thank you.

The CHAIRMAN. The gentleman from New York, Mr. Hochbrueckner.

Mr. HOCHBRUECKNER. Thank you, Mr. Chairman. Admiral, on page two you state, "One of the most important lessons learned from the *Exxon Valdez* incident is that prevention is our best environmental protection tool. Once oil is spilled in the water, the battle is always an uphill one," and I certainly can say I couldn't agree with you more.

Now, last week at a Coast Guard Subcommittee hearing, we had the transport industry come in, and they stated that over the last 15 years they have averaged about one major oil spill a year. And certainly we are glad to hear from the latest numbers that in the last two years the amount of oil spilled has greatly diminished. But also in your remarks you indicated that we do utilize a tremendous amount of oil with 5 percent of the population, 25 percent of the world's use of oil, and it probably will continue to increase, and, therefore, our sensitivity to oil spills must also increase proportionately.

Now, on the prevention side, I just wanted to make you aware that I am reintroducing my legislation that would, in essence, call for a Differential Global Positioning Satellite-based navigation system feeding an autopilot that would, in fact, come in two sizes, so to speak, depending on the size of the ship in order to allow, for example, any tanker coming into U.S. waters to put a diskette in the computer and have, in fact, the path through the particular

waterway plotted out in terms of way points and utilizing that plus the digital maps that are in the works.

And, of course, all of this would begin to occur appropriately as the equipments become available, that we would allow, in essence, automatic steering right up through the most desired path through the waterway and thus give an additional tool to the captain in order to assure that we avoid oil spills. And, of course, we all agree that is extremely important to do, and, of course, also the program would not relieve the captain of the responsibility for the ship, naturally. This is merely an additional navigation aid to help the captain do his job. And, of course, I will continue to work with the Coast Guard along those lines.

Now, on reducing the impact of oil spills, many of us do have a major concern about the coming regs associated with OPA '90, and one of the problems we do have is the failure to acquire onboard equipments on the tankers. As we understand it at this point from the hearings, essentially all that is really required are mops and buckets and that kind of thing in order to clean up a spill that might occur on the tanker itself. We are certainly concerned about the safety of the crew, but if a collision should occur or if a ship should go aground, obviously, since studies show and logic dictates that clearly the largest amount of oil spill occurs right at the very beginning and that the more you can do up front to minimize the amount of oil that does get spilled and does get away from the ship, clearly the better off one is.

And so we are very concerned about the lack of onboard equipment. There are systems today where you can automatically deploy boom. We have pumps that can draw up the water and oil, separate them, and, in fact, put the oil back into a bladder that is over the side to be salvaged later. These systems are available today. When we met with the industry last week in this Coast Guard hearing, they seemed very negative on the subject and totally closeminded to even considering the use of these systems. We are very concerned about that, and let me assure you coming from an engineering background, that Murphy's Law will always prevail in terms of prepositioned equipment. It is guaranteed that any ship problem and spill you may have is, by definition, going to occur at the worst possible time at the point most distant from the way you prepositioned your equipment. I mean, that is sort of one of the rules of life, and we all know Murphy's Law applies across the board.

I guess my question for you at this point is what can we do on this Committee short of passing a change to OPA '90 that can get the Coast Guard to build into the impending regs the requirement that onboard equipments be available for those occasions where they could be used where, in fact, we could go a long way toward reducing the impact of an oil spill by being right on the spot with the equipment on the ship itself for deployment?

Admiral KIME. Sir, you address two issues. First, on your legislation concerning autopilots and ship control using electronic chart displays and automatic pilots, we are familiar with this initiative, and certainly would like to continue to work with you. We do have some concerns that while the idea certainly has a great deal of merit, we are not certain that technology has caught up with it

such that we can actually require it yet. Many of the systems that we are talking about, especially electronic display of charting and Differential Global Positioning Systems are still in the development stage and will be perhaps for another couple of years. But the basic idea is a very sound one, and we would like to continue to work with you on this as we have.

On the question of carriage of spill response equipment aboard ship: I think that is one aspect of OPA '90 that probably has been researched, worked on, and talked about more than anything else. We did it initially in a public meeting and through an advanced Notice of Proposed Rulemaking. We followed up with a Reg-Neg—a negotiated regulation project, the only one the Coast Guard has ever conducted, where we brought together all the impacted people—the State, Federal, industry, shipbuilding, and environmental communities—into the same room, and talked about this particular issue. It is also now the subject of a Notice of Proposed Rulemaking.

Let me say that I think there was general consensus that it is not advisable to put people from the ship into the water after a spill, to try to contain a spill. That is very, very difficult. What we did look at was a requirement to have an increased towing capability aboard ship so that a vessel can be taken under tow much more readily than they are required to be right now. We would expect rules to be promulgated on that very, very quickly. There are requirements like this in certain parts of the country already.

Everyone, I think, has agreed that there ought to be an equipment capability of the proper fittings of hoses, adapters, reducers, connectors, so that you can pump oil from one tank on a vessel into another space, whether it be a void space, a ballast tank, or whatever. I think that has been agreed upon. The real question is how effective it is to have significant amounts of boom or skimmers aboard ship where they have to be maintained and where you have a minimum number of crew members who would be able to do this and still do the other things that they have to do. Remember, as bad as the *Exxon Valdez* was (spilling 11.2 million gallons), 40 million gallons was salvaged from that ship and did not spill because of the activities of the crew, the Coast Guard, Exxon, and salvagers. So, there are many things that need to be done.

The Coast Guard is aware of commercial initiatives to develop booming systems that they believe can be deployed by remote control vehicles. And certainly we would not want to close the door on that. We would think that the private sector, and the oil industry, could perhaps look into the feasibility of this. I don't know if there is anything more than a prototype right now to do this. The horsepower required to move a boom around at a minimum, for a very light boom, is about 50 horsepower, and for a major sea containment boom, as much as 5,000 horsepower. This is a rather significant sized remote vehicle. I think all this technology has to be proven. Until that has been done, I think we would be reluctant to require the expenditure of vast amounts of money and risk a false sense of security, rather than perhaps spending that money on other things such as tug escorts and equipment ashore. But, it is something that I think we should continue to pursue.

The CHAIRMAN. The gentlewoman from California, Ms. Eshoo.

Ms. ESHOO. Thank you, Mr. Chairman, and thank you for calling this important hearing. Admiral, if you were to issue a report card on what has taken place since the *Exxon Valdez* spill, on OPA '90 and the critical role that the Coast Guard plays in all of this, what grade would you issue? There have been so many good questions that have been asked, and, most frankly, several of them I was planning on asking, but, overall, what kind of a grade would you issue on a report card on how it is working?

Admiral KIME. I think that is a very good question. I think, concerning efforts of all parties responsible for implementing OPA '90 and related laws, I would give an A+. As far as where we stand, I think we have to give an "Incomplete". For the things we have done, I think we have done very, very well. I have tried to list some of the things that we have done, and in those things, I would give us an A. But the incomplete things still need to be addressed, and we are working on those. With 64 initiatives for the Coast Guard to do in a very short time period, we recognize that we aren't there yet, but we need to continue working to complete this job.

Ms. ESHOO. Just following up on that, do you have timeframes that are set up within the Coast Guard so that you will be able to come back to Congress on a timely basis, and say, "This is what we have completed," so that you won't come up with an incomplete?

Admiral KIME. We have——

Ms. ESHOO. And can you get those to Committee Members so that we can track this?

Admiral KIME. Yes, we can. The monthly summary I held up contains some of that information. We can provide you with——

Ms. ESHOO. I may have stepped out. I had to go and testify someplace else.

Admiral KIME [continuing]. other information, and I will make certain personally you do get this, and if you would like, our staff could brief your staff on the details of just where we are with many of the initiatives or all if you would like.

Ms. ESHOO. We need God to create another day of the week in order for that to happen, but I think that it is really important, especially for me as a new Member, that we stay on track so that know on a timely basis that we are making progress and we know that there are A's across the board. I think that is what people are looking for.

Let me just ask a follow-up question, regarding the recent Shetland oil spill in Scotland. If, in fact, you issue an A on the report card relative to the effort that has been made to date, what of that A have we been able to share with other countries based on what we have learned and what we have been doing in the U.S.? Did they ask for anything from us? And, if so, to what extent have we been able to share what we have learned with other countries.

Admiral KIME. Well, I think we are continually sharing the information that we have from OPA '90 with the rest of the world through the International Maritime Organization. When the *Braer,* the vessel that ran aground in the Shetlands, did so, I immediately called the Secretary General of the International Maritime Organization and offered him any assistance that the United States might provide. In addition to that, I called the U.S. Ambassador to Her Majesty's Government in London and spoke to him personally and

offered him any assistance that the U.S. Government might provide.

Ms. ESHOO. I would give you an A for calling, but what I am looking for is the expertise that we have gained as a result of what has occurred, were we, indeed, able to share any of that expertise—what I am trying to find out is how well this is all working. Maybe you can help me with that.

Admiral KIME. Well, I think you have to look at the condition of the *Braer*. The cause of the accident is still under investigation by the British Government. The best information we have is that the vessel lost all power, probably because of water contaminating the fuel oil. They lost their generators. They lost their main engines, and they were adrift. Tugs were not available to hook up. The crew was evacuated. The engineers did stay aboard to try to restart the engine, and eventually the ship ended up on the rocks. I think what we have to look at there is whether or not we have enough salvage capability right now.

And there is a study ongoing in the United States by the Marine Board of the National Academy of Sciences. It began as a study to answer some questions on the legal aspects of lightering—taking all oil off the vessel in a salvage operation to prevent future contaminating of the water. And this is being done by the U.S. Navy. We have had the study expanded to look at the salvage capability that we have in the United States right now. So those are the types of issues.

In addition to that, as has been reported in the press, and I have not seen the official document yet, but the British Government is talking about specific ship routing measures on a voluntary basis to keep them away from specially sensitive areas which may be sensitive either because of the difficulty of navigation, or environmental reasons. That is going to be presented to the International Maritime Organization with a view toward making it mandatory.

We have been approached by two governments in Europe to look at further steps that might be mandatory regarding ship routing around the country, and whether vessel traffic systems that require both reporting and compliance with regulations could be applied under the Law of the Sea Convention to vessels in international waters. That is something we are looking at also right now. I think those are the issues concerning the *Braer* that have come to light so far. I think we will all have to wait until the British Government finishes their report.

Ms. ESHOO. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. The Chair hopes he is doing this in the right order. The gentlewoman from California, Ms. Schenk.

Ms. SCHENK. Thank you, Mr. Chairman, and thank you for your keen understanding of the multiple committee demands on all of us. Admiral, although I didn't hear your prepared testimony, I did have an opportunity to look at it and that of Secretary Brown's. As you know, I represent San Diego where we are very pleased and proud to have a major Coast Guard facility. I am also relieved that we don't take tankers in San Diego Harbor, but as a Californian along with my colleague Ms. Eshoo and a number of others on this panel, we are very concerned about our precious almost 1,000 miles of coastline in California.

And so what I would like to ask you is if you can help us look at some risk factors that you have learned from the Valdez situation, risk factors that we in California can look at as points to consider to protect the coastline in our own State from the kind of thing that happened in Alaska?

Admiral KIME. We certainly would be pleased to do that. We have worked very closely with the port authorities in San Francisco, LA-Long Beach, San Diego and the Santa Barbara Channel, in the course of doing our port-access study. In addition to that, we worked very closely with Mr. Pete Bonadelly, who heads up the environmental effort for the Governor in California in an exceptional way. We have worked very closely, looking at risks, and we will continue to do that. And if there is anything specifically that you have in mind or any other groups that you would like us to work with, we would be more than pleased to do it.

Ms. SCHENK. Well, what I would like to hear just from you if off the top of your head there are just a few key points now that you could point to?

Admiral KIME. We are looking, up in Prince William Sound right now, at an initiative begun by the Prince William Sound Regional Citizens Advisory Council to look at issues like this—some risk factors including types of tugs that should be used for various situations, whether speed restriction should be applied, and items of that nature. Certainly, this information will be shared with everyone. In fact, we are holding up on regulations in certain areas waiting for the completion of that study to see what we can find.

Ms. SCHENK. Well, when do you think that study will be completed?

Admiral RUFE. 1995. We also have a safety study.

Admiral KIME. In addition to that, we have another study ongoing, working with the Volpe Transportation Systems Center up in Cambridge, Massachusetts. This study is looking at some of these same issues that I just talked about from a more theoretical basis, doing computer simulations in over 200 locales around the country and doing over 3 million simulations. That should be completed in 1995, and the work in Prince William Sound should be done in '94.

Ms. SCHENK. So we are quite a ways away from having some practical things to look at here, and that is of concern to me.

Admiral KIME. Well, I think we have a great many practical things to look at. I think a great deal of work has been done leading up to OPA '90 and in implementing it. I think these are areas that we feel require a very detailed and careful look. That is what is being given to them right now, just as quick as we possibly can recognizing the complexity involved.

Ms. SCHENK. So in your view there is no way to speed this up?

Admiral RUFE. Not the safety studies.

Ms. SCHENK. And we are at the beginning of 1993, and when you say 1994, if that is the end of 1994, that is still two years away and a lot can happen in two years.

Admiral KIME. The navigation safety study that I mentioned to you to be completed in 1995 has 12 parts, and as each part is completed, that will be made public.

Ms. SCHENK. All right. I understand from Secretary Brown's testimony that he has allocated another $25 million for land acquisi-

tion, and I don't ask you to second-guess the Secretary, but where would you spend $25 million if you had it?

Admiral KIME. I think that is something that comes under the purview of the resource managers there who will be represented in the next panel, and really that is not a Coast Guard responsibility——

Ms. SCHENK. Well, but if, of course——

Admiral KIME [continuing]. so I don't think, in my official position as Commandant, I should be speculating on something like that.

Ms. SCHENK. Well, let me be more specific. Are there needs of the Coast Guard that haven't been met where you could utilize more resources?

Admiral KIME. Well, certainly I think the terms of the settlement are very clear, that money has been provided and is still being provided from the one-plus billion dollar settlement to recoup Coast Guard funds, and those of other agencies. We have received several millions of dollars to do that, and it has been expended. I think the other funds have been very clearly earmarked for restoration and in various areas. I think we will be coming forward for any needs the Coast Guard has in the President's budget in 1994, and I would like to ask you and all Members of this Committee as you have in the past to support the President's budget because I think we have done a good job of articulating in that budget what our real needs are.

Ms. SCHENK. Thank you, Admiral. Thank you, Mr. Chairman.

The CHAIRMAN. The gentleman from California, Mr. Pombo.

Mr. POMBO. Thank you, Mr. Chairman. Admiral, I am sure you will agree that the language in Section 1016 of Public Law 101-380 dealing with the Certificates of Financial Responsibility will in all likelihood affect the transportation of oil in the U.S. waters more than any other requirement established by the Oil Pollution Act. I believe there are people who supported the oil spill protocols who knew that the P & I Clubs would refuse to act as guarantors under OPA. What is the status of the rulemaking on Certificates of Financial Responsibility?

Admiral KIME. I think you are correct in indicating that this is probably the single largest maritime issue facing the industry, whether it be the oil industry, the shipping industry, or governments worldwide right now, and I, too, had hoped that we would ratify the protocols. In fact, I sat right at the end of the first row here in this very room in the Conference Committee, when it was decided—over the significant efforts of this Committee and the Chairman to try to ratify it—that they would not be ratified. Given that, we have published a Notice of Proposed Rulemaking to require Certificates of Financial Responsibility to the limits in OPA '90, with rates of $1,200 a ton for tankers, and $600 per ton for other vessels.

And as you have said, the P & I Clubs have indicated an unwillingness to become guarantors under this, even though they are guarantors under the Clean Water Act, and even though they are guarantors under the 1969 Civil Liability Convention, as well as in other cases too. Let me say that we are continuing to work this issue. There are numerous alternatives that have been proposed

such as separate insurance arrangements. To see just exactly what market is available, we have been approaching the reinsurers, and I don't want to get into a lot of technical discussion. These are the people that insure everything above what the P & I Clubs insure, which is something around $12 million right now.

We are also looking at several other initiatives that I could provide you the details of. We would like to bring this to closure just as quickly as possible. There are those that say that if we hold the P & I Clubs' feet to the fire, that we are going to have a train wreck, meaning that all oil is going to stop flowing into this country because no ships will enter because they can't get Certificates of Financial Responsibility. For this, they look at the Coast Guard. I have to look toward the oil industry and the shippers as riding in a locomotive of that train that is going to have a wreck because it is, in fact, the shipping industry that controls the P & I Clubs. They certainly have directors, but the P & I Clubs are part of the shipping industry, and we would hope that they would exert more pressure on the P & I Clubs to say why they cannot become guarantors. They claim that they have unlimited liability under OPA '90, but we wrote Section 1016(g) which specifically limits their liability to the amount of cover that they write, even though the shipowner's liability can be broken. We have yet to see the first piece of information to show us why in Federal, state, common law, or international law their position is true.

We have asked for a continued dialogue on this. I take this opportunity again because I am sure my words will appear in print that we would like to come sit down and talk specifics with the P & I Clubs.

Mr. POMBO. I would like to thank you for your answer. I would like to follow up on the question that was asked by my colleague a few minutes ago about land acquisition in the area. And I realize that you don't have all the control over all these issues, but in your opinion would it be better to spend the money on the cleanup of the area and on prevention in the area than to purchase upland lands?

Admiral KIME. Well, we are talking about an agreement that has already been entered into by the State of Alaska, the Federal Government, and Exxon, about how much money there is and what it is going to be spent for. Let me say that money has been set aside, and other funds are available. It is certainly outside of my area of responsibility or expertise to say what should be done with the other money that has been set aside in this legal agreement for restoration, whether it be specific restoration or acquiring lands, and, if so, what lands. I think those are the kinds of questions that are more appropriately directed to the resource managers who are going to be represented in the following panel. The Coast Guard has no expertise in this and no responsibility.

Mr. POMBO. Thank you.

Mrs. UNSOELD. [presiding] The distinguished gentleman from North Carolina, Mr. Lancaster.

Mr. LANCASTER. Thank you, Madam Chair, and thank you, Admiral. I regret that I had to leave and was not able to hear your remarks orally delivered. Let me, as Mr. Hochbrueckner did a moment ago, tell you how disappointed I am at this point in the

response of the Coast Guard in its rulemaking authority with regard to onboard response equipment and tell you that I hope that that will be remedied before those rules are made final.

But giving you the benefit of the doubt that there simply is not equipment available which can be safely used in response from onboard, I wonder if you could tell us what research is being done on making that equipment available and deployable, and if no research is being done, is that because of lack of resources? And, if so, what resources are needed for the necessary research and development of this technology to take place since I believe that is the single greatest thing that can be done to avoid the effects of a spill immediately following an accident?

Admiral KIME. Well, I believe you had the benefit of my answer to the previous question. Let me say that there is some work being done by a private developer and entrepreneur to develop such a system. And as I said in my answer to the previous question, I think that this is a responsibility of the private sector, oil industries, and shipping industries, to look at things of this nature. We do not think that this is a responsibility—with the limited resource budget for R & D that the Coast Guard has—that our funds should necessarily be earmarked.

Mr. LANCASTER. Excuse me, Admiral. That was not the question. If you don't have the resources, what resources are needed if the Coast Guard was going to take a proactive role in doing research and development? What happens if private industry never does any research because, as Mr. Hochbrueckner indicated, they are very resistant to onboard technology? So should there not be a proactive response on the part of the Coast Guard, and if that is the case—you just said you don't have the money—what money would be needed to——

Admiral KIME. You are talking literally millions of dollars to do something like this. You are going to have to make full size tank vessels available. You are going to have to build prototypes. I mentioned that the equipment to move these booms would require at minimum 50 horsepower, a maximum of maybe 5,000 horsepower, you are going to have to do actual on-site prototype testing with these systems in sea conditions determining the effectiveness of the booms, and the ability to deploy these booms. As I mentioned in answer to many of the other questions, we shouldn't overlook the technological limitations we have with these booms—once we get them into the water. Right now, even if we could have a skyhook that would lower them down from the heavens, they are not going to be that effective. They are very sensitive to sea state. They are very sensitive to currents. You have safety considerations as you trap oil between the boom and the vessel especially if it is crude oil—you have got some very flammable vapors. The ability to get in there and skim the oil is something that is a consideration also.

So there are some technical concerns about the practicality of doing that recognizing we still need to get out there as quick as possible with as much equipment as possible. But to develop this type of system is going to literally take millions of dollars. The entire research and development budget of the Coast Guard right now is about $25 million, and that is to do everything that we do for all the missions we have—for environmental protection, en-

forcement of laws and treaties, maritime safety, and national security. So we are talking about a significant increase if, in fact, the Coast Guard were to undertake such a venture like that, where I think we do have some technical doubts.

Mr. LANCASTER. Lastly, the Valdez incident was created because of human misconduct. I wonder if you could tell us what developments since that incident have addressed that issue? What are we doing to ensure that human misconduct is not the cause of future incidents like the Valdez?

Admiral KIME. This is an area we are very much concerned about. The Coast Guard will soon be issuing Notices of Proposed Rulemaking for increased drug testing for people, increased review of driving records, renewing licenses on an increased basis, and looking at the entire spectrum of training that people have. In addition, I mentioned we have already published rules that require two watchstanders on the bridge, one of whom must hold a Federal pilot's license for the waters from the time the State pilot gets off until you get past Seal Rocks. All of these things are being looked into—things such as improving the Vessel Traffic System so that if people do lapse, that they can be brought back onto course. These are all incidents or types of things that we are looking at.

Mr. LANCASTER. Thank you.

Mrs. UNSOELD. The gentleman from California, Mr. Hamburg.

Mr. HAMBURG. Thank you, Madam Chairwoman. I am sorry to have missed so much of your testimony. I had to be at another hearing, and I don't have any questions at this time, but I do want to say how much I appreciate your coming here before the Committee, and that I will be looking very hard as a Member of this Committee into how in the future we can prevent these kinds of incidents, get greater cooperations from industry, more careful monitoring of transport of oil by the government, and know that you will be cooperating with us on those ventures. Thank you.

Admiral KIME. Thank you. We look forward to working with you, sir.

Mrs. UNSOELD. And I thank the panel for being here—very much appreciate it and appreciate, Admiral, your staying beyond the time that we thought we were going to have the pleasure of having you here.

Admiral KIME. Thank you very much.

Mrs. UNSOELD. I would ask that the next panel come up, and while you are doing so, I would like to make an apology for the Committee that we have to vacate this room by 1 o'clock. It will be occupied otherwise.

STATEMENT OF STEVEN PENNOYER, REGIONAL DIRECTOR, NATIONAL MARINE FISHERIES SERVICE, ALASKA; ACCOMPANIED BY MICHAEL BARTON, REGIONAL FORESTER, U.S. DEPARTMENT OF AGRICULTURE; DR. JONATHAN P. DEASON, DIRECTOR OF ENVIRONMENTAL AFFAIRS, DEPARTMENT OF THE INTERIOR

STATEMENT OF STEVEN PENNOYER

Mr. PENNOYER. Thank you, Madam Chair and Members of the Committee. Thank you for the opportunity to appear before the

Committee today to chronicle for you the events of the last four years since the *Exxon Valdez* oil spill occurred. As the representative of NOAA in Alaska, I have been involved in the process since 1989, but the testimony and background I am going to present relates to the activities of all the Federal and State agencies that have been involved in the damage assessment and response process.

As you mentioned, I have submitted a rather detailed testimony which I will try and condense to fit within your timeframe and will present a summary. I won't get into the physical events of the spill. You are aware of the *Exxon Valdez* and Bligh Reef and the spilled 11 million gallons of North Slope crude oil.

In the response area, NOAA's Hazardous Response and Assessment Division uses spill projection estimates, chemical hazard analysis, and assessment of sensitivity of marine and estuarine resources to spills to assist the Federal On-Scene Coordinator to make timely operational decisions that will help protect the environment from further harm. NOAA scientists of this division were on-scene within hours of the oil spill to identify problem areas and to advise the Federal On-Scene Coordinator.

In response to an earlier question, the work of this division provides the only comprehensive and continuous study of the environmental effects of *Exxon Valdez* oil spill cleanup procedures, and it does continue today. As you mentioned, Mr. Kennedy is here from that division and could present further technical details if you require it.

Inspite of many funding and organizational obstacles, a credible damage assessment effort was mounted. Damage assessment became a formalized process under an agreement between the Federal trustee agencies and the State of Alaska. A Trustee Council was formed immediately after the spill.

Over the next three years, 50 to 65 projects per year were carried out to assess resource injury and calculate the damages of the resources of Prince William Sound and the Gulf of Alaska. Background testimony provided details of our assessment of the damages to various resources. In summary, there were extensive damages. In some cases, resources are recovering naturally while others remain depressed though stable. In some others, there is evidence that declines may still continue. Yet, in other areas, the effects may always remain unknown.

On October 8, 1991, an agreement was approved by the U.S. District Court that settled the claims of the United States and the State of Alaska against Exxon Corporation and Exxon Shipping Company. This agreement was not finalized until December 9 of that year after public review. In the civil settlement, the Exxon companies agreed to pay the United States and the State of Alaska $900 million over a period of 10 years.

That agreement calls for the formation of a Trustee Council to guide the restoration process. This council is composed of three individuals from the State of Alaska and three from the Federal Government. All decisions made by the Trustee Council must be made by unanimous consent. Restoration of the injured resources and services is the primary focus of the Trustee Council formed under the settlement and is an activity in which we are now fully en-

gaged. With one exception, all damage assessment field programs have been concluded. The Trustee Council is only a little over a year into the settlement process and is within a month of having the first summary of the Draft Restoration Plan available for public review. In 1994, a work plan will be largely based on the results of the Final Restoration Plan which will be adopted later this year.

I think it is important to emphasize the habitat protection and acquisition process. This process has basically two phases. One is imminent threat and the other is comprehensive habitat protection and acquisition. We are doing imminent threat lands now, and we are going to do comprehensive lands in the coming year and beyond. Imminent threat deals with private lands for which there is some foreseeable activity such as logging that will be taking place in the near future and could preclude potential valuable restoration habitat options from being realized.

During the past year, 16 imminent threat parcels have been identified and ranked for habitat value, and action has been authorized by the Trustee Council to initiate negotiations on five of the highest priority parcels. In addition, high priority holdings in Kachemak Bay State Park have been already approved for purchase. $20 million has been set aside by the council to initially address imminent threat lands.

Mr. Chairman, I have presented here and in the background information a simplified overview of what has been and is a complex, arduous, and often argumentative process. The focus of the Trustee Council as required in the settlement agreement has clearly shifted from damage assessment to restoration. All of the damage assessment field projects have been closed out. I know the people looking at the program still see studies being done. These studies are part of the restoration process. They are being carried out to monitor injured resources, to assess their recovery due to natural restoration, to gather information needed for resource management, to determine the most effective type of restoration which might be applied to restore injured resources.

I believe we are on the right track although I, like everyone else in this process, wish we could move more quickly into major restoration. We must have a plan to do that. The plan certainly must consider the input we have had and will get from the public, and it must be balanced against the assessment of the relative importance of various proposals, the recovery of resources and services in the oil spill area. There is certainly not unified public opinion as to how restoration funds should be spent. I think we have had an overwhelming body of public comment that most of the fund should go toward acquisition or protection of habitat and that we should move quickly on this. Unfortunately, selection and prioritization of land acquisition is not a simple undertaking.

On the other hand, many communities and groups want other projects varying from improved management of commercial harvest to construction of museums, visitor centers, and educational facilities. It will be our challenge to determine the best mix of projects to restore the vitality of the injured resources and maximize the benefits the public receives from the settlement money. This question cannot be attacked piecemeal. I don't think it will be

an easy process. Nevertheless, I think it is our intent that the plan we send out will frame these questions in a way the public can comment, and we can make choices based on those comments that will guide us through the restoration program for the next eight or nine years or beyond. Thank you for this opportunity to testify.

[Statement of Mr. Pennoyer can be found at end of hearing.]

Mrs. UNSOELD. Thank you. Statements from Mr. Barton and Dr. Deason have been submitted and will be included in the record.

[Statements of Mr. Barton and Mr. Deason can be found at end of hearing.]

Mrs. UNSOELD. I would call on Mr. Sandor now.

STATEMENT OF JOHN SANDOR, COMMISSIONER, ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Mr. SANDOR. Madam Chair, the people of Alaska appreciate the attention you and this Committee are giving to this issue. I will not repeat the points that Mr. Pennoyer has made, but I do want to emphasize some very specific damages that occurred just to remind us of the disaster that actually was involved.

In the 1,500 miles of shoreline that were oiled, there were an estimated 3,500 to 5,500 sea otters killed, 375,000 to 435,000 marine birds, 580 eagles, 200 harbor seals, and an unknown number of river otters that were killed by the spill. And although nature has done a remarkable job of recovering some of the damages that have occurred, there remains much concern, and I would like to just focus attention on several specific areas.

There still is some persistent oil in the environment specifically under the mussel beds which were not cleaned because of the damage that was expected to occur if the mussel beds were removed. We believe that this is responsible for continuing lingering problems of recovery of the breeding habits of harlequin ducks, also some problems with black oystercatchers, and also the river otters themselves. And marine mammals also were impacted, and, again, the juvenile sea otters are a specific lingering problem.

There were an estimated 172,000 to 198,000 of murres that were killed. These significant sea birds, while not threatened since there are over 30 million murres in Alaska alone, nevertheless, this decline remains a concern. I have already mentioned the problem with the reproductive capacity of the harlequin ducks, and it is important that the scientific studies that are underway continue to be able to determine not only the cause of that reproductive loss but also how it might be overcome. The primary commercial fish species in the spill area that were injured were herring, pink and sockeye salmon, and the magnitude of that has not yet been fully assessed.

I should also point out that subsistence damages were very significant. Subsistence harvests of fish and wildlife in nine of the fifteen villages surveyed declined between four and seventy-nine percent since the spill. Seven villages are still below prespill harvest levels. Village residents believe that subsistence species have not recovered, and they continue to fear that their food sources are contaminated by oil.

Mr. Pennoyer had covered the oil settlement itself so I will not repeat that process. I do want to reiterate that the driving force of the activities of the Trustee Council is the settlement agreement itself and specifically the provisions of the memorandum of agreement which, "requires that the purposes of restoring, replacing, enhancing, rehabilitating, or acquiring the equivalent of natural resources injured as a result of the *Exxon Valdez* oil spill and reduced or lost services provided by such resources is what, in fact, drives that process."

I would like to move on now specifically to activities that are now, in fact, underway and particularly what the State of Alaska has done with other cooperators in dealing with the threat of future oil spills. As illustrated by the *Exxon Valdez* oil spill, technology fell far short of expectations, and no one—industry nor regulators—was adequately prepared for a spill the magnitude of the *Exxon Valdez*. However, as a result of the lessons learned from the *Exxon Valdez* oil spill and stricter State requirements, measures to ensure safer transportation of oil through Prince William Sound and other State waters, and to more effectively respond to spills that do occur, have been implemented, and I would like to summarize just a few of them.

First, in regard to contingency planning, the State has revised and updated its Oil and Hazardous Substance Release and Response Plan. An Incident Command System is in place. DEC is working closely with EPA and the Coast Guard to implement such plans. I should point out that as the Commandant of the Coast Guard has also noted that the Response Vessel System is in place in Prince William Sound. There is also equipment locations and depots at various places.

I would like to now move on very specifically to lessons that we have learned in the State of Alaska.

The CHAIRMAN. Excuse me, sir.

Mr. SANDOR. Yes?

The CHAIRMAN. I hate to tell you, but the red light is on.

Mr. SANDOR. OK. Just let me say that——

The CHAIRMAN. OK. You can summarize.

Mr. SANDOR [continuing]. a major point is a partnership effort between the U.S. Coast Guard and other Federal agencies. Additionally, we have a partnership arrangement with the West Coast states and British Columbia, partnership arrangement with the Russian Far East, and, finally, we believe that the cooperative efforts with citizens' organizations in the Sound and in other areas are crucial. Finally, Mr. Chairman, I must say that in the last 30 years there has been at least 18 spills of 10 million gallons or more. There will be another spill, and it is only through close partnership arrangements that we can be more adequately prepared to deal with such spills. Thank you.

[Statement of Mr. Sandor can be found at end of hearing.]

The CHAIRMAN. Thank you, sir. I apologize. In fact, I gather there are several things I should apologize for. I don't know whether the brutal and rude system of lights was explained while I was not here or not, and I know when you have come from as far as Alaska, that seems sort of ridiculous. You are right. It is ridiculous. Unfortunately, it is necessary. We have asked, as I think you were

told, everybody to confine their oral summary of their statements to five minutes. Your full written statements will appear in the record so that future historians will never know you didn't read every word of them. The brutality of the lights is such that the yellow light is your warning that you have one minute left, and the red light is your warning that you have completed your statement. I do apologize for the crudeness of it all, but without it, we would never, ever, ever be able to finish what we have to do.

I also apologize again. As you can probably hear from my voice, I have been asked by higher medical authorities not to continue to talk. I have been asked by a lot of people not to continue to talk, and at some point I will probably be handing the Chair over to another Member of the Committee. It is not because I don't have the greatest interest in what you have to say, it is because I have been told to go away and gargle something, but you don't need to know all about that. Our next witness is Ms. Elenore McMullen, Chief of the Port Graham Village from Alaska. Ms. McMullen, welcome.

STATEMENT OF ELENORE MCMULLEN, CHIEF, PORT GRAHAM VILLAGE, ALASKA

Ms. McMULLEN. Thank you, Mr. Chairman. I also have a bad voice. I have laryngitis. My name is Elenore McMullen. I am Chief of the Village of Port Graham. I have been for the last four years and special thanks for inviting me to testify on behalf of myself and the native people, the Sugpiaq people of Port Graham, and the coastal area that was affected by the Exxon disaster.

Oil companies came to Alaska to exploit the natural resources of Alaska. They came with the assumption that they knew about myself, my people, the Sugpiaq people, the people of Alaska, and our relationship to the surroundings. They didn't know anything. When the Exxon disaster occurred on March 24, 1989, 10 million gallons of oil spilled. My village is down along the coast—further down, several hundred miles in Kachemak Bay. Never once did I ever think that that oil would reach my area. The people, the communities of Prince William Sound were impacted directly immediately.

As the oil spill came around to my area, with much grief we watched our beaches soiled. My people rely on subsistence. Subsistence is life itself for us—for my people. And so as a result, there was a lot of trauma on my people. After the oil spill was claimed to be cleaned up, we were left with the realization that we didn't have our beaches to subsist off of. My people have to travel many miles right now to do subsistence. Just recently, my men from my village traveled for a two-day trip just to do subsistence, and that is at a great expense.

The resources have not been restored. The damage still remains. Since the spill, there is simply less life in Prince William Sound and the coastline in our area. Ducks are rarely seen. Seals are difficult. The men from my village traveled for several days just to hunt seal. The manmade disaster also damaged the culture part of my people—a very, very substance of my people. The sharing, the gathering of subsistence is part of my people, and that has been destroyed. I have not been able to go out on the beach with my

family, my children, to gather or to teach the children. That is how subsistence usage is passed on by my people, by going out and doing those things together as a family but also as a community.

Our home, our land, our sea, our animals are not just the same. We have asked for help. We have not been listened to. The government settled with the Exxon, and we were told when we were asked, "What about us?" but we were ignored. Monies are being spent on purposes of restoration that we feel won't be of impact to us or of assistance to us. We feel this is very unfair. We have been gravely wronged, and no one has come forward to right that wrong, and I am here to ask that that wrong be righted for the people that live along the coast, that the people that live on the subsistence, the people that make use of those products that are along the shoreline were impacted greatly. Our people don't live with full-time jobs or have the money to buy groceries with. We depend on subsistence. It is part of the life, and so there is a great impact.

Until the resources are fully recovered, our livelihood as Sugpiaq people along the coast, as the Alutiiq people, our livelihood cannot fully recover. Until the resources are restored, we will not be restored as Sugpiaq-Alutiiq people along the coast. Thank you.

[Statement of Ms. McMullen can be found at end of hearing.]

Mr. PICKETT. [presiding] Thank you. Our next speaker is going to be Mr. James Hermiller.

STATEMENT OF JAMES HERMILLER, PRESIDENT, ALYESKA PIPELINE SERVICE COMPANY, ANCHORAGE, ALASKA

Mr. HERMILLER. Thank you, Mr. Chairman. I am the president of Alyeska Pipeline. I came to Alaska shortly after the oil spill in June 1989. I have testified on two earlier occasions before the Coast Guard and Navigation Subcommittee shortly after the *Exxon Valdez*; and I certainly welcome the chance today to come before you and talk about the achievements of Alyeska.

I will emphasize quickly the major points. We, too, as many of the previous people at this table this morning, say prevention is paramount. Every plan, every activity, every response must be continually scrutinized to assure that we are going to prevent spills as much as possible.

Another major point is that preparation and response require extensive commitment of equipment, require extensive commitment of material, and trained personnel.

Another important point is planning. Planning must include a broad interest base, including regional citizens, public agencies, and public interest groups. I see here among us today at least three individuals who were instrumental with Alyeska in establishing the Prince William Sound Regional Citizens Advisory Council which advises us in many areas even beyond the contingency plan for which it was originally intended.

Finally, I think one of the most significant points that everyone here today has to understand is that there are no fail-safe guarantees. I consider our people to be as well-trained and equipped as any you are going to find anyplace. However, the best efforts of Alyeska cannot absolutely prevent oil spill accidents or guarantee the recovery of all spilled oil.

After the incident in 1989, Alyeska gathered as many resources as it could in terms of oil spill expertise from all over the world, and we established our program. We identified three important goals which are preparedness, prevention, and response capability.

Before summarizing the resources and measures provided in our plan, I would like to make some general observations. First, Alyeska's commitment has been serious and substantial. We spent about $250 million in the Port of Valdez and Prince William Sound since the spill occurred in March of 1989.

Second, we believe that it was critical to the planning process that we involve the citizens of the Prince William Sound community in helping us define and develop our contingency plan. This action ultimately led to the formation of the Prince William Sound Regional Citizens Advisory Committee.

Thirdly, all of the equipment and materials in the world are not good enough if you do not have the organization to manage them and manage them properly. We adapted the Incident Command System. I think we are the first oil spill response group that has adapted that program, originally it was a program used with fire-fighting activities in the State of California.

Finally, our oil spill equipment and material are in a sense like an army waiting for a war, and we have to keep them on edge, to do this we conduct weekly drills. We have also conducted major drills with all—at least up to this date four of the major shippers—from Valdez. Two more major drills are scheduled for this year. These drills are very large activities. They involve hundreds of people. I would like certainly to extend an invitation to the Committee Members to come to Alaska and see the tremendous amount of activity that is involved in one of these drills.

Given the time constraint, I would like to talk a little bit more about some of the aspects of the plan, namely, the prevention aspect of the plan. We have 12 specially-fitted vessels with trained crews in Prince William Sound. All laden tankers are escorted by these vessels. This happens 24 hours a day, 7 days a week. We have 200 trained personnel to respond to an oil spill in Prince William Sound. Several hundred other Alyeska employees are trained in oil spill response. We have a core group of 30 fishing vessels on contract to provide support. We have another 300 fishing vessels on contract in case we need them. We also have prepositioned equipment throughout Prince William Sound. We also have five hatcheries in the Sound to which we have provided equipment.

I would like to talk about some of the equipment quickly. We have over 33 miles of oil spill containment boom. We have 12 of the highest volume skimming recovery systems anywhere in the world. Despite all of this effort, prevention is the key. We must continue to place strong private and public efforts to make sure that we do not have additional oil spills. Thank you, Mr. Chairman.

[Statement of Mr. Hermiller can be found at end of hearing.]

Mr. HAMBURG. [presiding] Thank you very much, Mr. Hermiller. We appreciate your comments. The next panelist is Professor Rick Steiner, Associate Professor, University of Alaska Marine Advisory Program. Professor Steiner.

STATEMENT OF PROFESSOR RICK STEINER, ASSOCIATE PROFESSOR, UNIVERSITY OF ALASKA MARINE ADVISORY PROGRAM

Mr. STEINER. Thank you, Mr. Chairman. First of all, thank you very much for holding this hearing. The people of the oil spill region are very grateful that you are interested. The other thing though that a lot of people feel is that Exxon really should have been here, and a lot of people are very, very upset. It shows a sort of arrogance and disdain that the corporation has for public process. They should be here.

Next, I will just summarize very quickly the written testimony. First of all, damage was extensive and is ongoing. I don't think there is any great surprise there. It was the most damaging oil spill in human history, and I think we have passed out to most of the Committee Members samples of oiled beach taken just last week which illustrates that the oil is still there. As a matter of fact, I ought to return this to Alyeska. It was their oil. Actually, it was Exxon's oil, but I will——

Mr. HERMILLER. THIS IS NOT ALYESKA'S OIL, IT IS EXXON'S.

Mr. STEINER. It came out of the Alyeska pipeline. I will give this to Mr. Hermiller. Next, the financial claims of victims have not been settled. Exxon promised to make people whole. They have not. The only holes people feel in the region are in their pocketbooks and in their hearts and in their souls, and I cannot overstate that. If Exxon and Alyeska care about mitigating the socioeconomic impacts in the region, they will settle the private claims. And until they are settled, the wounds will fester and will continue. The impacts will continue.

Next, the natural resource damage settlement. Regional residents first proposed a governmental settlement with Exxon in early 1990. The Federal and State governments achieved the settlement, as you have heard earlier, for about 15 cents on the dollar for what the government's own economic evaluation of the damages was, but the people in the region were still generally willing to accept it because everybody realized that unless we got money to use for restoration purposes, the damage would continue. So people were willing to accept the low dollar settlement in order to get on with the work, but the tragedy of it is that once the settlement was in the bank, not one cent has been spent on any substantive restoration.

Again, I can't overstate the frustration of the people in the region or how the process has unfolded. Congress should not come away from this hearing with the idea that the restoration process has proceeded well. It really hasn't proceeded at all. When it comes right down to what we can and can't do for restoration, I think everybody with any sense admits that there really is no such thing as oil spill restoration. We just can't fix what was broken here. We have to admit that. What we can do, however, is do absolutely as much as possible to protect the region as much possible to allow the system to heal on its own. The resources will heal if they are allowed to.

The most popular proposal being forwarded by local residents is to use the bulk of the moneys to acquire coastal habitat that is threatened by logging. Beyond that, fisheries deserve special atten-

tion here because they are so important to the local economy and character of the region.

The other thing that should be said about acquisition or about the use of the settlement funds is that the world is watching us here. We are the only nation in the world that collects natural resource damages in this sense, and if we really use it in a legitimate, genuine sense and do the right thing with it, we will show the world that we really indeed do care about large environmental disasters. We will show that we darn well intend to collect some amount of money commensurate with the damage done, and even if we can't fix the damage, we will offset the damage by doing some other good thing for the damaged environment. It is really just that simple.

Next, tanker safety. I think you probably know as much about tanker safety as anyone. The state of the world's shipping industry is disastrous at the moment, and it can almost without question be predicted that there will be a huge tanker accident somewhere off the U.S. shoreline within this decade. The only time to deal with this is before it happens. I think we are all very clear on that. So if the Committee can do anything, the biggest problem seems to be the Coast Guard's lack of resources in their marine inspection program or the tank vessel examination program.

And, lastly, this Committee has a very important responsibility not only for tanker safety but for oversight of the trustees process, and for continued oversight of national interests in Alaska, and I certainly appreciate the fact that you are taking that responsibility seriously. Thank you.

[Statement of Mr. Steiner can be found at end of hearing.]

Mr. HAMBURG. Thank you, Dr. Steiner, for your very straightforward and unequivocal testimony. The next panelist is Ms. Michelle O'Leary, Cordova District Fishermen United, Cordova, Alaska. Thank you.

STATEMENT OF MICHELLE O'LEARY, CORDOVA DISTRICT FISHERMEN UNITED, CORDOVA, ALASKA

Ms. O'LEARY. Good afternoon, Mr. Chairman and absent Committee Members. Greetings from the far north. I am Michelle Hahn O'Leary. I have lived and fished commercially in Alaska for the last 19 years. I represent Cordova District Fishermen United, CDFU, which is the oldest regional commercial fishing organization in Alaska, and the Prince William Sound Regional Citizens' Advisory Council, RCAC, a volunteer council that meets the requirement of OPA '90.

RCAC is citizens promoting environmentally safe operation of the Alyeska terminal and the associated tankers.

The Sound has not recovered from the oil spill. Contrary to what some might have you believe, the Sound is not OK. It is not back to normal. If you look at the shorelines, you probably won't see any obvious damage, but it is there. As visual impacts fade, dramatic and long-term impacts continue. Herring, an integral part of the food chain, are representative of the health of the ecosystem. They are a critical food source for a wide variety of sea life and represent a multimillion dollar commercial fishery.

The oil spill coincided with the annual spring migration of herring to spawning areas. In 1989, 3.3 billion herring eggs were laid. By best estimate of the potential larvae from that lay, 96 percent died. This past season, the '89 year class of herring returned as first-time adult spawners at the lowest level measured since '67. This is particularly disturbing when noting that they were the offspring of the largest spawning population in the Sound since the 1970's.

Four years after the spill, returning adults, which were one-year old fish in '89, showed significantly reduced reproductive capabilities. This may adversely affect future population stocks, and reductions in the herring fisheries would be a blow to the communities dependent on fishing economy.

Many species near the bottom of the food chain have not been adequately studied. Who knows what the compounding effects may be to other injured species farther up the food chain. There is no clear picture of the extent of the damage to the ecosystem. However, every indication is that the fallout from the spill will continue to impact the social, psychological, and economic fabric of the communities.

For four years, fishermen have been kept in the dark. All of our decisions on buying, selling, or upgrading permits and equipment were made in a vacuum. The science was just released this February and has not been distributed to the people of the impacted areas. Trustees should hold many symposiums to bring damage assessment information to the public. And now Exxon has decided to release their scientific evidence in Atlanta far from those who have the greatest need to know.

Exxon came to Cordova four days after the spill and said, "We will make you whole." There are a lot of people in Cordova who have not been made whole. CDFU believes that despite Exxon's multimillion dollar PR campaign, fishermen have never been fairly or fully compensated for their losses, and they still may face more in the future. CDFU feels the agreement between Exxon and the government was hastily negotiated.

The resulting trustee process leaves little room for public involvement. The public can only rubber-stamp or complain about the Draft Work Plan when it is published. At no time is the public made aware of the restoration options and research proposals originally submitted for consideration. To date, not one dollar has been spent on restoration projects. One of the biggest problems is that the trustees cannot take action without unanimous consent making it easy for a single agency to control the process with a dissenting vote.

RCAC believes the greatest lesson is the importance of prevention. In terms of response equipment, resources, and citizens' involvement, the situation in the Sound is much better than it was in '89 and compares favorably with other ports. However, while we were on the way toward prevention, there are gaps. We are seriously deficient in response capabilities outside of Prince William Sound. We need weather reporting buoys stationed in the Sound. Many of us believe that bad weather and loss of tanker power will account for the next big spill just like the *Braer* in the Shetland

Islands. RCAC is working with agencies on a project to place weather buoys in the Sound. Funding is needed for that project.

Questions have been raised about the current towing packages on oil tankers. Towing equipment is so buried on some tankers that it could take a crew of eight up to four hours to deploy if they still have power to use their winches. Lacking power, it could take the crew two days. In rough weather, crews may be unable to get forward to towing equipment or to the anchors to deploy them at all.

We need an international-based monitoring system such as GPS to expedite assistance to tankers in distress. We also need to establish and demonstrate the effectiveness of the Near-Shore Response Protection Plan. This plan is designed to get the oil in the water before it reaches the beaches. RCAC has learned that we can't assume that the jobs of prevention, regulation, and enforcement are being done and done right. An aggressive approach is needed to implement the provisions of OPA '90. The *Braer* spill was a strong reminder that we are working against the clock of the next spill. Now is the time to act. Thank you.

[Statement of Ms. O'Leary can be found at end of hearing.]

Mr. PICKETT. [presiding] Thank you very much. Next is Dr. Charles Peterson.

STATEMENT OF DR. CHARLES PETERSON, UNIVERSITY OF NORTH CAROLINA, INSTITUTE OF MARINE SCIENCES

Mr. PETERSON. Thank you, Mr. Chairman. I apologize for my voice which, like your Chair, is suffering so I imagine there will be some sympathy. I think I first need to explain why a professor of marine sciences and ecology from the University of North Carolina at Chapel Hill is here talking to you about problems with the ecosystems in Alaska. I am here in my role as what has been called a peer reviewer.

From the beginning of the process, the State of Alaska and the Federal Government employed independent scientists who had no connections with State or Federal agencies involved in the studies to come and help review those studies and to review the study plans, to address whether there were significant improvements that could be made, and to review the results as they were achieved to make sure that they were scientifically credible, and to attempt to integrate those studies and the information that was being gathered on the damages from the spill so that we could have a better understanding of the full process in Prince William Sound and the broader Gulf of Alaska ecosystems, to try to understand just exactly what happened.

I am one of those peer reviewers, and my involvement has gone on since the beginning, now totaling nearly four years in looking at those studies. I have also been involved in advising on restoration projects and attempting to address how ecological science could be brought to bear to try to solve some of the restoration challenges that exist in Prince William Sound and in the spill area.

I have submitted written comments, and I hope you will accept those for the record. I thought I would take my moment to talk verbally about those and to try to paint a picture for you of just what the ecosystems look like. Let me first say that I think the

basic question that has been posed at this hearing is in some ways a wrong one and a wrong one dictated by the press and the failure for the press to continue to cover what really has been going on in the Alaska system that has been impacted by the spill.

And what I mean by this is the question of how has the restoration proceeded? What does the system look like now? The real question—the appropriate question to have been asked is what are the additional damages to the system that we don't know about because the press has not been there to cover it any longer? Here is why I say that. In the beginning, there was clear and obvious damage to natural resources and damage to a pristine environment. The oil came ashore. There were oiled birds by the hundreds of thousands. There were oiled sea mammals, and there was clear death that resulted from that spill. That was documented and readily—easily documented.

What is not documented are the subsequent damages that have continued over time to add to the total of problems in the system, and these damages tend to be of two sorts. One is the damages caused to reproduction, and these are reproductive failures and reproductive dysfunctions of a wide suite of species including many important marine mammals, sea birds, and fishes.

The second type of damage that has continued that was not accounted for in that first flush of oiled carcasses that came ashore are the damages that result from cascading effects in the ecosystem, and here I, unfortunately, sound a bit like a scientist. My point is fairly simple. When you change key species in the ecosystem, that then has impacts that ramify and move further through the system, and there are key species of several sorts that have been impacted by the oil spill that continue to have impacts that are secondary on other species that rely on them.

One of those has been referred to earlier and that is the oiled mussels. Mussels in the intertidal and shallow subtidal are almost universal prey organism upon which numerous animals feed including animals that continue to show reproductive damages probably because of consumption of those contaminated prey. These include such things as harlequin ducks, black oystercatchers, river otters, sea otters, and others.

The other sort of damage that is very significant has also been referred to and that is damage to herring. Herring are consumed by over 40 species and groups of consumers—marine mammals, larger fishes, and sea birds in the system. And the herring, therefore, represent a key prey-base resource that will have continued effects on those other consumers in their absence.

And, finally, a last example of the sort of cascading effects of damages that are still accumulating in the ecosystem is the loss of sea otters. In the absence of sea otters, their principal prey, sea urchins, grow without limit and come to decimate their own food. Their own food are the seaweeds and the algae of the shallow subtidal and intertidal coastline of Alaska. They actually grow to the point, the urchin populations, that they remove the algae from the shore creating what scientists have called urchin barrens. And by doing so, they have removed a key habitat for spawning and for development and nursery of marine fishes, shrimps, crabs, and other key resources in the system.

So what I am here to say is that what we think of as restoration and recovery in the system has been to date very superficial. The oil that we could see on the surface of the rocks has been largely removed, but that oil persists subsurface in a very important fashion. It persists in accumulating in key prey resources, and the damages that were caused initially to the system have only started to be recovered, and in many cases, those damages are accumulating rather than going in the proper direction. And that is the message that the press has not been around to portray for you and that I think is the important one to deliver here, and that is why I have taken my comments—my opportunity verbally to mention it. Thank you, Mr. Chairman and the Committee.

[Statement of Mr. Peterson can be found at end of hearing.]

Mr. PICKETT. Thank you very much, Dr. Peterson. I want to thank the entire panel for your presentation here today, and it is unfortunate that so many of our Members have conflicting commitments. It is not a lack of interest. There are a lot of things going on, and we just had a vote on, but I see we have our distinguished Member from Alaska back, and, Mr. Young, do you have any——

Mr. YOUNG. Thank you, Mr. Chairman. Michelle, how well is the Regional Citizens' Advisory Council working?

Ms. O'LEARY. Thank you. It is young, and it has had its growing pains, but I think it is doing an incredibly effective job of monitoring and working with the oil industry and the other agencies, the Coast Guard, ADEC, EPA, et cetera. I think it is a model that can be applied to other industries around the United States and should be looked at very seriously. We have really been able to have some input into the Oil Spill Prevention Plans, into developing the Near-Shore Response Plans. Right now we have got a disabled tanker towing study that was mentioned earlier where we are working with numerous agencies and the Tanker Association. And out of that, we hope to get some better results on just what we need in the towing equipment on the tankers, what kind of equipment we actually need out there, whether we need to get some new tractor tugs.

So I think the RCAC has been very effective, and it is doing a good job and having a big impact, I think, and, above all, I think it is really allowing the citizens to have a voice and have a say in what is, indeed, happening with their oil.

Mr. YOUNG. All right. Thank you. Mr. Hermiller, do you have any comments along that line seeing that you are the second part of that party—oil industry and advisory council?

Mr. HERMILLER. Congressman, I certainly had a big part to play in the formation of the Citizens' Advisory Group. As I said earlier, at the time we initiated our contingency planning prior to the time of the concept of a citizen advisory council, we felt it was critical to include the citizens in that plan. As I mentioned in my testimony, we looked at it as an advisory council to aid us in the contingency planning process. Since that time, it has included other port activities. It included the environmental aspects of the terminal operation in Valdez all of which, I think, certainly have played a role. I think Michelle characterized it pretty accurately when she said there are growing pains, and, obviously, we have not always seen

eye to eye on all things, but that is part of the process. I think it is working well.

Mr. YOUNG. Elenore, what do you feel about this $25 million and the money possibly going to some of the villages for preventing a potential pollution problem? Do you think that would work, or would there be interest in that?

Ms. MCMULLEN. I think there would be interest. There are groups that are participating—some fishermen from my village are participating right now in Seldovia on a mock cleanup spill program. It is a yearly training program that our men are involved in—our fishermen are involved in.

Mr. YOUNG. Now, but some of the villages I visited have inadequate sewer, and also I think it is Eyak. I think that one of them has the oil tank that has been there for years—the one I would like to see removed because no one wants to take responsibility for it. I believe it belonged to a cannery, and it has gone defunct. That should be removed, you know, because that could break and go into the bay. It seems to me that maybe some of that money ought to be spent in those manners as well as purchasing land and to try to avoid some potential polluting in the Prince William Sound, and maybe we can look at that.

Ms. MCMULLEN. Yes. I don't disagree with you, Mr. Young. I think one of the things we need to do is to look at the subsistence though in our area because you know how Chanega and Tatitlek and our villages in the area along the coast depend on those.

Mr. YOUNG. OK. And, Dr. Peterson, I didn't get to hear your whole presentation, but I have done a little reviewing, and I am glad you brought out some of those points because it seems like the media has a tendency to address the fire and not the ashes after it has occurred. And, you know, I wish they would have some follow-up on some of the comments you made about maybe we did some things that weren't right but we had to do because of certain pressures, and maybe there was a better way of addressing it. I think the Admiral today addressed some of that. I do appreciate your oversight of your peer review report.

Mr. PETERSON. Well, thank you, Mr. Young. I might respond briefly by saying that I think there are some comments that the peer reviewers can bring and some suggestions for improvement in the restoration process, and I have incorporated those into my written comments, and those include issues about how we might learn better from this experience. I mean, I think we ought to be able to create some sort of operations manual at this point for how we should respond to a disaster like this in the future.

We should learn better from what we have seen here, and I think that includes issues of how to clean up the intertidal zone in a minimally damaging way and how to balance the public pressures for cleanup of that intertidal oil against the concerns that the scientific and user communities—the fishermen and subsistence users have for the resources that might be damaged in the cleaning. So there are some very important issues that I don't think we have worked out and used to our full advantage from this bad experience.

Mr. YOUNG. Thank you, Mr. Chairman.

Mr. PICKETT. All right. I am just going to have one kind of an overall observation to make for the panel. A common theme that seems to cut across a lot of what each of you have given us today is that of the one of communication. Dr. Peterson, I think that is a point that you are making, and each of you have spoken about a particular part or particular aspect of what has happened since the spill, and each of you seem to in some way bring forward the issue of communication—of communicating your concern of making an adequate historical record, of taking the information that we have derived and communicating that in a way that it can be used in the future to respond to spills. And, Ms. McMullen, you have mentioned the need in your case to do a better job of communicating the requirements of the group that you represent and are speaking for here today as far as their concerns are involved.

I would ask each of you if you would care to expand on that theme a little bit and tell us what may best be done at this point to improve communication and to take full advantage and gain greater benefit from what we already know as a result of this spill?

Mr. PENNOYER. Thank you, Mr. Chairman. I think you are right. Communication is very important, and from some of the testimony you heard today, we may have not bridged all those gaps and barriers particularly on the Trustee Council. We have formed a public advisory group with 17 people on it representing all diverse sorts of interests. We have a rather extensive mailing list and have been out on all of our plans and have been holding hearings in various villages and communities. I think the real test is going to come from the restoration plan we are sending out and whether, in fact, we get appropriate communications on that, get good feedback, and can then pick our course for the next several years regarding what restoration priorities will have to be addressed.

I think there are many priorities. I think as you have heard today, they are everything from science—how do we tell a better story of what happened here so that we know how to respond to these things in the future and we can better say what the results of them are—to the land acquisition discussions that you heard previously. And I think all of those are in our kit, and I think we have got to make sure we go out there and get proper emphasis on them and find out specifically what the people's needs are and combine that with the results of our studies.

I heard today that we ought to hold mini symposiums regarding damage assessment results. I think something like that makes a lot of sense. We had a symposium in Anchorage. We have had some of the generalized results out for individual species, but we haven't written a combined book that puts it together in the more ecosystem overall approach and then gone back out and talked to the public about that. I think we have to do that.

Mr. PICKETT. All right.

Mr. SANDOR. Mr. Chairman, I think it is very important that there be better public participation although we have a public advisory group, as Mr. Pennoyer has noted. I think we need more involvement of the communities that have been impacted by the spills itself, and this can be done in a number of ways. We need to communicate really more effectively what the reasons are for the continuing investments in studies. We are still learning from the

impacts of the spill, and I think we will be doing so at least for a decade, and that the investments that we are making in such biological studies are essential in the restoration process.

So with respect to habitat acquisition, the Trustee Council has before it now a group of 19 parcels of land 16 of which are critically threatened, and we need to have local involvement in prioritizing those. We want to ask not only the public advisory group for their views of what are important but also the public at large. The Trustee Council does have public information and involvement sessions with each of our regular meetings, and we need to continue that.

Finally, I guess, we need to realize—the trustees need to realize that people have been impacted—and are still impacted, and we need to know how we can help them. Thank you.

Mr. PICKETT. All right. Ms. McMullen?

Ms. MCMULLEN. Thank you, Mr. Chairman. I feel the last statement of the gentleman sitting next to me covered the statement that I want to say. We people, Sugpiaq-Alutiiq people of the coastline, were impacted. You hear about the fisheries. You hear about the sea otter, the seal, but very seldom do you hear about the Sugpiaq people—the Alutiiq people along the coast that were greatly impacted.

We were impacted culturally subsistencewide, and I think through communication, to improve communication and through participation of the Sugpiaq people along the coast, I think maybe some of that can be resolved. I feel like—I don't know how familiar you are with small villages. Small villages like mine don't have the dollars to go to another area to participate in a meeting. It takes money. It takes lots of money. Thank you, sir.

Mr. PICKETT. You have made a very fine statement here today, Ms. McMullen, but do you have anything specific you might suggest as a way or ways to improve communication with our people?

Ms. MCMULLEN. Participation basically—involvement.

Mr. PICKETT. Thank you. Mr. Hermiller?

Mr. HERMILLER. Mr. Chairman, I don't have anything to add to the previous comments.

Mr. PICKETT. All right. Professor Steiner?

Mr. STEINER. Very quickly, Mr. Chairman. First of all, I would encourage the entire full Committee to come visit Prince William Sound and the impacted region this summer. I am sure Congressman Young could point you in the right direction and show you a good time around the coast of Alaska. Secondly, apparently there is some communication going on. Secretary Brown's announcement earlier today, that they are going to devote half of the criminal restitution funds that the trustees have available to habitat acquisition, is one of the most encouraging announcements, I think, a number of people in the region have yet heard in four years.

Lastly, I think in policy decisions that Congress and the Administration make, there needs to be a redoubled effort to really find out fears and concerns of local people; for instance, on OCS development, whatever. These policy decisions that are made here in Washington have extraordinary impact. Today, we are dealing with one—a decision that was made in 1969 or 1970 to site the pipeline into Prince William Sound and the result of that. Sometimes the

results of these policy decisions don't occur for 10 or 20 years, so the more carefully they can be done, the better. Thanks.

Mr. PICKETT. Thank you. Ms. O'Leary?

Ms. O'LEARY. Thank you. There is a strong need for continued communication, and oftentimes that communication needs to take place in the form of vigilance or in simply reminders and remembering. Secretary Brown had said that the response to the spill was effective, but yet a response or a lack of a response that allows oil to hit the beach, it has failed. And I think it is really important that we communicate that and continue to communicate that to the public. It often gets forgotten. And so much of the response that was actually made sort of was a side show to divert attention away from Alyeska and Exxon's initial promise to respond within 72 hours to a spill when they promise the people of Alaska that they could clean up the spill if one occurred.

So I think it is important that we have strong reminders like that, and also as Mr. Steiner was saying, often things are implemented in Washington that go askew. And the TransAlaska Liability Fund—it was also mandated by Congress, and it was supposed to be part of the solution or part of the price of building the pipeline that is in an area dependent on natural resources. Yet, instead of it being part of the solution, it has turned into part of the problem. Seven of the ten trustees of the fund are appointed by the oil companies that own Alyeska. It is really difficult for the public to get heard and get a fair shake.

There are so many meetings that take place that those without the money, as Elenore McMullen said, simply can't travel and are left out of the process and can't communicate. The plane fare down from the Alaska is for myself from Cordova—a normal plane fare is over $1,800. That is an astronomical fee to ask an individual to pay. It was a joint effort to get myself here by many people, and the people in Alaska really do want to communicate and want to be a part of this.

There, unfortunately, are many gaps in the communication link, and the people and the citizens of Alaska would desperately like to be a part of that. RCAC is one link, but we need more links. And most of all, we need more hearings like that you offered here today, but perhaps where the public—the people who know the most, who felt the most, could be heard from first when there are more Committee Members in attendance. Thank you.

Mr. PICKETT. Thank you. And, Dr. Peterson?

Mr. PETERSON. I think I could make several comments, but I will restrict myself to one. I trust the Committee and its Chair are aware that one of the barriers to communications here about the damages and just what was going on was an interesting one that was imposed by the legal process. That is to say this was part of a natural resource damage assessment study. The funds were put up by the State and Federal agencies and governments so as to collect information to gain compensation to those governments for the damages. The lawyers, who largely ran that process, also put essentially a gag rule on the investigators so investigators were unable to release their results publicly, to speak to the media until the suits were settled, and until there was approval to release that information. It was only actually in early February when the very

informative oil spill symposium occurred in Anchorage that those results were released broadly and to the public and in any kind of detail.

So really we are in a new chapter right now when that information can be publicly shared, appreciated, and acted upon, and your Committee has participated in this process, I think, in a very fine way by opening up these questions to a broader audience than could attend in February in Anchorage. And, therefore, I think your activities here will speed the process of seeing that the information gets out about the damages, their ongoing nature, and the state of the ecosystem in Alaska. Thank you.

Mr. PICKETT. Thank you. Mr. Young?

Mr. YOUNG. Mr. Chairman, I only have one comment. I appreciate the panel for being here. There are six Alaskans, and I think Elenore and Michelle mentioned the cost factor is extremely expensive. But I also think that the system as set up is working and needs a little encouragement. I would also, Rick, suggest to you that I know it is easy to be a Monday morning quarterback. If we had made the line go east, young man, I would not have had the oil spill, nor would I have had the ANWR battle that would have gone right through the area, but one does not know those things ahead of time. It was the support of the State which you know wanted to build a pipeline north and south which is probably more difficult than east and west. If we had done that though, Mr. Hermiller wouldn't be there. We wouldn't have had the spill, but now we would have opened ANWR because it would have gone right through that area because that is the side the environmental community wanted to go. But we didn't know those things so we have to deal with what we have now and hope we make wiser decisions in the future.

Mr. PICKETT. Anything else? Our very able staff here informs me that we are working on a satellite arrangement so that we could have our hearing and have a presence both in Alaska and here at the same time so maybe that will come to fruition sometime in the near future. And I am also advised that a visit to Alaska to the Prince William Sound area is being planned for sometime in August, and hopefully if there is adequate funding available that that trip will take place. I want to again thank all the members of the panel for coming here and testifying today. And let me please remind you that both your printed statements and all of your oral remarks are going to be transcribed and placed in a report that all the Members will have an opportunity to review and analyze. So the fact that they are not here to hear your remarks while you are making them today does not mean that they will not serve their purpose and will not reach the source that you want them to reach which is the Members of this Committee. So, again, I thank all of you for coming, and if there is nothing further that anyone wants to bring before this hearing, then the hearing is adjourned.

[Whereupon, at 12:50 p.m., the Committee was adjourned; and the following was submitted for the record:]

U.S. House of Representatives
Committee on
Merchant Marine and Fisheries
Room 1334, Longworth House Office Building
Washington, DC 20515-6230

March 18, 1993

BACKGROUND MEMORANDUM

TO: MEMBERS, COMMITTEE ON MERCHANT MARINE AND FISHERIES

FROM: COMMITTEE STAFF

RE: PRINCE WILLIAM SOUND -- FOUR YEARS LATER

On Wednesday, March 24, 1993, at 9:30 a.m., the Committee on Merchant Marine and Fisheries will conduct an oversight hearing on the state of Prince William Sound, Alaska, four years after the EXXON VALDEZ oil spill. Testifying will be Commerce Secretary Ron Brown and other representatives of the Commerce Department; Admiral J. William Kime, Commandant, U.S. Coast Guard; representatives of the State of Alaska; and public witnesses.

BACKGROUND

On the night of March 24, 1989, the T/V EXXON VALDEZ ran aground on Bligh Reef in Prince William Sound, Alaska, ripping a gash in her hull and spilling approximately 11.2 million gallons of North Slope crude oil. The oil spread through the waters of Prince William Sound, the Gulf of Alaska, and lower Cook Inlet. More than 1,200 miles of coastline were oiled, including portions of the Chugach National Forest; Alaska Maritime, Kodiak, and Alaska Peninsula/Becharof National Wildlife Refuges; Kenai Fjord National Park; Katmai National Park and Preserve; and Aniakchak National Monument and Preserve. Oil from the spill affected shorelines as far as 600 miles from Bligh Reef.

This was the largest oil spill in U.S. history, and therefore little was known about the potential effects of a spill this size on the marine ecosystem. The State of Alaska and the federal government undertook more than 100 studies (at a cost of approximately $100 million) to determine the extent of injury or loss to natural resources. These studies were recently released at a symposium in Anchorage, Alaska. (See Major Impacts, below.)

SETTLEMENT

As trustees for natural resources under the Clean Water Act, the State of Alaska and the federal government sued Exxon Corporation and Exxon Shipping Company for damages caused by the spill. Before the studies were completed and prior to trial, the parties entered into a comprehensive settlement agreement on October 8, 1991. The settlement, covering both civil and criminal fines and totalling $1 billion, represented the largest sum ever recovered by the United States in an environmental enforcement action.

On the civil side, Exxon is required to pay $900 million over a period of 10 years (1991-2001) for natural resource damages. (See attached schedule of payments.) Of this amount, the governments plan to reimburse themselves about $215 million and about $50 million will revert to Exxon for the costs the company incurred during the cleanup.

Under the settlement, the United States and the State of Alaska are co-trustees and their representatives must agree to any expenditure of funds. The United States is represented on the Trustee Council established to administer the settlement by the Secretaries of the Interior and Agriculture and the Administrator of the National Oceanic and Atmospheric Administration (NOAA). The State is represented by the Attorney General and the Commissioners of the Departments of Environmental Conservation and Fish and Game. All of the money must be spent in Alaska (unless the trustees agree otherwise) and only for restoring, replacing, enhancing, rehabilitating, or acquiring the equivalent of injured natural resources.

On the criminal side, the settlement includes a fine of $150 million and criminal restitution of $100 million. Exxon admitted violating provisions of the Clean Water Act, the Migratory Bird Treaty Act, and the Rivers and Harbors Act. Of the $150 million fine, $125 million was forgiven due to Exxon's cooperation with the governments during the cleanup. The remaining $25 million was distributed between the North American Wetlands Conservation Fund and the Victims of Crime Act Account. The $100 million restitution was split evenly between the United States and Alaska. These monies must be used exclusively for restoration projects within the State relating to the oil spill. The Department of the Interior holds the federal government's share in a revolving fund.

MAJOR IMPACTS ON PRINCE WILLIAM SOUND RESOURCES

Prince William Sound is one of the largest marine ecosystems in the United States. It is located east of Anchorage, Alaska, amidst the Chugach National Forest, several state parks, the cities of Whittier, Valdez, and Cordova, and a number of small villages. It has one of the largest tidal estuaries in the United States, and contains valuable commercial herring and salmon fisheries. Bears, bald eagles, puffins, seals, sea lions, and sea and river otters

also inhabit the Sound. The EXXON VALDEZ spill occurred just prior to the most biologically active season of the year in south central Alaska. More seabirds and marine mammals were killed by the spill than any other ever recorded. Following is a summary of the major impacts as described by the trustees.

MARINE MAMMALS:

Sea Otters: Of 10,000 sea otters in the Sound before the spill, 1,000 carcasses were recovered and 3,500-5,500 were estimated to have died from acute exposure to the oil. Abnormal patterns of mortality are continuing.

Killer Whales: Approximately 182 killer whales, forming nine distinct family units or pods, lived in the Sound before the spill. Thirteen whales from one pod and 11 from another are missing. It is not known whether the missing whales died or left the Sound.

Harbor Seals: Two hundred harbor seals are estimated to have been killed, but a complete census had not been conducted prior to the spill. Numbers remain low in 1991, with some recovery.

TERRESTRIAL MAMMALS:

River Otters: Twelve river otter carcasses were recovered. Estimated mortality may be much higher because river otters often feed on mussels which continue to be contaminated with oil.

Bears, mink, deer: No conclusive injury.

BIRDS:

Common Murres: Of the approximately 1.4 million murres that resided in the Gulf of Alaska, 300,000 were estimated to have been killed. There is evidence of complete failure to reproduce at several large colonies in 1989, 1990, 1991, and a minimum of 300,000 chicks lost.

Bald Eagles: Of the estimated 4,000 bald eagles that resided in the Sound, 151 were found dead, with estimates of mortalities as high as 600. Reproduction returned to normal in 1990, and few long-term effects expected.

Ducks:	More than 2,000 sea duck carcasses were recovered, including 200 harlequin ducks. Surveys show a near-total reproductive failure in 1990-1992 likely due to oil-contaminated mussel beds.
FISH:	
Pink Salmon:	The full extent of injury to pink salmon has not yet been assessed. Some analyses suggest that the 1990 return of both wild and hatchery pink salmon was 20-25% lower than expected without the spill, resulting in a return of 15-25 million fewer fish.
Sockeye Salmon:	Commercial harvest of sockeye salmon was curtailed in 1989 because of the spill. This resulted in an unusually large number of adults returning to spawn (called escapement). The overescapement resulted in too little food and poor survival of smolts or juveniles.
Pacific Herring:	May be significant losses. Three-year old herring noticeably lacking in 1992 spawn migration.
Dolly Varden/ Cutthroat Trout:	In 1989-1990, there was 57% greater mortality and in 1990-1991 a 65% greater mortality in oiled versus unoiled streams. Growth rates in oiled areas were also substantially less than in unoiled areas.
SUBSISTENCE HUNTING AND FISHING:	Some communities virtually ceased subsistence harvests in 1989 and have only gradually begun to resume harvests. Other communities continued some reduced level of subsistence harvest. By 1991, some recovery was seen in Kodiak and Lower Cook Inlet, but little in Tatitlek or Chenega Bay.
COASTAL HABITAT:	The coastal tidal zone, commonly known as the "intertidal zone", was the most severely contaminated habitat. Populations of intertidal organisms were significantly reduced along oiled shorelines in Prince William Sound, on Kodiak Island, and along the Alaskan Peninsula. In 1991, high concentrations of oil were still found in mussels and mussel beds. Fucus, the dominant intertidal plant, was severely affect-

ed by the oil and subsequent cleanup activities. Clams and eelgrass beds are still contaminated with oil.

Additionally, scientists at the Anchorage Symposium concluded that application of pressurized hot water during the cleanup of the oil was at least as damaging as the oil itself to intertidal invertebrates and may have delayed biological recovery.

RESTORATION AND HABITAT ACQUISITION

Since the settlement, the trustees have been studying options for use of the $900 million natural resources settlement. To date, the Trustee Council has authorized the expenditure of only about $40 million for studies and some restoration work. The Council is expected to have a final restoration plan in the fall of 1993.

Because some scientists believe that nature is doing the primary job of restoration, they and environmental groups are urging that most of the settlement money be spent to acquire upland habitat, including land and timber rights in Prince William Sound, Kenai Fjords National Park, Kachemak Bay State Park, and Afognak Island. The major landowners of these areas are Alaskan Native Corporations.

The Trustee Council recently stated that, while they cannot acquire all of the private land in the oil spill area -- it could cost $1 billion -- they have begun a process to determine which of the upland habitat will contribute most to restoration and should be acquired. In September 1992, the Council agreed to use up to $20 million to protect lands threatened by imminent logging. In January 1993, the Council authorized the expenditure of $7.5 million to purchase inholdings in Kachemak Bay State Park.

OIL SPILL PREVENTION AND RESPONSE

In direct response to the EXXON VALDEZ oil spill, the Congress passed the Oil Pollution Act of 1990 (Pub. L. 101-380). OPA 90, as it is popularly known, authorized a comprehensive liability, prevention and response regime for oil spills in U.S. waters.

OPA 90 contains several sections which specifically increase protections for Prince William Sound. First, single hulled tankers over 5,000 gross tons must be accompanied by two escort vessels in the Sound. (The State of Alaska also required Alyeska, the company that operates the Valdez terminal, to provide two escort vessels for each tank vessel that leaves the terminal.) Second, federal pilotage requirements for coastwise seagoing vessels are expanded to cover most of the Sound. Third, an automated navigation light for Bligh Reef was mandated and installed in September 1990. Fourth, the Coast Guard is required to expand the coverage of the Valdez Vessel Traffic System (VTS), and this has been extended 10 miles

past Bligh Reef. Fifth, the President established Regional Citizens' Advisory Councils to monitor the terminal facilities at Valdez and in Cook Inlet. Relatedly, Alyeska has stockpiled spill response and cleanup equipment at Valdez.

ISSUES

* What do we now know about the magnitude of the oil spill and its impact on Prince William Sound resources, habitat and subsistence uses?

* How long will the recovery of Prince William Sound and its resources take? Is the recovery occurring naturally, or can the trustees do something to help the process along?

* What should we be doing now in order to be better prepared to assess the damages resulting from the next oil spill if one occurs?

* What lessons have we learned from the cleanup of Prince William Sound for future oil spills? Should beaches be cleaned with hot pressurized water or left alone?

* How is the Trustee process working? Has the requirement for unanimous decisions impeded the process to agree on a final restoration plan?

* Should more of the civil settlement moneys be spent on habitat acquisition? If so, what criteria should be used for acquiring land? If not, what types of restoration projects should be funded?

* How many more years should the scientific studies continue?

* Are adequate oil spill prevention and response measures for Prince William Sound now in place?

* Has the Coast Guard implemented all of the OPA 90 requirements for Prince William Sound? for other areas?

Attachment

Attachment

EXXON VALDEZ CIVIL SETTLEMENT SCHEDULE

The Exxon Companies agreed to pay the United States and the State of Alaska up to $900 million over a period of ten years, according to the following schedule:

SCHEDULED DATE	AMOUNT
December 1991	$ 90 Million[1]
December 1992	$150 Million[1]
September 1993	$100 Million
September 1994	$ 70 Million
September 1995	$ 70 Million
September 1996	$ 70 Million
September 1997	$ 70 Million
September 1998	$ 70 Million
September 1999	$ 70 Million
September 2000	$ 70 Million
September 2001	$ 70 Million

Out of this money, the governments plan to reimburse themselves about $215 million, and Exxon about $50 million for their 1991 and 1992 cleanup costs.

KODIAK

EXXON VALDEZ BIRD MORTALITY

U.S. FISH & WILDLIFE SERVICE
FINAL COUNT - 1989

According to U.S. Fish & Wildlife Service final bird mortality count from the Exxon Valdez oil spill, the Kodiak region sustained higher bird mortality than Prince William Sound. Below is a breakdown by number and percentage of Kodiak's total bird mortality and ten case examples by species.

SPECIES	SPILL TOTAL	KODIAK TOTAL	KODIAK PERCENT
All Species	35,279	22,638	64
Common Murre	10,428	8,153	78
Short-Tailed Shearwater	2,460	2,371	96
Black-Legged Kittiwake	1,225	929	76
Fork-Tailed Stormy Petrel	363	293	80
Tufted Puffin	361	317	88
Sooty Shearwater	360	242	67
Ancient Murrelet	311	195	62
Rhinoceros Auklet	141	79	56
Horned Puffin	139	94	67
Bald Eagle	125	59	47

Annual Christmas count draws serious birders to Kodiak

By KARL PUCKETT
Staff Writer

Stellers eider populations have declined by 50 percent over the last decade, but that was hardly apparent during the Kodiak Audubon Society's Christmas Bird Count last year.

"Ironically, it was the most common bird here last winter," said Bill Donaldson, who helps compile bird count information for the local chapter of the Audubon Society. "It was the highest count in North America (1,421)."

Kodiak's moderate climate is a haven for dozens of bird species this time of year, from eagles to robins, chickadees to great blue herons — and migratory birds like the stellers eider, the bulk of which nest in Siberia and winter in just a few places along Alaska's coast.

"Birders" come from across the country to count Kodiak's dozens of bird species during the annual Christmas Bird Count.

Last year, 11,742 individual birds and 81 bird species were counted in Kodiak. The 81 species was the highest number recorded in Alaska counts, and a record in the 19 years of the local bird-count project. More than 100 species have been documented in Kodiak since the survey started in 1973, while Donaldson said there are more than 200 on the entire island.

Counters split up into groups and comb areas either by car, foot or boat using tools such as spotting scopes and bird calls. Birders take their business seriously, but it is fun, too.

"You turn it into a game. You try to count more species than any other count in Alaska," Donaldson said.

Chris Blackburn, who has been watching birds along with her husband for more than 20 years, participated in her first bird count last year.

"It's fun because you're doing it with other birders and you feel like you're contributing to overall knowledge of birds," Blackburn said. "And for my husband and I it's a good opportunity to work with birders with more experience than us."

Kodiak typically has the highest counts in the country of several species of birds, like the stellers eider, which has been petitioned to be put on the endangered species list but is still awaiting a determination. Other high count species here are the black oyster catcher, a large shore bird, and the red-faced cormorant.

But it is not just high numbers that make the count here interesting, birders said. Opportunities to see birds that do not usually overwinter here, but end up "wandering" over to Kodiak anyway, abound.

"The island is wonderful because we get so many 'accidentals' out of Asia and the Aleutians so it's always like a treasure hunt," Blackburn said.

One of the rare treasures birders spotted in 1992 was a brambling, a Eurasian finch about the size of a robin. Four were counted in Kodiak. Donaldson called unusual, too the sighting of a McKay's bunting, a bird that nests in the Bering Sea area and St. Matthew Island.

Kodiak is also a prime spot to watch overwintering sea ducks, from mallards to harlequins to golden eyes, said Robin West, migratory bird coordinator for the U.S. Fish and Wildlife Service in Alaska.

"It's a good place to see eagles, of course, but it's also a good place to see a variety of sea ducks," he said. "It has quite a variety."

Other facts from last year's count include:

• More bald eagles in the history of the survey were counted. Documented were 152 adults and 158 immatures, typical numbers for coastal Alaska, Donaldson said.

• The third highest number of black-capped chickadees were recorded. A record 197 were counted in 1985, while last year 146 were sighted.

• Seven robins were counted, the continuation of an upward trend. The first sighting of the common mainland bird was in 1986. From 1973 to 1985 there were no robins counted.

"They are starting to become a frequent bird in terms of seeing them every year," Donaldson said. "We see trends like that. Maybe they are starting to show up now."

• Ten great blue herons were counted. The sighting of the large, long-legged birds would have been unusual just a few years ago but, like robins, more herons are beginning to counted.

• Four species of loons were counted. "Normally, you might get two or three species so four is pretty good. That is the max," said Donaldson.

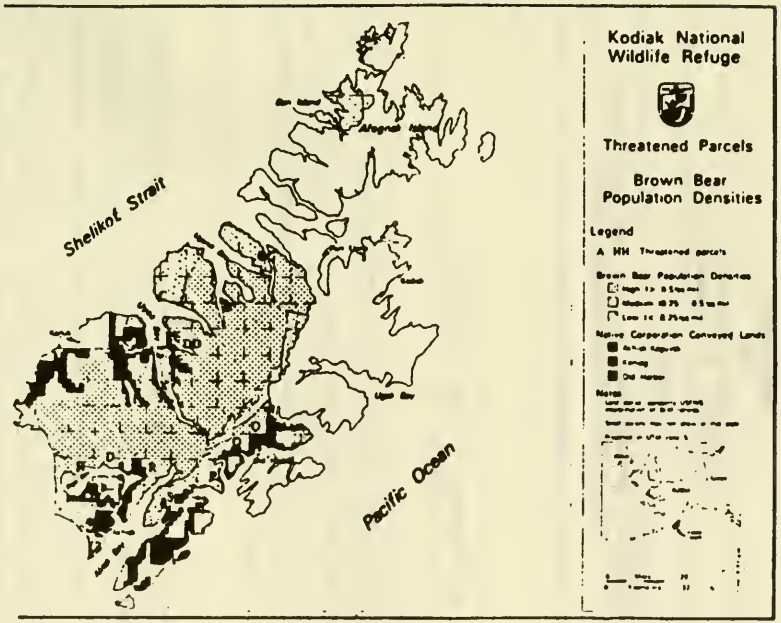
• Three species of eiders were counted here.

Those interested in participating in the count should contact Donaldson at 486-8591.

PARCEL RANKING AND ACREAGE SUMMARY

ANK	PARCEL #	NAME	ACREAGE	SCORE
		Imminent Threat Parcels		
1	CIK 01	China Poot, Kachemak Bay	7,500	45
2	KAP 01	Seal Bay, Afognak I.	15,000	30
3	PWS 04	Fish Bay, Port Fidalgo	1,700	27
4	PWS 02	Power Creek, Cordova	1,300	24
5	CIK 05	Lower Kenai Peninsula	3,000	22.5
6	PWS 06	Patton Bay, Montague I.	3,300	18
7	PWS 03	Two Moon Bay, Port Fidalgo	2,100	14
8	PWS 01	Orca Narrows / Nelson Bay	3,500	12
9	KAP 03	Izhut Bay, Afognak I.	1,000	10
9	KAP 04	Kazakof Bay, Afognak I.	1,500	10
0	CIK 04	Port Graham Allotments	200	8
1	CIK 02	Sadie Cove, Kachemak Bay	400	7.5
2	CIK 03	Jakalof Bay, Kachemak Bay	600	6
2	KAP 02	Pauls Lake, Afognak I.	500	6
4	PWS 05	Eyak River, Cordova	100	5
4	CIK 07	Rocky Bay	100	3
5	KAP 05	Danger Creek, Afognak I.	120	1
5	KAP 06	Paramanof Cr., Afognak I.	500	1
5	CIK 06	Windy Bay	400	0
		TOTAL IMMINENT THREAT ACRES	42,320	
		Opportunity Parcels		
	PWS 07	Chenega I /Eshamy/Jackpot	57,000	60
	KAP 08	Shuyak Strait, Afognak I.	51,000	48
	KAP 07	Alitak Bay, Kodiak I.	230,000	30
		TOTAL OPPORTUNITY ACRES	338,000	
		TOTAL ACRES ANALYZED	380,320	

: Protection Working Group 02/16/93



TESTIMONY
OF
RONALD H. BROWN
SECRETARY OF COMMERCE

BEFORE THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES
U.S. HOUSE OF REPRESENTATIVES

March 24, 1993

Mr. Chairman and Members of the Committee:

Thank you for the opportunity to appear before you today. I am delighted that my first appearance before the Committee presents the opportunity to discuss the importance of NOAA to our nation's environmental agenda.

Let me begin by stating this Administration has renewed America's commitment to leave our children a better nation -- one whose waters, land and air are unspoiled and whose leadership for sustainable global growth is unsurpassed. I believe that NOAA, through its stewardship responsibilities, its commitment to the protection, restoration and sound management of natural resources, and its monitoring and forecasting responsibilities has a bright future in the Department of Commerce and an important role in achieving our environmental agenda.

Mr. Chairman, the primary purpose of this hearing is to review the aftermath of the EXXON VALDEZ accident that occurred four years ago today. I would also like to talk for a few

minutes about NOAA's important contribution to addressing environmental problems which affect us all. After my remarks, I will ask Steven Pennoyer of NOAA's National Marine Fisheries Service to discuss in greater detail natural resource damage assessment and restoration issues concerning Prince William Sound.

Mr. Chairman, the grounding of the EXXON VALDEZ, the largest oil spill in U.S. history, had major environmental and economic consequences. NOAA and its co-Federal and State trustees, and academic and private organizations have worked together to respond to the devastation that threatened some of our most pristine wilderness resources.

Although the last chapter has not yet been written on the EXXON VALDEZ, I think we have learned several valuable lessons:

- Close cooperation between various Federal agencies, including NOAA, the State of Alaska, and the oil industry, was important in bringing about an effective response.
- NOAA's environmental expertise and oil spill response capabilities helped in controlling and assessing damage from the oil spill.
- Nonetheless, our knowledge of environmental systems is far from complete. In some cases, we learned that the

natural resources affected by the spill were more resilient than expected. But other events have taught us that we may not know the full impact for decades.

- The settlement and subsequent restoration plan for Prince William Sound and the Gulf of Alaska hold significant promise to insure that the region's valuable natural resources will exist for our children and their children.

I am aware that there has been criticism regarding the progress to date in using the settlement monies to restore the Prince William Sound region. I share the disappointment but I also recognize that natural resource restoration is a complicated and time-consuming process. I am, however, committed to expediting the restoration process to the greatest extent possible.

To further the restoration process, I would like to announce that Secretaries Babbitt, Espy and I -- in our role as Federal trustees -- have agreed to commit $25 million for land acquisition in the Prince William Sound region from amounts paid by Exxon to the Federal government as restitution. These funds will be made available during this fiscal year and will protect fish and wildlife. This is an important step forward to restore and protect our natural resources damaged by the spill.

The EXXON VALDEZ disaster teaches one very important lesson: prevention is always better than cleanup. No matter how well we respond in the aftermath of environmental catastrophes, our energies and efforts always have a greater impact when focussed on preventing environmental damages in the first place.

The EXXON VALDEZ oil spill also illustrates the importance of demonstrating that environmental protection and economic growth are mutually compatible. This is the vision of President Clinton and Vice President Gore. The contrary notion -- that our environmental objectives are inherently incompatible with our economic priorities -- is simply wrong.

We are obliged to think seriously and honestly about how we can assure both economic development and environmental stewardship. I am aware of the difficult issues that face us when this attempt is made. There are no simple or easy answers; in some cases solutions may be difficult and expensive. Parties on both sides of issues will have to compromise. The approach of past Administrations has left the nation with a poor record and a set of national environmental agencies that need help in resources and leadership in meeting their responsibilities.

This Administration is dedicated to long-term economic growth because we know that a strong economy leads to a better standard of living for all our people, better national security

in an uncertain world, and because we know that only a strong economy can maintain environmental health. We are committed to the best sustainable uses of the Earth's resources as population grows, with conservation as a key element in our plan.

The Department of Commerce will play a vital role in bringing these goals of environmental protection and economic growth together. Our approach will be based on the following beliefs.

Number One: Government has a legitimate and major role in harnessing science to help government agencies and private business make the best decisions now so that we will be prepared to compete in the economy of the 21st century. We must use our scientific expertise to help the private sector develop new technologies that preserve our environment. Science can provide tools for remedying environmental degradation; it can also point the way to more economically acceptable approaches to living with nature. Two examples:

- Science can help us avoid harming the natural environment. For example, as understanding increases about the complex interrelationships of coastal ecosystems, we can work with industry to develop new technologies for manufacturing and agricultural land use that satisfy environmental and economic objectives.

- Science can help us reduce the economic and social costs that result from naturally occurring changes in the environment. Hurricane Andrew is a good example of the risks posed to society by naturally occurring environmental change. Using our knowledge to develop new technologies to provide improved warnings furthers both environmental and economic objectives.

Number Two: We need to recognize that investments in knowledge -- our intellectual infrastructure -- are every bit as important as investments in bridges and highways. We need to apply the best science, information and technology to developing science-based policy options for some of the most difficult issues we have faced. The success of our national economy will be significantly affected by the quality of today's science and the decisions we make as a nation.

Number Three: We must invest in sound management of our natural resources today. We know that investments made today are far cheaper than paying for cleanup tomorrow. We must do a better job of managing the natural resources on which a great deal of our national wealth is based. Several examples illustrate the importance of this belief:

- Investments in our natural resources pay for themselves many times over. The Magnuson Fishery Conservation and Management Act established the most comprehensive marine resource management system in the world. As a result, in 1991, U.S. commercial fisheries produced $3.9 billion in revenue to fishermen at U.S. ports.

  However, a recent NOAA study concluded that, of the fishery stocks that can be assessed, 67 stocks are overutilized, and 28 stocks are underutilized, including skate, dogfish and Atlantic mackerel. The status of 80 stocks remains unknown. Making the needed investment to better manage our fishery resources can have a dramatic effect. We estimate that the seafood industry has the potential to produce nearly $3 billion in additional growth to the U.S. economy.

- We have established a program in NOAA to assess environmental degradation caused by oil spills and hazardous substance discharges and, where possible, to help restore the environment. The program has been used at various sites throughout the U.S. where natural resources have been harmed including New Bedford Harbor, the Palos Verdes Shelf off Southern California, and Puget Sound, Washington. We have settlement agreements which provide for the recovery of more than $130 million from

responsible parties and we will use these monies to help restore the damaged sites and to finance future assessments.

These are but two examples of the need for a long-term view, recognizing that investments now will pay off many-fold later.

Number Four: We must take an integrated approach to making sure all resources are used as efficiently and effectively as possible. We will take an integrated approach from a scientific and information viewpoint, using all appropriate disciplines working together. Government will take an integrated approach bringing Federal, State, industry and academia together to respond to the important issues that we must face.

Number Five: We must take a global approach. As the Vice President has written, some of the environmental problems we face are truly global in scale. They are beyond the resources of any single nation. We must undertake international scientific and technological efforts to tackle environmental problems that require a multinational response. We must move towards a truly global system to monitor changes in our oceans, in the atmosphere and on our land.

Our efforts to develop international solutions increase our ability to monitor the global environment because no one country can do this alone. Our leadership in the global arena will also

help to develop new technologies and new markets for those technologies.

Conclusion

The good news is that this Administration recognizes what needs to be done -- and is actively committed to solving the problems we face. I am particularly pleased to have the honor of serving at the Department of Commerce because I believe that we are the agency of the future -- linking environment, technology, and economic growth.

I could not be more pleased with my team in NOAA -- Jim Baker, Doug Hall, and Diana Josephson -- which is fully committed to building an agency prepared for the 21st century. A key element of NOAA will be the management of natural resources, and my team will have this as a central element of their activity.

Management of natural resources involves knowledge of the Earth system and application of new technology. I am pleased to report that we are already developing cross-cutting initiatives in Commerce to make the links between environment, technology and development a reality. NOAA and other parts of the Department of Commerce will be involved in modernizing our observing systems, developing new environmental technology and opening up new avenues for access to environmental information.

Mr. Chairman, you know that we face difficult tasks. I believe that we in Commerce and in NOAA are ready to face these challenges. I see many opportunities for NOAA to build on its achievements and to be a central agency in the area of environment, development, and management of natural resources.

Finally, Mr. Chairman, I want to congratulate you on holding this hearing today. Your leadership and this Committee are important in addressing the restoration plan for Prince William Sound and many of the other environmental issues which are at the center of our national agenda for the future. I look forward to working with you and the members of this Committee on numerous issues in areas critical to the mission of the Department of Commerce.

Thank you Mr. Chairman.

U.S. Department of Transportation
United States Coast Guard

Commandant
U.S. Coast Guard

2100 Second Street S.W.
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DEPARTMENT OF TRANSPORTATION

U.S. COAST GUARD

STATEMENT OF ADMIRAL J. WILLIAM KIME

ON THE PRINCE WILLIAM SOUND OIL SPILL

BEFORE THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES

HOUSE OF REPRESENTATIVES

MARCH 24, 1993

Admiral J. William Kime
Commandant
United States Coast Guard

Admiral J. William Kime became the 19th Commandant of the Coast Guard on 31 May, 1990. He was nominated to that position while serving as Commander of the Eleventh Coast Guard District in Long Beach, California.

During that time he also served as the commander of the Central California Sector of the U.S. Maritime Defense Zone, Pacific; and as Coordinator of the Pacific Region of the Office of National Drug Control Policy.

Admiral Kime has served in various assignments both afloat and ashore. He has headed delegations to both the Marine Safety Committee and the Marine Environmental Protection Committee at the International Maritime Organization (IMO) in London and was in charge of the structural design of the Coast Guard's Polar Star class icebreakers. He has commanded the Coast Guard Marine Safety Office in Baltimore, and was in charge of all Coast Guard drug interdiction operations in the Caribbean in the early 80's. Since his promotion to flag rank in 1984, he has headed the Coast Guard Office of Marine Safety, Security, and Environmental Protection in addition to commanding the Eleventh District in California.

Admiral Kime is a graduate of Baltimore City College, the Coast Guard Academy, M.I.T., the Industrial College of the Armed Forces and a registered Professional Engineer. In October of 1992 Admiral Kime was elected to a two year term as president of the Society of Naval Architects and Marine Engineers (SNAME). He is the first Coast Guard officer to serve in this distinguished post. Admiral Kime is also a SNAME Fellow and is the 1990 recipient of the SNAME Vice Admiral "Jerry" Land Medal.

The Commandant's awards include the Transportation Distinguished Service Medal, the Coast Guard Distinguished Service Medal, Defense Superior Service Medal, the Legion of Merit and many others.

Admiral Kime, his wife Val and son James live in Chevy Chase, Md.

DEPARTMENT OF TRANSPORTATION
U. S. COAST GUARD
STATEMENT OF ADMIRAL J. WILLIAM KIME
BEFORE THE
COMMITTEE ON MERCHANT MARINE AND FISHERIES
HOUSE OF REPRESENTATIVES
MARCH 24, 1993

Good morning, Mr. Chairman and distinguished members of the Committee. I appreciate the opportunity to bring you up to date on the current state of Coast Guard activities related to Prince William Sound, four years after the tragic EXXON VALDEZ oil spill. Specifically, I would like to address what lessons we have learned from this spill and what we have done to improve the protection of Prince William Sound. As might be expected, lessons were learned or reinforced in areas of prevention, preparedness and response. I will deal with each of these broad categories separately.

SPILL PREVENTION

One of the most important lessons learned from the EXXON VALDEZ incident is that prevention is our best environmental protection tool. Once oil is spilled in the water, the battle is always an uphill one. Since the EXXON VALDEZ oil spill, the Coast Guard has been aggressively implementing various pollution prevention measures within Prince William Sound.

Preventive efforts have focused on exercising greater control over vessel movements and closer oversight of vessel operations. Specifically, the Coast Guard has:

- Increased Vessel Traffic Service (VTS) oversight by providing an additional watchstander on each watch, installing an additional radar band to enhance coverage during adverse weather, and extending the area of coverage beyond Bligh Reef, where EXXON VALDEZ ran aground.

- Implemented speed, weather and ice restrictions on vessel operations. Vessels may not exceed six knots speed of advance in Valdez Narrows. During winds of 30-40 knots, the Coast Guard Captain of the Port requires an additional escort vessel. When winds are above 40 knots, transits are prohibited, and when ice encroaches the traffic lanes, vessels' movements are restricted.

- Undertaken a Critical Area Inspection Program (CAIP) which includes close inspection of the tankers engaged in the Valdez trade to ensure timely identification and repair of hull defects.

- In addition to the buoy off Bligh Reef, added a larger, more visible, fixed lighted tower to make the reef more identifiable to mariners.

- Initiated the installation of an Automated Dependence Surveillance System (ADSS), a state of the art navigational system which utilizes precise satellite navigation information relayed from tankers calling on Valdez, to the Coast Guard Vessel Traffic Service. This system will greatly extend the accuracy and range of the Coast Guard's VTS and allow closer oversight of tanker movements.

- Alyeska has begun drug and alcohol screening and testing of tanker captains and crews prior to sailing, to ensure they are fit for duty.

On the national level, another prevention project that is ongoing within the Coast Guard is the study of the need for tug escorts for certain type tankers. The purpose of escort tugs is primarily to provide a backup in the event of mechanical problems such as the motor vessel BRAER encountered in the Shetland Islands. The Oil Pollution Act of 1990 (OPA) currently requires that single hull tankers greater than 5000 gross tons, on specific waters within the states of Washington and Alaska, be escorted by at least two towing vessels. OPA 90 also requires the Coast Guard to devise tanker navigation regulations which govern the use of auto pilots, and which establish minimum bridge and engine room manning levels. A final rule regarding these rulemakings is being drafted. These national rules will provide clear benefits to Prince William Sound.

Another set of national prevention measures concentrates on improving the qualifications and fitness of merchant vessel personnel. These include:

- In addition to drug testing requirements already in place, applicants for Coast Guard licenses and merchant mariner's documents must indicate if they have been convicted of driving under the influence of alcohol (DUI) during the past five years, and a future provision will require that all Coast Guard license applicants undergo a National Driver Register check. The applications of persons with one or more DUI convictions will be carefully evaluated in accordance with established criteria prior to a decision being made on license issuance or renewal.

- To reduce the role of crew fatigue, tank vessel manning regulations have been revised to prohibit a licensed individual or seaman from working more than 15 hours in any 24-hour period or more than 36 hours in any 72-hour period.

Spill prevention through ship design is another area of research and regulation resulting from the EXXON VALDEZ grounding. Double hulls and other new designs and technologies will bring us margins of environmental protection that are orders of magnitude greater than we knew a few short years ago. OPA 90 requires double hulls for new tankers for which a contract has been placed on or after June 30, 1990 and delivered under that contract on or after January 1, 1994. We have issued an interim final rule implementing this requirement and are presently working to issue a final rule. The Act also prohibits vessels contracted before June 30, 1990, and delivered before January 1,1994 from operating in the navigable waters of the U.S. or the Exclusive Economic Zone (EEZ) unless they have double hulls. We also drafted proposed rules for structural and operational measures to reduce oil spills from single hull vessels during the interim period they can continue to operate.

These are some of the most important initiatives we have undertaken to reduce the likelihood of accidents in Prince William Sound and other environmentally-sensitive areas. I am confident that the spill prevention regime now in place in Prince William Sound is far more effective than in 1989 and will

continue to improve as programs under development come into force.

PREPAREDNESS

Another lesson learned from the EXXON VALDEZ tragedy is the importance of preplanned organization, teamwork and communication. The public, state and local government, the marine industry, and the Federal government (including the Coast Guard), have undertaken considerable effort in the Prince William Sound area, and throughout the United States, to improve preparedness to undertake oil spill response actions should a spill occur. We have come a long way over the past four years and are much better prepared to respond to a major oil spill now than we were in 1989.

Spill response planning and periodic exercise of the response plan are critical to Coast Guard and industry preparedness. The Marine Safety Office in Valdez actively participates in and monitors Alyeska's and the shipping companies' performance during oil spill exercises. The Coast Guard monitors weekly spill exercises and fully participates with the State of Alaska and other agencies during the semiannual large scale spill exercises which have involved over 600 industry and agency personnel and 50 vessels. During these exercises, the Coast Guard partially activates its District Response Group and deploys Coast Guard cutters, aircraft, spill response equipment and response personnel to augment the response and supervise the industry's response.

The Prince William Sound Regional Citizen's Advisory Council (PWSRCAC) has worked closely with the Coast Guard and marine industry to continually improve the safety of current shipping operations. The PWSRCAC has:

- Actively participated in and monitored oil spill exercises and is involved in the preparation of joint evaluations of exercises. It has been extremely helpful in the team development of the drill scenarios, problem introduction and other control issues.

- Served as the catalyst for conducting a comprehensive Disabled Tanker Towing Study to determine the appropriate towing equipment, safest speed of tankers, etc. to ensure disabled tankers can be brought under control before grounding.

- Continuously reviewed Coast Guard operations and commercial shipping activities to identify areas for improvement.

- Actively participated in the review of oil spill prevention and contingency plans with our Coast Guard, our Marine Safety Office in Valdez, and the industry.

Of equal, if not greater, importance are the PWSRCAC and marine industry's preparedness efforts to improve distressed vessel assistance in Prince William Sound. Alyeska's SERVS (Ship Escort and Response Vessels System) has provided for the escort of all laden tankers from Valdez to the open sea. A seagoing tug and an Escort Response Vessel accompany laden tankers to provide immediate assistance should a tanker become disabled.

Other preparedness programs the Coast Guard is actively pursuing nationwide will also benefit Prince William Sound. These include:

- The On-Scene Coordinators Emergency Management Course: This course is designed for Federal and State on-scene coordinators (OSCs) and involves coordinating the concerns, demands, rights and responsibilities of the diverse group of public, private and media interests that come together in response to a major pollution incident. Its purpose is to make On-Scene Coordinators more efficient managers.

- The Federal Response Plan: The Coast Guard has been working closely with the Federal Emergency Management Agency (FEMA) and the Environmental Protection Agency (EPA) in rewriting sections of this plan, specifically Emergency Support Function #10 (Hazardous Materials Annex). The intent is to create a smooth transition and interaction between the emergency functions described in this FEMA document and those found in the National Oil and Hazardous Substances Pollution Contingency Plan.

- Marine Environmental Protection Industry Training: This program will provide Coast Guard personnel an opportunity to learn more about the management of major oil spill response organizations, and how coastal states are working to develop legislation to protect their waters and shorelines. This program will better enhance the working relationships between the Coast Guard, industry and the states, and improve our understanding of their operations.

- District Response Groups/District Response Advisory Teams: Title IV of OPA 90 requires the formation of a District Response Group (DRG) and a District Response Advisory Team (DRAT) within each Coast Guard District. The DRG provides a framework within which Coast Guard districts will organize their response operations. It consists of all Coast Guard units, personnel, and equipment within a district's geographic boundary; all prepositioned response equipment strategically located in the district; and a DRAT composed of three to six personnel billets, added to the district Marine Safety Division staff. The DRAT is the nucleus of the DRG and will serve as the coordinating body for the DRG and be of special value as a readily-accessible, easily-deployable team that can be dispatched to provide support for a Federal On-Scene Coordinator. It is specifically dedicated to enhancing pollution response preparedness at the port/district level, and providing expert assistance to the OSC during response operations. Within the Seventeenth Coast Guard District, a DRAT has been established at Juneau, Alaska. This DRAT consists of four specialized billets which are there to provide preparedness and response coordination for Prince William Sound, or other sites in Alaska.

- Preparedness for Response Exercise Program (PREP): The Coast Guard is developing a Preparedness for Response Exercise Program (PREP), which will establish guidelines to be used by the entire response community (Industry and the Federal, State and local governments) for the various exercises required by OPA 90. We will be holding a series of four workshops, beginning on

April 2, 1993, to obtain input from the response community to help develop the exercise guidelines. The workshops will address four major issues associated with the exercise program -- scheduling and execution of the exercises, "credit" for exercise participation, evaluation of the exercises, and a means to transmit information related to the exercises such as "lessons learned." This program will provide a familiarity among the responsible agencies that was lacking in 1989.

- Area Committees & Area Contingency Plans: In response to OPA 90, Area Committees are now being formed throughout the country to better prepare for a coordinated response to oil and hazardous substance spills. The Area Committees are required to develop Area Contingency Plans for their areas. These plans will detail information on a "community" response to an oil or hazardous substance spill in the area. The "community" response means that the Federal, State and local governments in the area will combine resources to ensure an efficient, effective and coordinated response. The Area Contingency Plans will be developed by July 1, 1993. The Area Plan concept envisioned by OPA 90 and now being institutionalized in our field operations, will be the driving force in generating a team approach to response that was lacking at EXXON VALDEZ.

Also, on a national level, interim final rules have been published requiring tank vessels and facilities handling oil in bulk to develop, submit for approval, and carry response plans. The deadline for submission was February 18, 1993, and vessels or

facilities that did not submit a response plan by then may not handle, store, or transport oil within the waters of the United States. Thus far, the response from industry has been very positive with the number of vessels and facility plans received being close to the total number of plans anticipated. We are already in the process of conducting preliminary reviews of these plans. Once fully in place on August 18, 1993, the requirements for tanker and facility owners to ensure the availability of private equipment necessary to respond to a "worst-case" spill will greatly enhance our ability to get sufficient equipment on-scene quickly.

RESPONSE ACTIVITIES

Another lesson of EXXON VALDEZ was that the initiation of a rapid response to a large scale oil spill becomes essential to minimize environmental damages. This, of course, requires maintaining an inventory of spill response equipment appropriate to the risk, which must be available to respond as quickly as possible.

RESPONSE EQUIPMENT

Most of the response equipment obtained by the Coast Guard is located outside of Prince William Sound to address spills from freight vessels, passenger ships and fishing vessels which are not required to have spill response resources pre-identified and which are the source of most spills in Alaska. Since the EXXON VALDEZ spill, we have accumulated a wide range of spill response equipment to enhance the Coast Guard's spill response capability

in Alaska. Approximately 26,000 feet of containment boom has been pre-positioned at nine locations around the state of Alaska. The equipment is co-located with Coast Guard air stations, vessels and Marine Safety Offices to leverage our resources and ensure rapid response to spills. Pacific Strike Team oil lightering equipment (pumps, hoses and power packs), dracones (portable barges) and Open Water Oil Containment Recovery System (OWOCRS) have been pre-positioned at Coast Guard Support Center Kodiak to allow rapid mobilization of this equipment via Coast Guard aircraft or vessels stationed in Kodiak, to spills anywhere in Alaska.

Aleyska has accumulated the most extensive spill response equipment inventory in the world and they now routinely exercise it. Two response vessels are pre-staged outside of Valdez in remote areas of Prince William Sound along the tankers' trackline to ensure immediate response to spills. These vessels are equipped with lightering equipment to provide for immediate removal of oil from damaged tanks, as well as booms and skimmers to recover oil from the water. Alyeska has amassed over 200,000 feet of containment boom, 50 response vessels and oil skimmers with a cumulative nameplate recovery rate of 44,000 barrels per hour. The response equipment includes, but is not limited to:

- Five 210-foot Emergency Response Vessels (ERVS), each of which are equipped with oil skimmers, 4,500 feet of boom and 3,500 barrels of storage.

- One 125-foot self propelled dynamic inclined plane skimming vessel, VALDEZ STAR, which has a 1,000-barrel per hour recovery rate.

- Five oil barges dedicated to spill response. Four of these are equipped with (two) Transrec 350 skimmers which have 2,100 barrels per hour recovery rate. The total oil capacity of these barges is 490,000 barrels.

- Four seagoing tug boats equipped with dispersant spraying capability and large capacity fire monitors.

- Oil containment boom and mooring buoys pre-staged at Prince William Sound's five fish hatcheries to allow immediate deployment of the same by local fishing vessels in the event of a spill.

- An extensive network of fishing vessels, whose crews have been trained by Alyeska, are employed in exercises to place containment boom, assist the Escort Response Vessels' skimming operations, and provide logistics support.

- Response equipment, including sorbents, boom and skimmers are carried on one of the two vessels that escort all laden tankers in Prince William Sound. In addition, a dedicated crew highly trained in the use of the equipment are on board each vessel. Alyeska has also contracted with a core group of local fishermen who regularly train with Alyeska personnel and are required to participate in drills as a condition of their contract. Literally hundreds of other fishing boats are also pre-contracted to be called upon in the case of an emergency.

A Vessel of Opportunity Skimming System (VOSS) has been procured by the Coast Guard and is planned to be delivered to Alaska in April. This system includes skimmers, containment boom and portable tankage, suitable for deployment on Coast Guard cutters and other vessels of opportunity. This equipment will be staged in Anchorage for spill responses.

OPA 90 requires the periodic inspection of containment booms, skimmers, vessels and other major equipment used to remove discharges. A program has been developed by the Coast Guard's National Strike Force Coordination Center to classify contractor response capability, and, in conjunction with this classification, periodically inspect contractor response equipment to ensure its operational availability. In addition, OPA 90 requires vessels operating on the navigable waters of the United States and carrying oil in bulk as cargo to carry appropriate removal equipment that employs the best technology economically feasible and that is compatible with the safe operation of the vessel. We are currently in the midst of a rulemaking on this subject. Once in place, it will provide further protection for vessels in Prince William Sound and elsewhere.

Having the right equipment is only one piece of the response puzzle. The EXXON VALDEZ spill reinforced that industry, state and Coast Guard response efforts need to be coordinated from a central command area to ensure all activities complement each

other. Much has been accomplished in this area. The Coast Guard is in the process of developing a "Spill of National Significance" organizational and management structure that would be implemented in the event of a catastrophic spill incident. This structure is near completion and will be tested during a major pollution exercise to be held in Anchorage in September, 1993. In addition, the Coast Guard actively participates in all State and industry run exercises that are held throughout the State of Alaska.

A final lesson of EXXON VALDEZ was that we must consider the use of every available response technique, including mechanical cleanup, in-situ burning and chemical countermeasures. The Coast Guard, along with the Regional Response Team and industry has been working closely in developing procedures for the pre-authorization and use of dispersants, as well as other chemical countermeasures such as bio-remediation. To push the response envelope further, the Coast Guard, along with the State of Alaska, Alaska Clean Seas Cleanup Co-operative, and many others are negotiating with Russia to conduct an offshore in-situ test burn of spilled oil in order to determine the effectiveness and environmental soundness of this as a spill response technique. This would be the first major test of burning oil in an offshore environment in which the Coast Guard, along with the State of Alaska, will have been active participants.

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In summary, much has been done in Prince William Sound by the public, as represented by the Prince William Sound RCAC, the State of Alaska, the marine industry, and the Coast Guard to prevent oil spills and improve oil spill response, should a spill occur. The changes are dramatic. Additional improvements are being made through regular exercises, joint State, RCAC, Coast Guard and industry meetings which identify areas where improvement can be realized, and the application of new technology such as Automated Dependence Surveillance System.

Clearly, our work is not yet complete, but we have gained experience and gleaned knowledge from the events that followed March 24, 1989. I am convinced we have made great strides toward assuring that history does not repeat itself in Prince William Sound.

TESTIMONY
OF
STEVEN PENNOYER
REGIONAL DIRECTOR, ALASKA REGION
NATIONAL MARINE FISHERIES SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
DEPARTMENT OF COMMERCE

BEFORE THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES
U.S. HOUSE OF REPRESENTATIVES

MARCH 24, 1993

Mr. Chairman and members of the Committee:

Thank you for the opportunity to appear before the Committee today and chronicle the events of the last four years regarding the *Exxon Valdez* oil spill. I am Steve Pennoyer, Regional Director of the National Marine Fisheries Service's Alaska Region, National Oceanic and Atmospheric Administration (NOAA). I have been involved in spill-related activities as the NOAA representative since that fateful Friday in 1989. My testimony and background materials relate to the activities of all the Federal and State trustee agencies involved in the oil spill restoration process. My testimony will address the following issues:

* Were Federal and State natural resource management agencies prepared to respond to an oil spill of this magnitude?

* Were initial actions taken by the trustee agencies appropriate and timely?

* What were the major problems faced by the trustee agencies in the first 30 days after the spill and how did they cope with those problems?

* How did the trustee agencies' approach injury and damage assessment and is that job done?

* What is the status of the natural resources injured by the spill?

* Has the focus of the trustee agencies' programs changed as a result of the settlement?

* Is the restoration program on the right track and is it ahead or behind where it ought to be (oil spill plus four years)?

* What kinds of restoration projects are being considered?

* Is there unified public opinion about how the settlement monies should be spent?

* Have any significant opportunities been missed by not having a completed Restoration Plan done sooner or by not having the fiscal resources available earlier to fund projects?

* What will the trustee agencies do over the next 6 months and beyond?

Shortly after midnight on March 24, 1989, the *T/V Exxon Valdez* ran aground on Bligh Reef in Prince William Sound spilling 11 million gallons of North Slope crude oil. This was the largest tanker spill in U.S. history. The oil moved along the coast of Alaska contaminating the shoreline of the Sound, the Kenai Peninsula, lower Cook Inlet, the Kodiak Archipelago, and the Alaska Peninsula. Portions of 1,200 miles of coastline were oiled including part of 1 national forest, 4 national wildlife refuges, and 3 national parks. Oil eventually reached shorelines nearly 600 miles from Bligh Reef. A map of the spill area is presented in Figure 1.

When individual agencies learned of the spill, the immediate question of what to do had to be answered separately. You have heard about the response activities relative to oil spill containment and some of the lack of preparedness and difficulty in dealing with a marine spill of this magnitude, but that confusion did not exist in the response area alone. We knew that the physical and biological resources likely to be exposed to the spilled oil fell under the management jurisdiction of several Federal and State agencies, and that each would have some responsibility in determining the impact of the oil. However, there was no pre-agreement of how this should be accomplished or

which agencies would be responsible for what. This effort to determine spill impacts was separate from the environmental support provided to the On Scene Coordinator by these same agencies, such as protection priorities and environmentally appropriate oil removal actions. At the time of the spill there was not an adequate, shared inventory of existing pre-spill background information on the resources that might be in the path of the oil. We had no idea at that time how far the oil would ultimately spread and which portions of the ecosystem would be affected. Incomplete information was available on the potential effects of crude oil in a subarctic environment.

Many agencies diverted resources from ongoing programs and projects and immediately sent personnel to the area to start evaluating what needed to be done, both from the standpoint of long-term damage assessment and for any assistance that could be given to the cleanup operation. There was no Trustee Council; there was no inter-agency coordinating group for the damage assessment side of the response; there was no shared database. I clearly recall the first meetings in Cordova on an ad hoc basis between NOAA and the State of Alaska Department of Fish and Game. For about a week, programs were hammered out to get into the field ahead of the oil and to assess what was happening. Other agencies also mobilized independently. As an example, NOAA had sampled a number of mussel beds in the Sound for hydrocarbon contamination in connection with the trans-Alaska pipeline

monitoring program. As a high priority, we quickly reinstituted that effort in an attempt to resample these beds before they might be inundated by oil. Each agency, in effect, sought to utilize its expertise to combat the spill and its aftermath.

Most agencies did not have funding for a damage assessment effort and certainly no dedicated staff to contribute to the evaluation of a major environmental disaster. In our case, we dropped projects in southeastern Alaska and in our Seattle labs to get personnel and support logistics to the Sound as soon as possible. In cooperation with the State, we opened an oil spill logistics office in Cordova and staffed it with coordinating personnel. There was a mad rush to move equipment, employees, and vessels to the Sound. The remoteness, the sheer magnitude of the area affected, and the complexity of the resources involved were mind boggling. Oil seemed to be everywhere and we had little idea of where it would go or what it was going to affect.

In spite of all of these obstacles, a creditable effort was mounted. While not funded, NOAA and the other Federal and State agencies were told to proceed and do what needs to be done. Leadership was provided at the highest levels and appropriate authorities were delegated to those who were in the battle.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the provisions of the Clean Water Act

(CWA) would structure the trustee agencies' actions in the weeks, months, and even years ahead. Policy direction was given and "damage assessment" became a formalized process of unanticipated and unfamiliar rules and requirements. In April of 1989, a Memorandum of Understanding (MOU) was signed between the Federal trustee agencies--the Department of the Interior, the Department of Commerce, and the Department of Agriculture--to form a Trustee Council with representatives of those agencies acting in the place of the Secretaries in Alaska. Although it did not sign the MOU, the State of Alaska was a member of the Council and both the State and Federal governments operated in conformance with the MOU for the next three years. The Council--composed of NOAA representing Commerce, the Forest Service representing Agriculture, the Fish and Wildlife Service representing Interior, and the Department of Fish and Game representing the State of Alaska--first met in late spring of 1989 to start formal coordination of a process that was already well under way. Over the next three years, 50 to 65 projects per year were carried out to assess the resource injury and to calculate the damages to the resources of the Sound and the Gulf of Alaska, including land, air, water, fish, wildlife, and the other biota and the services these resources provide. This effort was expensive, but we must take into consideration the remoteness of the area, the lack of an infrastructure, a lack of historical databases and background information on the resources, and the sheer magnitude of the original disaster.

In many respects, this spill wrote the book on injury and damage assessment of major oil spills. It provided the impetus for the Oil Pollution Act of 1990. In 1989, four short years ago, as the nation and the world watched, the governments embarked on a new and uncertain journey to document and place a dollar value on the consequences of the spill we were not prepared to study. One intent of CERCLA and the CWA was to require the definition of a process to assess and place a value upon the effects of a spill. However, while the CERCLA regulations were not specifically adopted by this multi-agency group, they nevertheless served as guidelines and were generally followed.

The first step was damage assessment. This damage assessment would lead to litigation to try to get the potentially responsible parties to reimburse the citizens of our country for damages. This process demanded a litigation sensitive approach during the damage assessment which required that our scientists not reveal their information or even discuss it outside the government agencies involved in the process. This was frustrating and did not always lead to the best scientific coordination. Nonetheless, now that a settlement has been achieved, public release of this information has been possible. More recently, an oil spill symposium on the results of the damage assessment studies was held in Anchorage, Alaska. On October 8, 1991, an agreement was approved by the U.S. District

Court that settled the claims of the U.S. and the State of Alaska against Exxon Corporation and Exxon Shipping Company for various criminal violations and for recovery of civil damages resulting from the oil spill.

As part of the criminal plea agreement, the court fined Exxon Shipping $150 million--the largest fine ever imposed for an environmental crime. Of this amount, $125 million was remitted due to Exxon's cooperation with the governments during the cleanup, timely payment of many private claims, and many environmental precautions taken since the spill. The remaining $25 million was paid into the North American Wetlands Conservation Fund and into the Victims of Crime Act account.

Exxon also agreed to pay $100 million as restitution--$50 million to the U.S. and $50 million to the State of Alaska. The State and Federal governments separately manage the $50 million payment that each has received. These funds are not under the authority of the Council; however, they must be used exclusively for restoration activities within the State of Alaska relating to the *Exxon Valdez* oil spill. As the Secretary has announced, $25 million of the amount paid to the Federal government will be made available this year for land acquisition.

In a civil settlement, Exxon agreed to pay the U.S. and the State of Alaska $900 million over a period of 10 years. The settlement agreement calls for the formation of a Council to guide the restoration process. Decisions on spending the settlement funds are made by a Council of six Trustees (three State and three Federal). The State Trustees are the Commissioner of the Department of Environmental Conservation, the Commissioner of the Department of Fish and Game, and the Alaska Attorney General. The Federal Trustees are the Secretary of the Interior, the Secretary of Agriculture, and the Administrator of NOAA representing the Secretary of Commerce. The Federal Trustees have appointed representatives to the Council from local Federal agencies. All decisions made by the Council, such as the use of settlement funds, must be made by unanimous consent, and the trustees must use the settlement funds "for the purpose of restoring, replacing, enhancing or acquiring the equivalent of natural resources injured as a result of the oil spill and the reduced or lost services provided by such resources." The agreement also provides for reimbursement of certain expenses to the governments.

The civil settlement requires Exxon to deposit funds each year beginning December 1991 and ending September 2001. Of the $900 million settlement, over $712 million remains for additional restoration and reimbursement.

Exxon has, so far, paid $240 million in two deposits. Of that amount, $107 million went to reimburse Federal and State governments for their work during the damage assessment phase of the program, $19.3 million was used to implement the 1992 Work Plan; $21.2 million to implement the 1993 Work Plan; $7.5 million for the purchase of inholdings in Kachemak Bay State Park; and Exxon took a one time $39.9 million deduction for allowable clean-up expenses after January 1, 1991. In addition, the settlement allows further reimbursement of government cleanup and litigation expenses. A summary of these expenditures is shown in Table 1.

The initial Work Plans in 1992 and 1993 included a close out of the damage assessment phase of the program. As mentioned before, the results of the damage assessment were presented in a symposium in Anchorage.

Prior to the *Exxon Valdez* oil spill, areas in the Sound were considered to be pristine and relatively unspoiled. The spill injured resources and the services throughout the area. The oil spill occurred just before the most biologically active season of the year in south central Alaska. During the four month period after the spill, many organisms were entering critical times in their life cycles. Salmon fry began their migration to the sea; major migrations of birds entered the Sound on their way to northern nesting areas. This was the primary reproduction period

for most species of mammals, birds, fish and marine invertebrates in the area. The oil spill also directly impacted archaeological resources, subsistence, recreation, designated wilderness areas and wilderness qualities, aesthetics, and other services. The following is a brief summary of the status of the Sound's resources and affected areas four years after the event. In addition to the injuries described below, many other species may have been affected but have not been studied.

COASTAL HABITAT

INTERTIDAL: In the intertidal zone (the area between low and high tide), the oil caused population declines of plants and animals. Intertidal organisms were also impacted by cleanup techniques, particularly the high pressure hot water washing. Many intertidal plants and animals in the lower and mid-intertidal zone have recovered, but effects persist for rockweed and invertebrates in the higher intertidal along rocky shores. A few beach sediments still contain oil, and some oil persists in and under some mussel beds.

SUBTIDAL: In the subtidal zone (the area below low tide), the oil caused population declines of plants and animals. Some of the oil washed off the intertidal beaches with high pressure hot water treatments found its way to the subtidal zone. Overall recovery to the subtidal zone appears good, but oil contamination

still can be measured, both in seafloor sediments and in some biota such as flatfish.

The intertidal and subtidal zones are important to all the animals of the Sound because they ultimately produce a significant portion of the food for the higher organisms. Thus, impacts on the plants and animals in these biologically active zones adversely affect the entire food web.

MAMMALS

HARBOR SEALS: The oil spill caused population declines and chronic injuries to harbor seals. Many were directly oiled and an estimated 345 died. In 1990, oil residues found in seal bile were five to six times higher in oiled areas than in unoiled areas. The harbor seal population was declining prior to the spill making it difficult to estimate the continuing effects.

KILLER WHALES: The oil spill caused sublethal injuries to at least one of the killer whale pods in the Sound. Debate continues about whether the oil spill caused a population decline. Thirteen of the 36 whales in the AB pod are missing and presumed dead. Circumstantial evidence links whale disappearance to the oil spill. Additionally, several adult males have collapsed dorsal fins indicating stressful conditions. Social disruption of family units has been observed. In the AB pod, no

new births were recorded in 1989 or 1990; one birth was recorded in 1991; and two births were recorded in 1992. These recent births suggest that the AB pod may be beginning to recover. More will be known after this field season.

RIVER OTTERS: The oil spill caused at least sublethal injuries to river otters. The population is difficult to census and it is uncertain if population declines occurred. Indicators of oil exposure continued in 1991. River otters feed in the intertidal and shallow subtidal areas and may still be exposed to oil persisting in the environment.

SEA OTTERS: The oil spill caused population declines of sea otters. An estimated 3,500 to 5,000 sea otters died as a result of the spill. Surveys in 1989, 1990, and 1991 showed measurable differences in population numbers and survival between oiled and unoiled areas. In 1992, lower juvenile survival rates and higher than normal numbers of dead prime age sea otters indicate that the populations in the Sound continue to be stressed. Sea otters feed in the lower intertidal and subtidal areas and may still be exposed to oil persisting in the environment. Little or no evidence of recovery has been detected.

BIRDS

BALD EAGLES: The oil spill caused deaths and possibly population declines in bald eagles. In 1989, 151 carcasses were recovered from beaches. Productivity of bald eagles in the Sound was disrupted in 1989, but returned to normal in 1990. Exposure to oil and some sublethal injuries were found in 1989 and 1990, but no continuing effects were observed on populations. Bald eagles may have recovered from effects due to the oil spill.

BLACK OYSTERCATCHERS: The oil spill caused population declines in black oystercatchers. In 1989, nine carcasses were recovered from beaches, but the actual number killed was many times greater. In 1989, eggs found in oiled areas were abnormally small. Black oystercatchers feed in the intertidal areas and may still be exposed to oil persisting in the environment. The population is recovering, although evidence of sublethal injuries persisted in 1992.

COMMON MURRES: The oil spill caused drastic population declines at murre colonies within the oil spill area. In 1989, 10,428 carcasses were recovered from beaches representing between 174,000 to 300,000 murres killed. Measurable impacts on populations were recorded in 1989, 1990, and 1991. Those colonies not affected by the spill have experienced three years of complete

breeding failure. The degree of recovery varies between colonies; however, some major colonies show little evidence of recovery.

HARLEQUIN DUCKS: The oil spill caused the harlequin duck population to decline. In 1989, 213 carcasses were recovered from beaches representing well over 400 birds killed. Post-spill samples showed oil contamination and poor health in 1989 and 1990. In the three years since the oil spill, it appears that harlequin ducks still do not appear to be breeding successfully in oiled areas. Harlequin ducks feed in the intertidal and shallow subtidal areas and may still be exposed to oil persisting in the environment. Although the population continues to show evidence of sublethal injuries and is not yet showing signs of recovery, it is possible that the decline has ended.

MARBLED MURRELETS: The oil spill caused population declines of marbled murrelets. In 1989, 612 carcasses were recovered from beaches. It is estimated that 8,000 to 12,000 birds died. Measurable population effects were recorded in 1989, 1990, and 1991. Marbled murrelet populations were declining prior to the oil spill. In 1989, oil contamination was detected in livers of adult birds. Although the recovery status in 1992 was uncertain and no signs of an increasing population have been observed, it is possible that the decline has ended.

PIGEON GUILLEMOTS: The oil spill caused population declines of pigeon guillemots. In 1989, 614 carcasses were recovered from beaches representing from 1,500 to 3,000 birds killed. Pigeon guillemot populations were declining prior to the spill. In 1989, oil contamination was found in birds and, externally, on eggs. The recovery status in 1992 is uncertain with no evidence of an increase in population.

FISH

CUTTHROAT AND DOLLY VARDEN TROUT: The oil spill caused sublethal injuries and may have caused population declines of these two species. Differences in the survival and growth between anadromous adult populations in oiled and unoiled areas persisted from 1989 to 1991 despite less indications of oil exposure. This may be due to continuing injury to the food base; however, scientists disagree as to whether these differences in survival and growth existed before the spill. It is unknown whether these species are recovering.

PACIFIC HERRING: The oil spill affected Pacific herring, but it is unknown whether a population decline will result. Measurable differences in egg counts between oiled and unoiled areas were found in 1989 and 1990. Lethal and sublethal effects on eggs and larvae were evident in 1989 and, to a lesser extent, in 1990. In 1991 there were no differences between oiled and

unoiled areas. It is possible that the 1989 year class was injured, resulting in reduced recruitment to the adult population. If so, an adult population decline will not become apparent until 1993. Overall, the recovery status of this species is unknown.

PINK SALMON: The oil spill affected wild stock populations, and there is debate whether wild stock populations have declined. Abnormal fry were observed in 1989 and egg mortality was higher than expected in 1990 and 1991. The debate about population declines focuses on whether the observed injuries necessarily result in reduced adult returns. Reduced growth of juveniles was found in 1989 and 1991, which correlates with reduced survival. In 1992, there was continued evidence of sublethal injuries. Overall, the recovery status of this species is unknown.

ROCKFISH: It is unknown whether the oil spill caused rockfish populations to decline. Twenty dead fish were found in 1989, but only a few were in suitable condition for analysis. These showed exposure to oil with some sublethal injuries. Closures of salmon fisheries increased the fishing pressure on rockfish, and the increasing catch may be impacting the population. It is unknown if rockfish have recovered from sublethal injuries.

SOCKEYE SALMON: Kenai River and Red Lake sockeye salmon stocks have declined. Smolt survival continues to be poor in both systems due to over-escapements that occurred at Red Lake in 1989 and in the Kenai system in 1987, 1988, and 1989. As a result, adult returns are expected to be low in 1994 and successive years. Overall, the recovery status of this species is unknown.

ARCHAEOLOGY

ARCHAEOLOGY: Twenty-four archaeological sites are known to have been adversely affected by oiling, cleanup activities, or looting and vandalism linked to the oil spill. Injuries attributed to increased looting and vandalism are still occurring. Archaeological sites and artifacts cannot recover; they are finite nonrenewable resources.

DESIGNATED WILDERNESS AREAS: Hundreds of miles of wilderness coastlines were affected by oil. Some oil remains embedded in the sediments of these areas.

SERVICES

RECREATION AND COMMERCIAL TOURISM: The nature and extent of injury varied by user group and by areas of use. About one

quarter of survey respondents reported no change in their recreation experience, but others reported avoiding the spill area, reduced wildlife sightings, residual oil and more people. They also reported changes in their perception of recreation opportunities in terms of increased vulnerability to future oil spills, erosion of wilderness, a sense of permanent change, and concern about long-term ecological effects. There are indications that declines in recreation activities reported in 1989 appear to have reversed in 1990, but there is no evidence that these activities have achieved pre-spill values.

RECREATION: SPORT FISHING AND HUNTING: Between 1989 and 1990, a decline in sport fishing effort (number of anglers, fishing trips and fishing days) was recorded for the Sound, Cook Inlet and the Kenai Peninsula. In 1992, an emergency order restricting cutthroat trout fishing was issued for western Prince William Sound due to low adult returns. The closure is expected to continue at least through 1993.

Sport hunting of harlequin ducks was reduced by restrictions imposed in 1991 and 1992 in response to damage assessment study findings. It is likely that these restrictions will continue until the species shows signs of recovery.

SUBSISTENCE: Subsistence harvests of fish and wildlife in 9 of 15 villages surveyed declined from 4 to 78 percent in 1989

compared to pre-spill averages. Seven of the 15 villages showed continued decline in use in 1990 and 1991. This decline was particularly noticeable in the villages of Chenega and Tatitlek. In 1989, chemical analysis indicated that most resources tested, including fish, marine mammals, deer, and ducks, were safe to eat, but that shellfish from oiled beaches should not be eaten. However, villages believe that contamination to subsistence food sources continue to be a health hazard.

COMMERCIAL FISHING: During 1989, emergency commercial fishery closures were ordered throughout the spill area. This affected salmon, herring, crab, shrimp, rockfish, and sablefish. The 1989 closures resulted in sockeye over-escapement in the Kenai River and in the Red Lake System (Kodiak Island). In 1990, a portion of the Sound was closed to shrimp fishing. Spill-related sockeye over-escapement is anticipated to result in low adult returns and in closures or harvest restrictions during 1994, and perhaps in subsequent years. Injuries and recovery status of rockfish, pink salmon, shellfish, and herring are uncertain.

In summary, there was significant damage. In some cases the resources are recovering naturally while others remain depressed, though stable. For some species there is evidence that declines may continue; for yet others the effects may always remain unknown. An observer visiting the Sound area and the coastline

of the Gulf of Alaska down to Kodiak Island would have a hard time determining that a spill had occurred. The area's natural beauty is apparently unchanged, but then the casual observer cannot evaluate the differences in various animal populations and may not be aware of the lost opportunities and services that were caused by the spill, especially immediately in its aftermath.

The trustees were charged with restoration of resources and services, including the potential for their enhancement. Restoration is the primary focus of the Council formed under the settlement and, in fact, is the activity in which we are now completely engaged. At this time, $712 million remains available to the trustees for the future restoration of the resources and services injured by the *Exxon Valdez* oil spill and for reimbursement of government expenses. To date, approximately $25 million has been spent on direct restoration monitoring, restoration research, and specific restoration projects, including amounts dedicated to land acquisition. The Council is only a little over a year into this settlement process. The draft Restoration Plan and draft Environmental Impact Statement (EIS) will be available for public review in June. The final Restoration Plan and final EIS and a draft 1994 Work Plan will be implemented later this year.

Many restoration options are currently available for funding. These options range from a direct commitment of the

settlement funds in a finite time frame, to establishing a long-term funding mechanism such as an endowment to structure restoration activities well into the next century. There are many options that fall between these two.

How the money is spent as opposed to how fast the money is spent is the other consideration. Our choices include monitoring of natural recovery of injured resources, many direct restoration projects, enhancement projects, habitat protection and acquisition, and other choices. We have not made these decisions and have not wanted to begin significant restoration or enhancement projects until a plan for the expenditure of these funds is completed. We have not wanted to forestall our ability to choose the more valuable of these options by having already expended the funds on less important activities. This has resulted in $53 million being available to us at this moment beyond amounts which have actually been committed, even from the payments already received.

However, significant restoration activities are occurring and opportunities which might be lost are being addressed. The settlement was finalized in October 1991, late in the third year of the damage assessment effort. We had to end the damage assessment projects and make the transition to restoration. We had only three months to plan for this change of course. It was logical for the 1992 effort to give priority to the close-out of

the damage assessment projects, but the trustees also used this opportunity to initiate restoration in a number of areas. In 1992, in addition to closing out 35 damage assessment projects, and continuing 6 others, we approved 17 restoration projects of the following types:

- Restoration Implementation Planning
  - Survey and evaluate instream habitat and stock restoration techniques for anadromous fish.

- Restoration Habitat Protection Planning
  - Determine marbled murrelet nesting habitat.
  - Surveying stream habitat use on private lands.
  - Determine harlequin duck nesting habitat.

- Restoration Management Actions
  - Determine sockeye salmon escapement, genetic stock structure.
  - Identify, tag and monitor wild and hatchery stocks of pink salmon.
  - Determining harbor seal habitat use.
  - Measuring recovery and restoration options for oiled mussel beds, black oystercatchers, and river otters.
  - Conduct site stewardship of archeological resources.

- Restoration Manipulation and Enhancement
  - Begin Red Lake sockeye salmon smolt restoration

- Natural Recovery Monitoring
  - Initiate monitoring of natural recovery of murres, pink salmon (eggs and fry), and intertidal biota

Soon after the 1992 Work Plan was approved, planning began for the 1993 effort. Public ideas were solicited, and over 450 potential project ideas were reviewed. Although the Restoration Plan was not yet developed, 47 projects were identified that needed to be done in 1993, or were needed for additional restoration planning. The 1993 funding period was only for seven months, from March 1 to September 30, to get the funding cycle off the "oil year" and onto the Federal fiscal year. Therefore, the 1994 Work Plan which is being prepared, is scheduled to begin this October. Some of the significant projects that were approved for the shortened 1993 year are:

- Funding ($20 million) for protection of imminently threatened habitat, included $7.5 million for Kachemak Bay State Park inholdings.

- Restoration of Coghill Lake in Prince William Sound.

- Continuation of Sockeye Salmon Over-escapement and Management Actions.

- Site-specific Archeological Resources Protection and Restoration.

- Recreational Planning for Prince William Sound and the Gulf of Alaska.

- Additional Habitat Assessments on Private Lands for Anadromous fish, Marbled Murrelets, Harlequin ducks.

- Subsistence Foods Safety Testing and Restoration.

- Resurvey of Shoreline Oiling.

- Continued natural recovery monitoring of subtidal sediments and biota, intertidal biota, harbor seals, murre colonies, pigeon guillemots, black oystercatchers, sea otters, killer whales.

- Development of a comprehensive, long-term monitoring plan.

Information on a significantly broader 1994 Work Plan will be available by late August.

It is important to emphasize the habitat protection and acquisition process that the Council is pursuing. In July of 1992, the Council issued a document, "Restoration Framework Supplement," which identifies a two-phase process for habitat protection and acquisition. The two phases are "imminent threat" and "comprehensive" habitat protection/acquisition. Imminent threat deals with private lands for which there is some foreseeable activity, such as logging, that will be taking place in the near future. If these lands are not protected, potentially valuable restoration habitat may be lost. During the past year, 16 "imminent threat parcels" have been identified and ranked for habitat value. Action has been authorized by the Council to initiate negotiations on the 5 highest priority parcels and to begin discussions and further evaluation of the 11 lower ranked parcels. In addition, letters have been sent to all owners of private lands (greater than 160 acres) to determine their willingness to discuss options for protection or acquisition of non-threatened parcels. When these lands are identified, they will be evaluated and ranked on their habitat value, and negotiations will then be pursued on priority habitat parcels. We are addressing "imminent threat" lands now; we will address "comprehensive" lands in the coming year and beyond.

The amount and value of private lands which may be available far exceeds the amount of settlement funds available for their purchase. The Council will have to determine the priorities and

the costs of the priorities. Unusual strategies, other than fee-simple purchase, may be identified to protect more lands and to extend the availability of settlement funds.

To reiterate, the Council is moving forward on habitat acquisition and protection. Settlement funds have been approved to purchase native inholdings in Kachemak Bay State Park and we expect negotiations to be completed within the month. These lands will be added to the Alaska State Park system. The Council has also identified a number of other land parcels in private hands for which logging is planned in the near future. The Council has begun negotiations for protecting or acquiring the highest priority parcels--those which we believe have the highest habitat value.

Over the next year, we will identify all private lands within the oil spill area that are candidates for habitat protection. Once the habitat values of these lands are assessed, we intend to focus negotiations for protecting or acquiring those with the highest priority. We intend for this process to be our main habitat protection strategy over the long term, once "imminent threat" is settled.

Mr. Chairman, I have presented a simplified overview of what has been, and is, a complex, arduous, and often argumentative process. Nevertheless, I hope I have answered most of the

questions posed at the beginning of my testimony. To summarize some of the more significant points:

First, I don't believe the State and Federal natural resource management agencies were prepared to undertake damage assessment and restoration activities for an oil spill of this magnitude. I believe that the response was confused at the start, but ended up remarkably well-coordinated, considering the diverse agencies and interests involved. I believe a creditable job of damage assessment was done. A manual is being written on how to respond to events of this nature so that none of us will be caught unprepared again. The work done in the damage assessment phase and the general picture of the status of the resources in the Sound and other oil spill affected areas have been summarized in this testimony.

The focus of the Council, as required in the settlement agreement, has clearly shifted from damage assessment to restoration. With one exception, all of the field work for the damage assessment projects has been completed. Studies still being done are part of the restoration process. They are being carried out to monitor injured resources to assess natural recovery, to determine the most effective type of restoration that might be applied or to measure the results of restoration activities being undertaken.

I believe we are on the right track although I wish that we could move more quickly into major restoration projects. I believe strongly we must have a plan to do that. The "Plan" certainly must consider the input we have had and will get from the public, and it must be balanced against the assessment of the relative importance of various proposals to the recovery of resources and services in the oil spill area. As noted, we expect to have that Plan in draft form this spring with a final draft this summer and a Plan in place by the first of the year. It is our intent for the 1994 Work Plan, however, not to wait entirely for that process to be completed. Building on the draft and the public comment received on the draft, we hope to have a better idea of which Restoration projects are opportunities that could be lost due to any delay, and we will be prepared to act on that type of information.

We achieved the settlement in October of 1991. The Council that was called for under that settlement was not the original damage assessment body. Only two members of the original Council, myself and Mike Barton from the U.S. Forest Service, carried over into the new organization. We have spent money on the organization (see figure 2). We have spent money on insuring that benefits received in the damage assessment process were not lost, and that we could transit in an orderly fashion from emphasis on damage assessment to restoration based on what we had already learned.

There is certainly not unified public opinion as to how restoration funds should be spent. I think the overwhelming body of public opinion that we have received has been that most of the funds should go toward acquisition or protection of habitat as a means of both helping to insure the recovery of injured species or to insure or enhance the services these resources offer to the public. Unfortunately, as stated, these are not simple issues. Even the "imminent threat" lands--lands that might be logged this year--present a complex challenge of evaluating the resources or services to be benefitted, negotiating the appropriate size of the protection area, negotiating prices, determining the type of protection and management that would be appropriate, and so on. We are dealing with these imminent threat lands in the absence of detailed field work, but are proceeding, on at least the highest priorities, to forestall loss of opportunity. On the other hand, communities and groups want projects varying from improved management of commercial harvests to construction of museums, visitors centers, and aquariums. Also, included is the concept of endowments to inflation-proof interest income with the idea of supporting research in perpetuity. These options could utilize more than the available settlement funds, and it will be our challenge to determine the best mix of projects to restore the vitality of the injured resources and to maximize the benefits the public receives from the settlement money. These issues cannot be attacked piecemeal. I would be foolishly optimistic, and perhaps misleading, to say right now that the Restoration

Plan that we send out will clearly put this in perspective and easily lead to a solution. I don't think it will be easy. It is our intent that the Plan will frame these questions in a way that the public can comment on, and we can make choices based on those comments to guide us through the program for the next eight or nine years or beyond.

I do not believe that we have lost significant opportunities. That is not to say that with 20/20 hindsight there are not going to be some things that we wish we might have proceeded with earlier, but I do not think there are going to be many. I guess I would change my mind if our imminent threat process does not preserve some of the opportunities on potentially impacted habitats that we are trying to address, but hopefully it will.

I have outlined the process that the Council will follow during the next year or so and hope that the next time we report back to you, we will have a Restoration Plan in place, an agreed upon 1994 Work Plan that incorporates some of the elements of that Restoration Plan, and a vision of where we will proceed over the next seven or eight years. Thank you for this opportunity to testify.

TABLE 1

EXXON VALDEZ OIL SPILL SETTLEMENT ACCOUNT
RESTORATION JOINT TRUST FUND

DATE	ITEM	AMOUNT	ACCOUNT BALANCE (MILLIONS)
12/09/91	Exxon Payment	90.0	90.0
12/09/91	Partial reimbursement directly to governments for expenses	(53.5)	36.5
05/21/91	1992 Work Plan authorized by Trustee Council	(19.3)	17.2
12/01/92	Exxon Payment	150.0	167.2
12/10/92	Partial reimbursement directly to governments for expenses	(53.5)	113.7
12/01/92	Reimbursement to Exxon for cleanup costs since 01/01/91	(39.9)	73.8
01/16/93	1993 Work Plan authorization	(21.2)[1]	52.6
Remaining	**Payments 1993 - 2000**	**660.0**	**714.6**

[1]12.5 authorized for additional habitat protection, but not spent or withdrawn from the Court Registry Account.

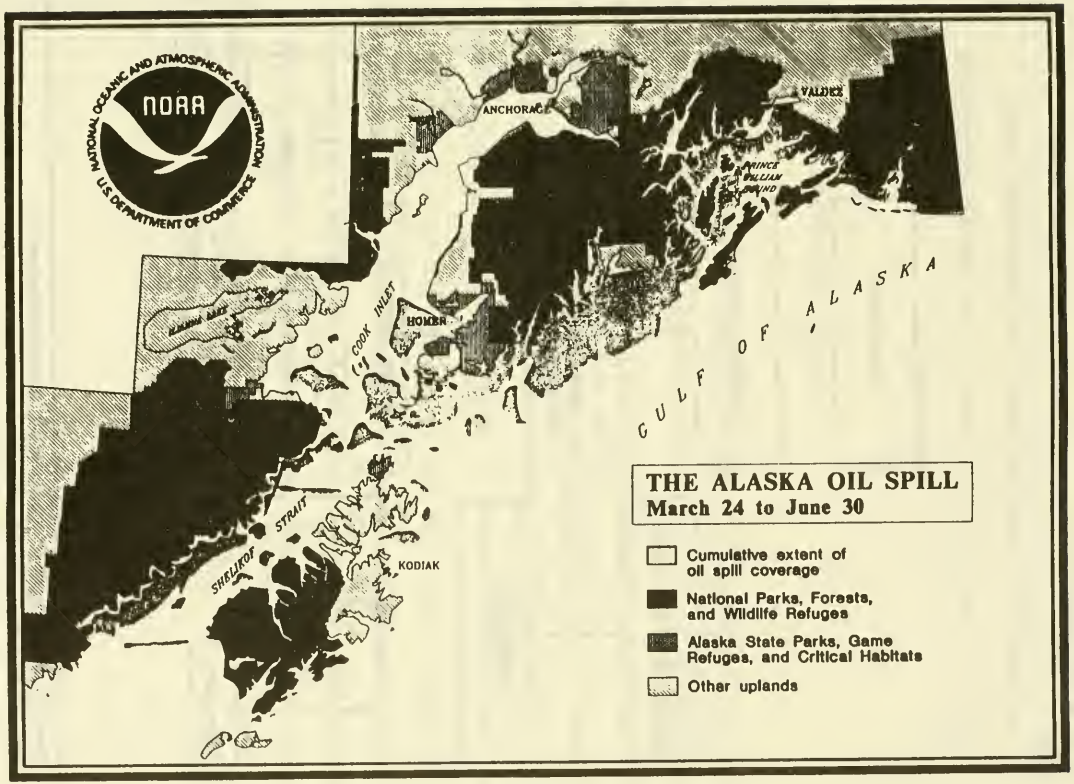
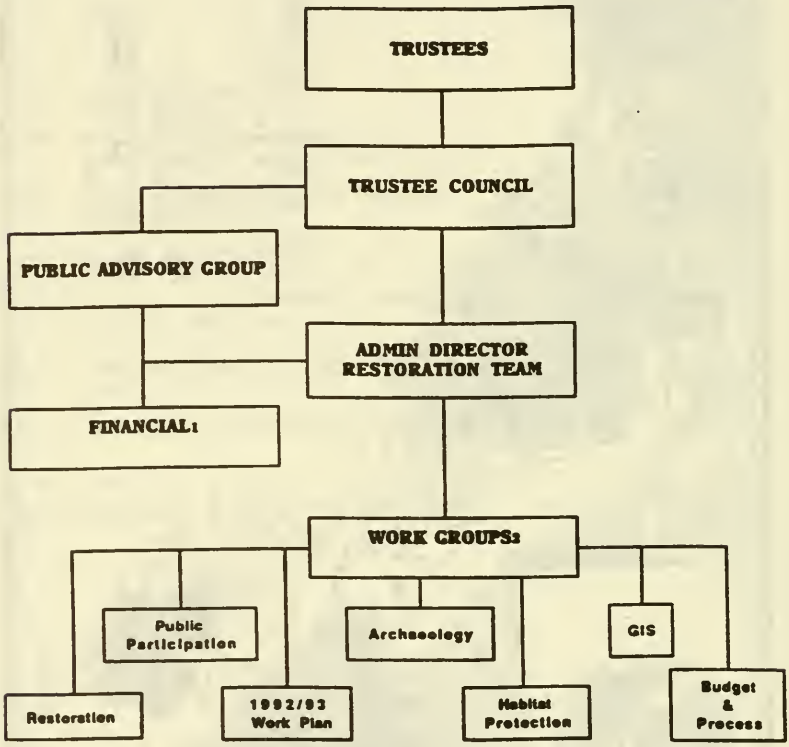

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
ANCHORAGE
VALDEZ
PRINCE WILLIAM SOUND
GULF OF ALASKA
COOK INLET
HOMER
KODIAK
SHELIKOF STRAIT
THE ALASKA OIL SPILL
March 24 to June 30
Cumulative extent of oil spill coverage
National Parks, Forests, and Wildlife Refuges
Alaska State Parks, Game Refuges, and Critical Habitats
Other uplands

FIGURE 1

Figure 2. Organization chart approved by the Trustee Council on February 5, 1992.



1 Does not include audit function. A proposal for this function will be developed.
2 Groups will be formed and disband as appropriate.

TESTIMONY OF COMMISSIONER JOHN A. SANDOR

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

BEFORE THE COMMITTEE ON MERCHANT MARINE AND FISHERIES

MARCH 24, 1993

Mr. Chairman and members of the Committee:

Four years ago the *T/V Exxon Valdez* spilled approximately eleven million gallons of oil in Prince William Sound. 1500 miles of shoreline were oiled extending as far as 600 miles from the grounding. An estimated 3500 to 5500 sea otters, 375,000 to 435,000 marine birds, 580 eagles, 200 harbor seals, and an unknown number of river otters were killed by the spill. Although other terrestrial mammals including brown and black bears, mink, and Sitka black-tailed deer were exposed to oil, there is little evidence of injury to these species. While the insult to the environment seemed overwhelming at first, the intervening years have shown us that nature can, for the most part, be quite resilient. Yet there remains much concern over specific injuries and the persistence of oil in the environment. In this testimony I will describe what those concerns are, how we intend to deal with them in the restoration process and how we are working to ensure that this tragedy never happens again.

Natural Resource Injury

Persistence of Oil in the Environment

While the beaches were dramatically cleaner one and two years after the oil spill, subsurface oil continues to persist and is a source of continuing exposure for intertidal organisms. Some oil continues to be found in the shallow subtidal sediments (3-20 meters) as well. Significant pockets of fresh oil also persist under mussel beds which were not cleaned in 1989 because of damage that cleanup would have done to the mussel beds. This oil is of particular concern as it now appears to be entering the food chain through the mussels and slowing the natural recovery of several species, possibly including harlequin ducks, black oystercatchers, juvenile sea otters and others. Proposals to address the mussel beds are being evaluated. While there have been ongoing discussions of ways to eliminate other persistent oil, all have been discarded as unworkable.

Marine Mammals

Heavy initial and continuing long-term exposure to oil may be resulting in continuing chronic effects to sea otters. Although killer whale mortality has been higher than normal since the oil spill, experts have been unable to conclusively determine the cause. Following the initial mortality after the oil spill, harbor seals appear to have stabilized at a population level below that prior to the spill.

Birds

Bald eagles, estimated to have suffered 580 casualties, were breeding normally by 1990 and as of today have not suffered a measurable population impact. Other species have not done as well. An estimated 172,000 to 198,000 adult breeding murres were killed by the spill. There is little indication of recovery and because of the nature of this species' breeding strategy, experts are concerned that the injured colonies will take many decades to recover or that they may not recover at all. Experts have been unable to develop a convincing method to restore this species. The species itself is not threatened, since there are thirty million murres in Alaska alone. Nevertheless, this decline remains a matter of serious concern.

The reproductive activity of Harlequin ducks in western Prince William Sound has sharply declined and not yet recovered. Scientists hypothesize that this may be the result of continuing contamination of mussels, an important food source for harlequins. A large number of marbled murrelets in the Sound were killed by the oil. As with harlequin ducks, food contamination may be responsible for continuing injury to this species. The recovery status of marbled murrelets is unknown, although it is unlikely that the population is approaching pre-spill levels.

Fish

The primary commercial fish species in the spill area, herring, pink and sockeye salmon, all suffered injury. Herring suffered early life stage injury which may eventually be shown to have caused a measurable population level impact on the adult population. Wild pink salmon suffered

egg and fry injury in 1989 and egg injury in 1990 and 1991. Recent work suggests that this species may have suffered a measurable population level injury.

Oil related closures in 1989 led to overescapement of sockeye salmon into the Kenai River system and the Red Lake system in Kodiak. Although studies are not completed, overescapement has probably caused a dramatic decline in smolt production for these systems. The Red Lake system appears to be naturally recovering; however, the Kenai has shown no such indication to date and may ultimately prove to be the largest long term injury affecting a commercial species.

Subsistence

Subsistence harvest of fish and wildlife in 9 of the 15 villages surveyed declined between 4 and 78 percent in 1989. Seven villages are still below pre-spill harvest levels. Village residents believe that subsistence species have not recovered and they continue to fear that their food sources are contaminated by oil.

Summary of the *Exxon Valdez* Oil Spill Settlement

On October 8, 1991 an agreement was approved by the United States District Court that settled the claims of the United States and the State of Alaska against Exxon Corporation and Exxon Shipping Company for various criminal violations and for recovery of civil damages resulting from the oil spill. The governments had filed civil lawsuits against the Exxon companies, seeking

to recover damages for injuries to natural resources and the restoration and replacement of natural resources. In the settlement the Exxon companies agreed to pay up to $900 million to the State and Federal governments. This was the largest sum ever recovered in the United States in an environmental enforcement civil action. The terms of the civil settlement can be found in the Agreement and Consent Decree in United States v. Exxon Corp. civil action no. A91-082 and State of Alaska v. Exxon Corp. civil action no. A91-083 executed October 8, 1991 by the Honorable H. Russell Holland, Judge of the United States District Court for the District of Alaska. The Exxon companies agreed to pay the $900 million to the United States and the State of Alaska over a period of 10 years, according to the following schedule:

Scheduled Date	Amount
December 1991	$90 Million
December 1992	$150 Million
September 1993	$100 Million
September 1994	$70 Million
September 1995	$70 Million
September 1996	$70 Million
September 1997	$70 Million
September 1998	$70 Million
September 1999	$70 Million
September 2000	$70 Million
September 2001	$70 Million

These monies, less certain allowable reimbursements, will be deposited in the registry account of the United States District Court for the District of Alaska and then transferred to the Federal Court Registry Investment System in Houston. As funds are needed for restoration, the Trustees will apply to the Court for disbursement of these funds. Money deposited in the Houston account will be invested and accrue interest for the restoration fund.

The settlement with Exxon also has a reopener provision, which allows the governments to claim up to an additional $100 million between September 1, 2002 and September 1, 2006 to restore one or more populations, habitats or species that suffered a substantial loss or decline as a result of the spill. Restoration projects funded with this money must meet two criteria: 1) costs must not be grossly disproportionate to the magnitude of the benefits anticipated, and 2) the injury could not reasonably have been known or anticipated from information available at the time of settlement.

Spending guidelines for the civil settlement monies (up to $900 million) are set forth in the Memorandum of Agreement and Consent Decree (Memorandum of Agreement) in United States v. State of Alaska, civil action no. A91-081 filed in the United States District Court for the District of Alaska and entered by the Honorable Judge H. Russell Holland on August 28, 1991. Through this document the United States and the State of Alaska resolved their claims against each other and agreed to act as co-trustees in the collection and joint use of all natural resource damage recoveries resulting from the *Exxon Valdez* oil spill.

The Memorandum of Agreement provides that the governments shall jointly use such monies for purposes of "restoring, replacing, enhancing, rehabilitating or acquiring the equivalent of natural resources injured as a result of the *Exxon Valdez* oil spill and the reduced or lost services provided by such resources." The money may also be used to reimburse expenses the governments have incurred due to the oil spill, including costs of litigation, response and damage assessment. The following table summarizes the major points of the Memorandum of Agreement:

MEMORANDUM OF AGREEMENT GUIDELINES

- all decisions shall be made by the unanimous agreement of the six Trustees;

- a joint trust fund will be established;

- the Trustees ". . shall jointly use all natural resource damage recoveries for purposes of restoring, replacing, enhancing, rehabilitating, or acquiring the equivalent of natural resources injured as a result of the Oil Spill and the reduced or lost services provided by such resources..." (except for the reimbursement of certain expenses to the governments); and

- all natural resource damage recoveries will be expended resources in Alaska unless the Trustees unanimously agree that outside of the state is necessary for effective restoration.

Restoration Organization

The post-settlement organization is largely guided by the Memorandum of Agreement. Under this agreement, the *Exxon Valdez* Oil Spill Trustees are responsible for making all decisions regarding funding, injury assessment and restoration.

The State of Alaska Trustees are:

- Commissioner of the Department of Environmental Conservation;
- Commissioner of the Department of Fish and Game; and
- Alaska Attorney General, Department of Law.

The Federal Trustees are:

- Secretary of the U.S Department of the Interior;

- Secretary of the U.S. Department of Agriculture; and

- Administrator of the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

The Federal Trustees have appointed representatives to the Alaska-based Trustee Council. These representatives are the Alaska Regional Forester for the Department of Agriculture, the Special Assistant to the Secretary of the Interior, and the Regional Director for the National Marine Fisheries Service, National Oceanic Atmospheric Administration. The State Trustees, unlike their Federal counterparts, serve on the Trustee Council.

The Trustee Council appointed an interim Administrative Director and a Restoration Team to take on the day-to-day management and administrative functions for implementation of the restoration program. Each Trustee has appointed one representative to the Restoration Team. The Attorney General of Alaska appointed a representative from the Department of Natural Resources. The Trustee Council has formed various work groups from agency staff to work on components of the restoration program, such as restoration planning, public participation, and habitat evaluation and protection.

Restoration Activities

The Trustee Council has made considerable progress towards implementing a restoration program for the spill-affected area. Damage assessment studies are nearing completion. A symposium was held in February to help disseminate the results. An Oil Spill Public Information Center has been established. A Public Advisory Group was created to increase public participation in the process. Annual Work Plans have been developed and adopted following extensive public comment. A habitat evaluation and protection process has been started. A Restoration Framework was published in 1992. Three series of public meetings have already been conducted and a fourth series of public meetings will be held in April to assist in development of the draft Restoration Plan which will be sent to the public this summer. We anticipate adopting a Final Restoration Plan this fall.

The Restoration Plan will provide long-term guidance for the Trustee Council to use in restoring injuries caused by the oil spill. Once adopted, the Trustee Council may change the Restoration Plan as necessary in response to new information about the injuries, recovery, new technologies, or changing conditions. The Council will implement the Plan through annual work plans which are a mix of restoration activities to be funded each year based on the policies and spending guidelines of the plan, future public comments and changes in restoration needs.

The Trustees intend to proceed with restoration as rapidly as possible, while at the same tin. carrying out their fiduciary responsibilities to the Trust. This is the largest project of its type ever attempted. The Trustees must make sure that the money is spent wisely and that the public has ample opportunity to affect the outcome. We all have the opportunity to assist in helping Alaska and its resources recover from the *Exxon Valdez* oil spill.

Oil Spill Response

Since 1977, the State of Alaska, through the Department of Environmental Conservation (DEC), has administered the state's oil program, designed to address rapid oil and gas development in the state. The Department's oil program historically has served a number of functions, including, review and approval of oil spill contingency plans, and response and cleanup or oversight of responsible party cleanup of oil spills.

DEC was involved in a lengthy review and approval process for the 1987 Alyeska contingency plan in effect at the time of the *Exxon Valdez* oil spill. That plan required Alyeska to provide an effective and quick response to all spills, including a major spill in Prince William Sound.

As illustrated by the *Exxon Valdez* oil spill, technology fell far short of expectations, and no one - industry nor regulators - was adequately prepared for a spill the magnitude of the *Exxon Valdez*.

However, as a result of the lessons learned from the *Exxon Valdez* oil spill, and stricter state requirements, measures to ensure safer transportation of oil through Prince William Sound and other state waters, and to more effectively respond to spills that do occur, have been implemented. Some of those are outlined below:

Contingency Planning

- The state has revised and updated its Oil and Hazardous Substance Release and Response plan in a number of ways. The plan now addresses the role of all state agencies in the event of a catastrophic spill -- not just DEC's role. In addition, the state response is now governed by an Incident Command System (ICS); Department response teams now employ this method and have participated in numerous drills to improve response capability.

- DEC is also working with EPA and the Coast Guard to combine state and federal government spill planning efforts to ensure coordinated spill response efforts.

Oil Spill Prevention and Response

In compliance with its contingency plan, Alyeska now provides at least two escort vessels to facilitate the safe transit of all laden tankers in Prince William Sound. At least one escort vessel is an Escort Response Vessel. Each escort vessel is designed and equipped for towing and is fitted with fenders to come alongside a tanker. Escort vessels are equipped with boom, skimmers and other equipment for immediate response in the event of a spill. The use of this system has already assisted in preventing possible spills in the waters of the Sound. On October 20, 1992, an escort tug helped nudge the *T/V Kenai* away from Middle Rock in Valdez Arm. The tanker experienced some steering problems and within minutes found itself dangerously close to the rock. There have been other near misses as well, but the escort system has helped to prevent the occurrence of any additional disasters. Due to the success of the Escort Response Vessel system in Prince William Sound, and several incidents involving the loss of power on tankers transiting Cook Inlet, the state is currently investigating the need for escort vessels in the waters of Cook Inlet.

An Escort Response Vessel and other spill response equipment is now stationed at Port Etches near Hinchinbrook Entrance in Prince William Sound.

Two Aerial Dispersant Delivery Systems (ADDS) packages are now maintained at the Anchorage International Airport, and can be readily mobilized in the event dispersants are needed for oil spill response.

- DEC has increased its spill response staff numbers and provided additional training for those with response duties.

- DEC has developed in-situ burning guidelines for adoption by the Alaska Regional Response Team.

- Negotiations have been initiated with Alaska's Oil Spill Cooperatives to establish mutual aid contracts for response to large oil spills.

- DEC has solicited private sector contracts for containment, control and cleanup of catastrophic oil spills.

Oil Spill Response Technology

- The Spill Technology Review Council has been established to make evaluations and recommend research priorities for spill response technology. The Council is working in partnership with the Oil Spill Recovery Institute in Prince William Sound to enhance efforts to seek federal funding support envisioned under the Oil Pollution Act of 1990.

- DEC is participating in the development of national standards for oil spill response with the American Society for Testing and Materials.

Involvement of Local Communities

- DEC, along with the State Emergency Response Commission, is assisting local governments in spill response preparedness through the establishment of fourteen Local Emergency Planning Committees, local response planning assistance, and the Community Right to Know program.

- DEC is working with local communities to conduct two nearshore demonstration projects for protection of nearshore coastal resources.

It is unfortunate that it took a disaster the magnitude of the *Exxon Valdez* oil spill to force industry, government, and the public to recognize the inadequacies of the oil spill response systems in place at the time of the spill. However, all parties affected by the spill will now benefit from increased safeguards to prevent oil spills and quicker, more effective immediate responses in the event of other spills.

Lessons Learned

In the past four years, Alaskans have taken many lessons of the *Exxon Valdez* oil spill to heart. To cite just a few:

- We've learned preparedness means prevention, and contingency planning for response. Alaska's regulations are the toughest in the country, if not the world.

- It is necessary to develop cooperative organizations and practices to assure success in our prevention and response. Among those organizations existing today are regional citizens' advisory councils in Prince William Sound, Cook Inlet, and in the Arctic. Spill co-ops such as Alaska Clean Seas or "CISPRI" in Cook Inlet have been strengthened. SERVS, the escort and response system established by Alyeska in Prince William Sound, now works closely with fishing groups to have the largest response possible.

- Plans are not worth the paper they are printed on unless they are tested. It is necessary to train and develop skills to effectively deal with natural or accidental disasters. We do this through frequent on-water drills; surprise as well as planned.

- It is important to have basic scientific information on the ecosystem impacted by such disasters. From the *Exxon Valdez* spill, we have learned a great deal about the impact of various substances on individual resources, and the remediation measures that can be applied to mitigate the damage and restore the resources.

- Public and community participation in all phases of prevention, preparedness and restoration activities associated with such incidents is absolutely necessary. People and communities are impacted in many ways, and they too must be "restored".

- We have learned the importance of hazardous substance spill research and technological development particularly in Alaska with its wide range of arctic, subarctic, coastal, and marine environmental conditions.

- The *Exxon Valdez* Oil Spill Trustee Council will need to continue working closely together to assure effective restoration activities in the future. The Council is working with communities and the public to develop a Restoration Plan and specific restoration projects. Under the terms of the settlement, funding is assured for the next decade, but it must be administered effectively to achieve the laudable goal of restoration to which we are all committed.

TESTIMONY OF

ELENORE MCMULLEN

CHIEF, NATIVE VILLAGE OF PORT GRAHAM, ALASKA

BEFORE THE

U.S. HOUSE OF REPRESENTATIVES' COMMITTEE

ON MERCHANT MARINE AND FISHERIES

March 24, 1993

My name is Elenore McMullen and I am Chief of the Village of Port Graham. I would like to thank the Committee for inviting me to testify on behalf of myself, the Native villagers of Port Graham, and the Alaska Natives who live in Prince William Sound and other areas in south-central Alaska impacted by the Exxon Valdez oil spill. For seven-thousand years the Alaska Natives of Prince William Sound, known as the Alutiiq people, have survived by relying upon the resources of the Sound. I would like to tell the Committee what the Alutiiq people believe is the condition of Prince William Sound four years after the Exxon Valdez oil spill and how that condition has altered and jeopardized our life.

The Native Villagers of Port Graham, as well as the Natives residing throughout Prince William Sound, are dependent upon uncontaminated, renewable natural resources for their survival. For centuries, we have lived in isolated communities surviving off the land -- a manner of living non-natives refer to as "the subsistence way of life." Until the Exxon Valdez oil spill, subsistence had been the cultural mainstay of my people.

The Exxon Valdez oil spill had far reaching effects on the natives of south-central Alaska and Prince William Sound. Oil hit beaches over 500 miles from the Valdez Narrows, where the Exxon Valdez ran aground. In Prince William Sound, nearly 170 miles of shoreline was oiled. Oil was documented in Cook Inlet, on the Kodiak Island group and along the Alaska Peninsula.

Cleanup activities were maintained as far west as Perryville and oil may have landed even farther west.

ICF Technology, science experts who have studied the oil spill area on our behalf pursuant to the Natives' settlement agreement with the United States and the State of Alaska, have given us alarming news. A summary of the report prepared by ICF Technology, entitled "An Overview of the Ecosystem and Damage To Subsistence Resources In The Area Impacted By The Exxon Valdez Oil Spill," is attached to my testimony.

According to the experts, the spill impacted the ecology of hundreds of miles of shoreline. Even though oil accumulations were cleaned from most beaches by the summer of 1992, oil residues remain beneath the surface of these beaches. According to the experts, oil residue may persist longer than 12 years in some areas. Inter-tidal biological impacts will likely persist more than eight years in heavily oiled sites. Recent studies show that isolated patches of highly contaminated sediment continue to bleed, producing more contamination. The potential for long-term impacts on biota and retarded biological recovery is great.

The experts have determined that the Exxon Valdez oil spill impacted a large number of natural resources used for subsistence. The species injured include salmon, rockfish, dolly

varden, char, herring, mussels, morays, clams, sea otters, harbor seals, killer whales, murres, black oyster catchers, murrellets, and harlequin duck. It has been estimated that over a half-million birds and over four thousand sea otters died immediately following the spill. For many species, population recovery has been slowed by continued exposure to oil that persists in inter-tidal and subtidal areas. Continuing reproductive and other injuries to harlequin ducks, sea otters, pink salmon, dolly varden and other consumers of inter-tidal invertebrates was probably caused by the ingestion of contaminated mussels. Oil in heavily contaminated mussel beds appears relatively unchanged since 1989 and will continue to harm the environment for an additional three or more years. Experts say that the rate of biologic recovery will be retarded until the oil disappears or becomes inert. Estimates of the timeframe for population recovery to pre-spill levels range from a few years to many decades. Some species, such as harlequin duck may never recover. Local extinction is very possible.

The experts' evaluation only confirms what has long been observed by my people. Since the spill, there is simply less life in Prince William Sound. Ducks are rarely seen. Seals are difficult, if not impossible to find. Sea otters are scarce. Even the pink salmon run has gotten smaller. It now requires greater effort to harvest amounts comparable to that taken before the spill, if it can be done at all. We must now search greater

lengths of shoreline to harvest chitons or find places to harvest uncontaminated clams and mussels. The large-scale kill of species by the oil forces us to harvest smaller, less mature, fish and game. Harvesting of smaller or undersized subsistence resources is wasteful and requires more effort to achieve the same subsistence harvest levels. Simply put, less edible meat will be obtained per pound of fish harvested when the fish are smaller.

Subsistence is the basis of Alutiiq culture. When the Exxon Valdez oil spill destroyed wildlife and blackened beaches, this manmade disaster also damaged the culture of the people who have relied on those subsistence resources for thousands of years. There were both real and perceived changes in the quality and quantity of those resources. We became uncertain as to the safety of the resources and our ability to harvest them. For the first time ever, we questioned our knowledge of the environment. Not only did subsistence production decline, but above all, culturally significant components of subsistence declined, such as subsistence participation, cooperative hunting, fishing and gathering, processing and preparing of subsistence foods, sharing, transfer of knowledge, satisfaction derived from eating subsistence foods, and our feeling of the integrity of place and autonomy.

I have attached two charts that graphically illustrate how the subsistence way of life was impacted. The first one shows how in one respect, the harvest of sockeye salmon, the subsistence way of life for one resident of Tatitlek changed after the spill. The second shows how the oil spill damaged the Alutiiq culture and people.

When the oil spill ripped the fabric of Alutiiq community by damaging its core elements: first the natural resources and with it, the subsistence harvest. This upheaval damaged the individual people by taking away the means by which they derive order and meaning from their lives and introduced uncertainty and confusion.

The impact of the oil spill on the subsistence way of life is not yet over for my people. We have no idea how long the impact will continue to be felt. The first year of the oil spill, the Alutiiq people suffered a major loss, not only in tangible subsistence products, but also in the loss of what subsistence means. The catastrophic oil spill shocked my people and severely disrupted our way of life. In 1991, 1992 and indefinitely into the future we remain deeply concerned about the long term impacts on subsistence species. Those who feel they can resume eating local resources have done so cautiously and worry about the risks to their health. They say they will never look at the resources with the same happiness and confidence as

before the spill. Now they will always wonder if it is safe to eat their native foods. Those who feel they cannot resume eating local foods will continue indefinitely to experience a serious disruption to their subsistence life.

The governments formed an Oil Spill Health Task Force as part of an emergency response to provide the best information available regarding the safety of subsistence resources. Although the Task Force did a credible job with the information and resources available, it was unable to alleviate concern among residents of the impacted areas. Native persons were excluded from the study while Exxon was closely involved. Inconsistencies caused poor public acceptance of the Task Force recommendations and a loss of the Task Force's credibility. For example, commercial fishing guidelines indicated that fish were unacceptable if oil was found on fish or equipment, yet Natives were advised that fish were edible if their smell, taste and appearance was satisfactory. Moreover, the Task Force's newsletters raised questions that were never answered which further contributed to uncertainty. To date, no definitive scientifically recognized health risk assessment has ever been completed for native subsistence foods.

Because we are so uncertain about the safety of the resources, we are uncertain about the ability of the Alutiiq culture and people to rebound from this event. As one Native has said, "If the water is dead, maybe we are dead. Our heritage,

our tradition, our ways of life and living in relating to nature and to each other." The world has recognized that there has been an environmental disaster caused by the spill. What is overlooked, however, is the human disruption. Until the natural resources have fully recovered, the Alutiiq people who depend upon the resource will not recover.

The problems my people face have not at all been addressed by the Trustees who are administrating the money received by the governments' settlement with Exxon. Approximately a billion dollars is being spent on natural resource recovery throughout the Prince William Sound area. The Alutiiq people, however, occupy and utilize just a small percentage of the Sound. Unfortunately, in the physical and financial vastness of the recovery program, the needs and desires of the Native people are being ignored.

At the time of the settlement, the Native people used the courts to make known their objection that they were not full participants in the settlement process. Our fears have now become realities as we have seen that the villages have not been involved in the restoration process. I understand that one subsistence study has been conducted by the Trustees thus far; to my knowledge, no Natives were consulted or involved in its design. The bulk of the settlement money appears to be headed towards commercial fishing interests and the restoration of

recreation services. Little or no attention is being paid to the impact on the subsistence way of life. The Native community, except for the two seats in the Public Advisory Group, has been essentially disenfranchised.

On behalf of the Native people, I implore this Committee to help us help ourselves. We need to money to be set aside so that the Villages can undertake their own programs and conduct their own restoration of their local subsistence areas. We need money specifically ear-marked to protect, preserve and enhance our subsistence resources.

Of all the persons affected by the spill, the Alutiiq people of Prince William Sound most heavily and directly rely upon the resources of the Sound. Yet we have been given almost no opportunity to participate in its restoration and have received no assistance from anyone interested in helping to restore and preserve our way of life.

I am glad that the Committee has taken the time to listen to the pleas of the Alutiiq people and pray you will assist us in our efforts in the wake of the Exxon Valdez oil spill to save the Sound and save ourselves.

AN OVERVIEW OF THE ECOSYSTEM AND DAMAGE TO SUBSISTENCE RESOURCES IN THE AREA IMPACTED BY THE EXXON VALDEZ OIL SPILL

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FEBRUARY 25, 1993

1.0 OVERVIEW OF FINDINGS

This section discusses the purpose and scope of the report and provides a summary of key sections.

1.1 PURPOSE AND SCOPE

The purpose of this report is to provide an overview of ecosystem damage coincident with the EXXON Valdez Oil Spill (EVOS), placing special emphasis on biological subsistence resources. The assessment of damage is derived largely from Natural Resource Damage Assessment Studies (NRDA) conducted as a part of the government's response to the EVOS. In addition, this report provides a brief review of the findings of the Oil Spill Health Task Force.

This report is based primarily on data collected as part of NRDA studies that were initiated following the EVOS. The NRDA studies were conducted by a coalition of scientists from federal and state agencies and from universities, organized by a joint federal-state oil spill trustee council, and provide the most comprehensive data regarding EVOS-related ecological effects. The NRDA data have been supplemented by data collected as part of subsequent restoration studies in the EVOS area and by data obtained from the open scientific literature.

The report has two main objectives. The first objective is to discuss biologic relationships in ecosystems and biologic communities among subsistence and other important biologic resources, without regard to oil spill damage. The second objective is to discuss damage from the oil spill to these resources and how that damage is propagated into individual biologic communities and into the ecosystem as a whole. Section 1.0 provides a generalized overview of the entire report. Section 2.0 discusses the major biologic communities of the oil spill area ecosystem without regard to oil-spill related damage. It provides a framework for understanding later discussions about the effects of damage in the ecosystem. Section 3.0 is a data-intensive section providing foodchain and other ecological information on subsistence resources and other important biological resources. Section 3.0 provides many of the key data from which the biologic relationships for subsistence resources are derived. Section 4.0 identifies the biologic resources which were given priority for damage assessment. These biologic resources are the plants and animals consumed by natives living in the villages impacted by the EVOS. Section 5.0 summarizes the oil spill impact to shorelines and the ecosystem toxicity of the spilled oil and its residues. It presents maps that illustrate the extent of oiled shoreline, and maps that overlay the main areas of subsistence harvesting with oiled shoreline. Section 6.0 discusses the potential effects of the spilled oil to the priority biologic resources identified in Section 4.0, and the propagation of the damage through the ecological communities and the larger ecosystem as a whole. Discussion about biologic damage related to the oil spill is in Section 6.0. Section 7.0 discusses the results of the Oil Spill Health Task Force's participation. The following paragraphs discuss Sections 2.0 through 7.0 in order.

1.2 SECTION SUMMARIES

Section 2 - This section discusses the four component ecosystems (or communities) that have been, to some degree, impacted by the oil spill. These are: 1) the coastal terrestrial and salt marsh ecosystem; 2) the intertidal ecosystem; 3) the subtidal ecosystem; and 4) the pelagic

ecosystem. These four ecosystems interact and numerous species move between systems, but this separation allows a more complete analysis of oil spill impact than can be obtained by a species-by-species consideration.

Within the terrestrial ecosystem, a critical area is the coastal upland-supratidal fringe, in particular the narrow coastal margin where snow cover is at its thinnest during winter. This zone is critical for deer survival during heavy snow winters. It is also the zone in the terrestrial ecosystem that was impacted by the EVOS, although impact was light. Salt marshes are the most oil-sensitive environments in PWS, but are also the most rare.

The intertidal ecosystem in the oil spill area is composed of a wide variety of shoreline types, with the biota varying in accordance with these changing environmental conditions. There are ten general shoreline types. Rocky shores are by far the most common in the impacted area. They create a habitat that produces abundant algal growth and subhabitat for animals of the subtidal ocean and nourish the intertidal marine invertebrates, including crabs, clams, mussels, snails, octopii, chitons, limpets and other animals. For the most part, PWS's intertidal community is organized by strong biological interactions. This means that effects on one specie may carry through the entire community affecting a number of species. The intertidal system produces several species that are vital food sources for large predators from all habitats of coastal Alaska. The mussels and clams are universal foods of this and other communities. Consequently, whatever changes occur in the quality or quantity of intertidal invertebrates induce cascading effects on the entire ecosystem of coastal Alaska.

The subtidal environment contains the ultimate depository for materials and sediments introduced into the ocean. This detritus, coupled with output from the intertidal zone and the narrow coastal fringe, fuels the entire ecosystem of the subtidal habitat. Thus, the biological vitality of the subtidal sea floor is closely related to the biologic output of shallower habitats and the intertidal zone. Thus impacts to the shallower habitats and intertidal zone affect the viability of the subtidal biologic community.

The pelagic or water-column ecosystem of the oil spill region produces the prey resources that support extremely large populations of predatory seabirds, marine mammals, and fishes. Pelagic food webs are based upon both local phytoplankton production and also movement of detrital particles from coastal regions of macrophytic plant abundance. These are eaten by species which in turn serve as food for three species of zooplanktivorous fishes, the capelin, sand lance, and herring. These three species represent forage foods for a vast suite of more than 40 ***groups*** of higher-level predators. These higher level predators serve as the food base for many species which culminate in the killer whale, the uppermost resident of the pelagic food web. Thus, the important higher-level predators of the pelagic ecosystem are all interdependent through their joint use of shared forage fish prey. Changes in those universal forage fishes will have ramifications throughout the entire pelagic ecosystem.

Section 3.0 - This section contains detailed descriptions of available ecological information on the component species of the coastal Alaskan ecosystems of the oil spill region. This section emphasizes food web interrelationships and the functions of various habitats in the life histories of key species. This section presents a detailed discussion of marine resources in the following order: microbes, detritus, phytoplankton, zooplankton, other pelagic and nektobenthic invertebrates (shrimp, squid), miscellaneous intertidal and nearshore taxa (octopus, chitons, mussels, meiofauna, eelgrass), fishes, birds, and mammals, concluding with a summary of feeding habits of fish, birds, and mammals.

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Section 4.0 - This section lists over 130 species used by the native peoples inhabiting the EVOS impacted area for subsistence consumption. These species have been identified through information collected by the Division of Subsistence within the Alaska Department of Fish and Game (DS-ADF&G). These biological resources were used prior to and after the EVOS. Of these 130, a subset of 25 priority subsistence species is evaluated in more detail. Most of the species that have been selected for more detailed evaluation are important components of the native subsistence resource base or represent significant biological components of the ecosystem.

Section 5.0 - This section addresses the nature and occurrence of landed EXXON Valdez oil. The EVOS had far reaching effects on the coasts of south central Alaska and PWS in particular. Landed oil was documented over 500 lineal miles from the spill point. PWS alone was significantly impacted over nearly 170 miles of shoreline. Oil was documented in Cook Inlet, on the Kodiak Island group, and along the Alaska Peninsula. Cleanup activities were maintained as far west as Perryville and oil may have landed farther west. The spill impacted the biologic and sedimentary systems over hundreds of miles of shoreline. Oil accumulations were largely cleaned from shoreline surfaces by the summer of 1992, but residues persist in the sedimentary subsurface. Rates of natural cleaning seem to be dropping off as residues are more and more confined to protected niches within and along shorelines. Forecasts are difficult to make with only three years of data, but based on other spills, viscous residues may persist longer than 12 years in selected settings. Intertidal biological impacts will likely persist more than 8 years for heavily oiled sites, especially in benthic communities. Limited field data indicate that isolated patches of highly contaminated sediments continue to bleed producing more widespread but lower levels of contamination. This bleeding perpetuates the potential for 1) long term sublethal impacts on biota and 2) retarded biological recovery. This effect add uncertainty to estimates of the length of time required to return to natural conditions. Asphalt pavements in sheltered niches in areas similar to the southern Alaskan coast, have persisted for more than 20 years. However, during this time, they but become highly weathered and their toxicity wains.

The toxicity of the oil varies with the abundance of the different components of oil. Polycyclic aromatic hydrocarbons are the most well understood toxicants and are thought to be the principal toxicant of EVOS oil. Other fractions, however, have not been as thoroughly studied. Polar compounds and oil metabolic products are also toxic. Toxicity may also be a function of the variety of potential toxicants. The presence or absence of some compounds may enhance or reduce the toxic effects of other compounds. The threshold for toxic effects to aquatic organisms may be as little as 0.1 mg/L, far less than amounts to which aquatic organisms were exposed within the intertidal zone shortly after the spill. Thus the full extent of lethal and sublethal effects from oil exposure can not be directly determined and merit further study.

Section 6.0 - This section discusses the effects of exposure of plants and animals to crude oil. Toxic effects include: 1) mortality as a result of ingestion, dermal absorption, inhalation, and disruption of thermal regulation; 2) altered behavior, and 3) altered physiology, any of which may potentially result in decreases in survival, growth or reproduction. Oil also can alter the physical environment to the extent that resident species suffer decreased survival or decreased growth and reproduction. The degree to which oil causes toxic effects is strongly influenced by the physicochemical characteristics of the oil and the conditions in the receiving environment. This complicated variety of responses to crude oil create uncertainty in resolving the degree to which biological resources have been impacted and overall effects are probably much greater than initial deaths.

The overall analysis reveals that a large number of natural resources were impacted by the EVOS. NRDA studies initiated after the spill, documented injury to a variety of fish (e.g., salmon, rockfish, Dolly Varden char, herring), marine invertebrates (e.g., mussels, clams), marine mammals (e.g., sea otters, harbor seals, killer whales), and birds (e.g., murres, black oystercatchers, murrelets and other sea birds, harlequin duck and other sea ducks, bald eagle). In many instances, the initial death rate following the spill was severe. For example, it has been estimated that over a half million birds and over four thousand sea otters, died immediately following the spill. Deaths in other species or species groups could have been similar in magnitude, but direct counts or estimates are complicated because carcasses are difficult to locate or sink to the sea floor. In many cases these initial deaths drastically changed the abundance and population structure. For many species, population recovery is slowed by continuing exposure to oil that persists in intertidal and subtidal areas or from contaminated prey species that inhabit these areas. For example, continuing reproductive and other injuries to harlequin ducks, black oystercatchers, sea otters, river otters, pink salmon, Dolly Varden char, cutthroat trout, and potentially some of the other unstudied consumers of intertidal invertebrates are probably caused by the ingestion of contaminated mussels and other intertidal prey. Oil in heavily contaminated mussel beds appears relatively unchanged since 1989. Assuming the toxic effects continue to persist, it is likely that the oil in the mussel beds will continue to harm the environment for an additional three or more years. The rate of biologic recovery will be retarded until the oil disappears or becomes inert. Estimates of the time-frame for population recovery to pre-spill levels range from a few years to many decades. Some species, such as harlequin duck, may never recover; local extinction is very possible.

Section 7.0 - This section discusses issues related to the health risk of consuming subsistence foods. The Oil Spill Health Task Force was formed as part of an emergency response to provide the best information available regarding the safety of subsistence resources. The Task Force faced a formidable task. They were charged with providing an expedited solution to a problem never previously investigated. Although the Task Force did a creditable job with the information and resources available, the Task Force was unable to alleviate concern among residents of the impacted areas. The concern was understandable. Native persons were excluded from the study while EXXON was closely involved. Commercial fishing guidelines indicated that fish were unacceptable if oil was found on fish or equipment, whereas natives were advised that fish were edible if their smell, taste, and appearance were satisfactory. These inconsistencies led to poor public acceptance of Task Force recommendations and a loss of Task Force credibility. In addition, the Task Force's newsletters raised questions that remained unanswered which further contributed to uncertainty.

ICF evaluated the Oil Spill Health Task Force's Reports and the associated FDA Advisory opinion on the safety of aromatic hydrocarbon residues found in subsistence foods affected by the EVOS. ICF determined that there is a high level of uncertainty associated with the potential human health risks from the EVOS because of the lack of prior information on toxicity, oil persistence, routes of exposure and amounts of exposure. Thus, the Task Force could find no hard evidence and had to obtain outside opinion.

The Task Force requested an Advisory Opinion from the Food and Drug Administration (FDA) on the safety of aromatic hydrocarbon residues found in subsistence foods affected by the EVOS. As part of the Advisory Opinion, the FDA assessed the risk of consuming fish and shellfish contaminated with PAHs. A number of the assumptions made by the FDA appear contrary to available information. The FDA did not, however, complete a human health risk assessment.

The FDA considered the consumption of only fish and shellfish by the natives. Samples from several other food resources contained levels as much as hundreds of times higher than the levels cited as safe for fish and shellfish including deer liver, ducks, and seal blubber and milk. The blubber is rendered by the natives to make oil used for, among other things, softening dried fish. These resources were not considered by the FDA in their assessment.

FDA stated that it was safe to consume fish from PWS. In most cases, however, the levels they determined to be safe are below detection limits. Thus it is not possible to know whether the fish contain PAHs at levels of concern. All these factors contributed to confusion regarding the safety of subsistence resources and uncertainty about health related recommendations. This situation only magnified the uncertainty about the effects of the oil spill on village residents and the sound in general.

1.3 IMPLICATIONS TO SUBSISTENCE CULTURES

Contamination that persists will retard the rate of recovery. For example, mussel beds which continue to bleed oil are expected to require many years. If no actions are taken, recovery may require more than 10 years. Mussels are food for many coastal marine creatures. Prolonged mussel contamination will likely retard recovery for the many species that consume mussels or survive in and around these mussel beds.

The following recovery times for marine biota are based on recovery of PWS intertidal organisms from the 1964 earthquake. These recoveries represent recovery from a single event.

Single event recoveries are estimated to be:

- Hot water treated intertidal sites will require a minimum of 3 to a generally accepted maximum of 15 years for biological recovery beginning after the last cleaning.
- At sites washed by pressurized hot water, lower intertidal infauna, primarily clams and worms, will require generally greater than 8 years to recover.
- Some species of rockfish may require a full life span for populations to return to the same number of adults and sizes for harvesting.
- Leather stars will require more than 3 years to recover.
- Shore birds, in particular oystercatchers, are estimated to recover at a rate of 1% per year.
- Murres will require 18 to 60 years to recover.
- Pink salmon eggs and alevins (the stage in which the offspring are still attached to the yolk sac and remain within the gravelly sediments prior to becoming fry) are showing continued mortality. This mortality is believed to be due to genetic damage.

- Herring larva have been found with deformations: absence of lower jaw, deformed or absent fins, retarded growth.

- Subtidal seastars and crabs are estimated to require more than 6 years to recover from toxic effects.

- Subtidal benthic infauna should recover in as little as three to four years from acute toxic effects. There are, however, oil contaminated fine-grained silt plumes along the bottom which may prolong the duration of the impact (although at a decreased rate) and thereby postpone full recovery.

- Sea otters were heavily impacted by the spill. Sea otters control sea urchins. Without otter control, sea urchins bloom and devastate algal growth (primarily brown and red). The devastation results in fewer limpets, chitons, snails, crabs and meiofauna.

- Harbor seals were heavily impacted. Brain lesions were detected in oiled seals collected and inspected by pathologists within minutes after death.

- Intertidal meiofauna may recover in as little as a month to a year after the last impact.

- Algae and eelgrass recover in as little as 1 to 2 years after the last impact.

The full impact to subsistence practitioners is difficult to estimate, but some of the ways in which native communities may be affected are as follows:

- UNCERTAINTY. Damage to subsistence species has led to uncertainty as to the availability and wholesomeness of key subsistence resources.

- REDUCED AVAILABILITY. Population densities of many subsistence species were reduced by varying degrees ranging from slight to catastrophic. This reduced the amount of subsistence resources available for harvesting and reduced population density leads to greater effort expended to harvest the equivalent pre-spill amounts. For example, greater lengths of shoreline need to be searched to harvest chitons, or dug to harvest clams.

- REDUCED EFFICIENCY. The disruption of population age classes may lead to harvesting smaller resource individuals. The harvesting of non-preferred sizes of subsistence resources leads to greater wastage and increased harvesting effort to achieve the same subsistence gain. For example, less edible tissue will be obtained per pound of fish harvested for smaller fish.

1.4 SIGNIFICANCE OF SUBSISTENCE TO SOUTH CENTRAL ALASKA COASTAL VILLAGES

Subsistence uses of natural resources have been an essential part of the way of life of human communities of Prince William Sound, lower Cook Inlet, the Kodiak Archipelago, and the Alaska Peninsula for 7,000 years or more (Clark, 1984). They remain so today. There are 15

communities of this region of southcentral Alaska whose populations are primarily composed of Alaska Natives. Most of the people are Alutiiq, the indigenous inhabitants of this area. These communities include Tatitlek and Chenega Bay along Prince William Sound; Nanwalek (English Bay) and Port Graham on lower Cook Inlet; Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions in the Kodiak Island Borough; and Chignik, Chignik Lagoon, Chignik Lake, Ivanof Bay, and Perryville on the Alaska Peninsula. In 1990, these communities had a combined population of over 2,000 people, 80 percent of whom are Alaska Natives. Many Alaska Native people who use subsistence resources also live in the larger coastal communities of this area, including Cordova, Valdez, Seward, Seldovia, and Kodiak.

Research has found that subsistence uses of wild resources support the economy and social well-being of most Alaska Native communities (Wolfe and Walker, 1987; ADF&G, 1990). These communities have subsistence-based socioeconomic and sociocultural systems. This means that these communities have a number of integrated economic, social and cultural characteristics centered around subsistence hunting, fishing, and gathering. In addition to the production of large quantities of wild food, these characteristics include kinship-based subsistence production units, a seasonal cycle of activities tied to resource availability, complex sharing networks, traditional systems of land use, and systems of beliefs, knowledge, and values associated with resource uses which are passed on between generations as cultural and oral traditions of the community (Wolfe, 1983).

Studies conducted in the 1980s by the Division of Subsistence of the Alaska Department of Fish and Game and other researchers found substantial evidence of the continued importance of subsistence uses of wild resources in the 15 Alutiiq communities of southcentral and southwest Alaska. All of the features of a subsistence-based way of life occur in these villages. Research has necessarily focused on the various aspects of subsistence in each community, describing harvest quantities, harvest methods, the social organization of production, and cultural traditions surrounding resource uses. Nevertheless, as will be shown in the following discussion, subsistence uses of wild resources must be understood "holistically," that is, as part of the larger context of the life of each community (Wolfe, 1983; Fall, 1990).

Subsistence hunting, fishing, and gathering provide large quantities of nutritious food to these Alutiiq communities: in the 1980s, their subsistence harvests as measured in pounds usable weight ranged from about 200 to over 600 pounds per person annually (Scott et al., 1992). These are substantial harvests, considering that the average American family purchases about 220 pounds of meat, fish and poultry per person each year (Wolfe and Walker, 1987). Of 445 households interviewed about subsistence uses in these 15 Alutiiq communities in the 1980s, all but one (99.8 percent) used subsistence foods (Fall, 1991; Scott et al., 1992). Given the remoteness of these villages – all are off the road system – and the consequent high costs of transporting supplies, subsistence harvests are clearly an indispensable foundation of each community's food supply.

Subsistence harvests in all of these communities are also very diverse. In the 1980s, households on average used between 10 and 25 different kinds of wild foods over the course of a year. In most of the 15 communities, an average of more than 15 kinds was used (Fall, 1991). Although the list varies by community, commonly used subsistence resources in all these communities include many varieties of salmon and other fish, marine invertebrates, land mammals, marine mammals, birds and eggs, and wild plants. In addition to familiar resources such as salmon, halibut, clams, and berries, frequently used subsistence foods include seal meat and oil, pickled sea lion flippers, black or brown bear fat, herring spawn on kelp, octopus, sea urchins, chitons,

sea ducks, and gull eggs. It is not possible for residents of these communities to obtain most of these foods except through their own subsistence harvests or through sharing with relatives and friends; they are simply not available in stores. Also, because people have grown up using these resources as a daily part of their diet, for them there are no culturally-acceptable substitutes.

Very thorough use is made of the fish and game subsistence harvests. For example, in Tatitlek (and most of the other villages), in addition to the meat, parts of harbor seals that are commonly used for food include fat (rendered into oil for use with dry fish), intestines, tongue, and liver (Stratton, 1990). Parts of salmon and other fish that are frequently used for food in Alutiiq communities include the head, tails, fins, hearts, stomachs, and eggs.

Subsistence activities in the Alutiiq communities follow a stable, patterned seasonal round that is usually related to resource availability and weather conditions which affect travel (for examples, see Stanek, 1984 and Stratton 1990). Seasons of relative abundance, such as early summer when salmon first arrive, are particularly important in that large quantities of foods are harvested and then preserved for later use. Thus, the economic, social, and cultural calendar followed by each community is shaped by these seasonal subsistence cycles.

Subsistence also plays a central role in organizing daily and seasonal activities for the Alutiiq people. Of the 445 households interviewed in the 1980s, 430 (96.6 percent) harvested at least one subsistence resource during the study year (Fall, 1991). These harvest activities are usually organized around kinship relationships. For example, an extended family in Port Graham in the 1980s which harvested and processed salmon together included 37 family members over three generations living in 10 households (Stanek, 1985). Particular harvesting and processing tasks are traditionally assigned by age and sex. Hunting parties usually involve brothers, male cousins, fathers and sons, or uncles and nephews. For the most part, women are responsible for processing fish, producing seal oil, or preparing harvests for storage. It is during such activities that traditional knowledge and skills are shared and learned. Thus, subsistence activities continue to play an essential role in defining social roles in these communities. Individuals establish their identities within their communities through their involvement in subsistence harvesting and processing.

Throughout this region, subsistence foods are frequently shared with relatives, elders, and others in need. For example, 91.2 percent (406 households) of the 445 households interviewed in the 15 villages received wild foods as gifts from other households. Sharing is not only frequent but widespread, linking many households in networks of mutual support. For example, in a case study described by Stanek (1984), a Port Graham man and his brother-in-law harvested a harbor seal which was distributed among 16 households with 45 people living in Port Graham, Seldovia, and Nanwalek. All of the households were linked by kinship. At Tatitlek, and many of the other villages as well, harvests of marine mammals are announced over CB radios, along with an invitation for people to come down to the beach and share in the harvest. Seals, as well as mountain goats, are also shared widely among Tatitlek residents during barbecues on the beach called *mangiq* (Stratton, 1990).

Sharing of subsistence products between communities is also quite common. This sometimes involves exchange of resources which are readily accessible in one village but unavailable in the other. Generally, however, resources are shared with no expectation of a return, a process anthropologists call "generalized reciprocity." For example, Tatitlek sends large amounts of herring spawn on kelp to friends and relatives in Chenega Bay. Larsen Bay households share

their large harvests of shellfish with Karluk, often in exchange for sockeye salmon. Residents of Perryville send fresh and smoked eulachon ("candlefish") to relatives in Chignik Lake in the spring, who in turn send spawned sockeye salmon ("redfish") to Perryville in the fall and early winter.

In addition to fulfilling social and cultural obligations, sharing has direct economic benefits in these communities. While the vast majority of households participate in subsistence harvests, as in most subsistence communities in Alaska today, the majority of the harvest is accomplished by a relatively small group of very productive households (Wolfe, 1983). These households share extensively with others, supplying subsistence foods to the elderly and others unable to provide for themselves. As noted by Wolfe (1983):

> "Once again, the distribution and exchange networks demonstrate subsistence-based socioeconomic systems operate at a community level. Subsistence activities are not primarily individual or even household concerns. Instead, subsistence activities serve to provide for the social and economic well-being of an entire network of extended families that comprise a community."

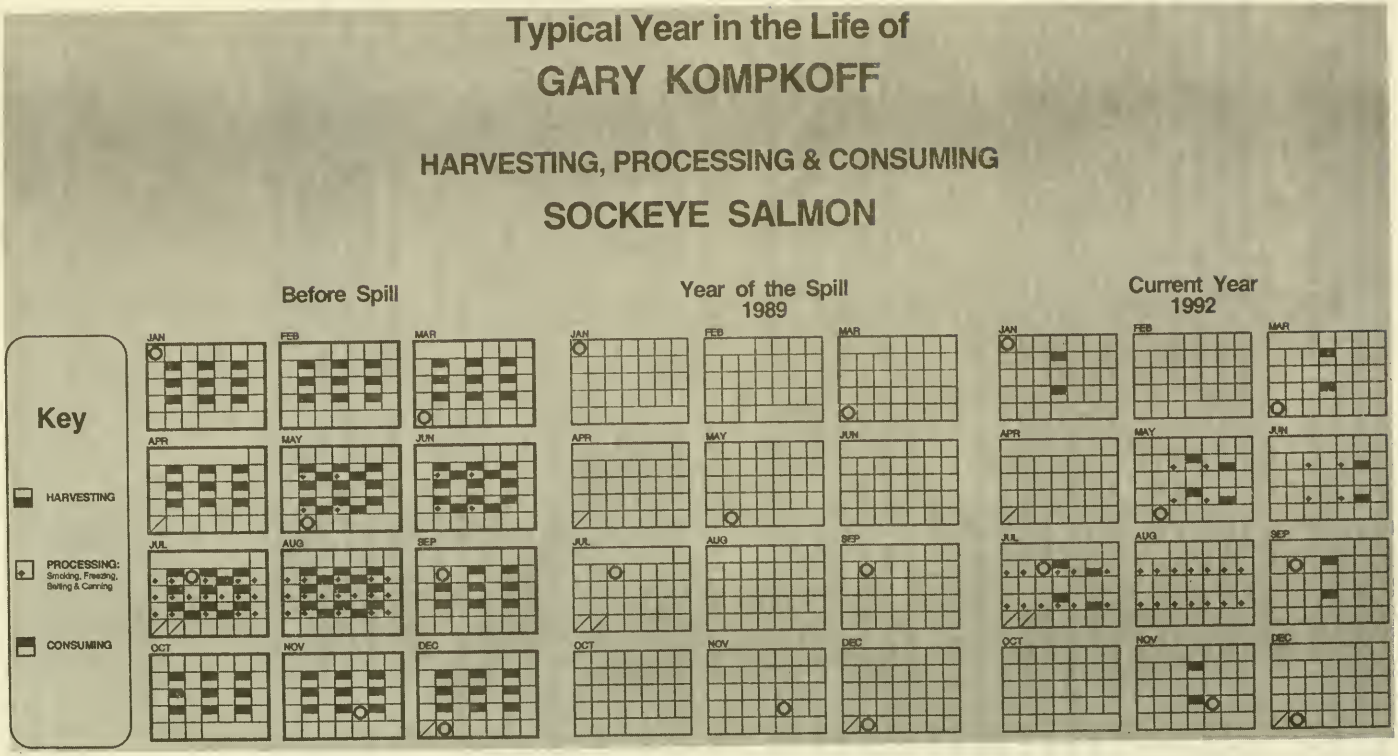
A great deal of traditional knowledge about animals and plants, geography, and weather is conveyed through participation in subsistence activities. For example, young girls at Tatitlek learn how to identify ripe herring eggs and the appropriate seaweed to harvest them on while accompanying their mothers and grandmothers in the spring to herring spawning areas (Stratton, 1990). When Chenega Bay was resettled in 1984, older hunters who were adults when the old village was destroyed 20 years before, taught younger men about hunting and fishing areas. This was a key element in the Chenega people's successful reoccupation of their homeland (Stratton and Chisum, 1986). Names of local places important for subsistence activities, whether in Alutiiq or English, often do not appear on maps and must be learned during subsistence activities. These local place names are generally concentrated at prime subsistence use areas (Stanek, 1985).

Subsistence activities also connect individuals and families to the lands and waters near their communities through traditional systems of land use and occupancy (Wolfe, 1983). Generally, subsistence hunting, fishing, and gathering take place within definable village harvest areas. In some cases, these areas are similar to the territories of ancestral Alutiiq regional groups. For example, the contemporary harvest areas used by Tatitlek within Prince William Sound correspond closely with the historic pattern of the Tatitlarmiut regional group from which most Tatitlek residents are descended (Stratton, 1990). Instruction in hunting and fishing skills, and transmission of knowledge of local weather patterns, reliable harvest sites, and safe camping locations, often associated for generations with particular families, occur within these areas. The thorough use of a wide array of mammal, bird, fish, marine invertebrate, and plant species reflects the detailed knowledge of these areas that has developed over generations of subsistence use. Consequently, it is rare for residents of these communities to travel outside these traditional harvest areas to other areas of the state to harvest subsistence resources.

The contemporary names of subsistence products in common use today are further evidence of the continuing cultural significance of subsistence. Although the primary language in most communities today is English, the Alutiiq language is used to name many important resources or groups of resources. For example, "oodiks" (Alutiiq *uutuk*) is the name frequently used for sea urchins. ***Uyangtaaq*** are a group of bottom-dwelling animals, including crab, that are found in shallow waters of bays and intertidal areas. These foods can be harvested by people of various

ages and abilities at times of the year when other resources are in short supply or when weather prevents extensive travel. *Tamuuq*, *uumatak*, and *ataneq* are products made from dry salmon that are staples of each village's diet (Stanek, 1985). At Nanwalek and Port Graham, the nutritional and cultural significance of dried salmon and halibut is expressed by calling these foods "our bread."

In summary, subsistence uses of fish, game, and wild plants continue to be of vital importance to the Alutiiq communities of coastal southcentral Alaska. Subsistence harvests provide large amounts of a variety of nutritious foods throughout the year. Subsistence activities structure much of the annual cycle of activities in the communities. Harvesting, processing, and sharing of subsistence resources unite people, households, families, and communities in networks of mutual support, and provide the context in which young people learn survival skills and cultural values. They also define each community's relationship to the lands and waters around them. Finally, it is important to understand each of these aspects of subsistence as part of an overall economic, social, and cultural system, for, as noted by Wolfe (1983), "The socioeconomic system comprises the basic structural relationships underlying the material and social well-being of a group. A breakdown in the system can lead to social disruptions, community disintegration, and economic hardships." Consequently, threats to subsistence challenge the very survival of the Alutiiq communities and their way of life.


Typical Year in the Life of
GARY KOMPKOFF
HARVESTING, PROCESSING & CONSUMING
SOCKEYE SALMON
Before Spill
Year of the Spill
1989
Current Year
1992
Key
HARVESTING
PROCESSING:
Smoking, Freezing,
Salting & Canning
CONSUMING
JAN
FEB
MAR
APR
MAY
JUN
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DEC

STATEMENT OF JAMES B. HERMILLER
PRESIDENT OF ALYESKA PIPELINE SERVICE COMPANY
BEFORE THE
MERCHANT MARINE AND FISHERIES COMMITTEE
U.S. HOUSE OF REPRESENTATIVES
MARCH 24, 1993
WASHINGTON, D.C.

Mr. Chairman and Members of the Committee:

My name is James B. Hermiller, and I am President of Alyeska Pipeline Service Company. I joined Alyeska on June 19, 1989 as Executive Vice President and Chief Operations Officer. On October 1, 1989, I was promoted to President.

I appreciate the opportunity to appear before you today to tell the Committee about Alyeska's efforts to provide safe oil transportation and to increase oil spill prevention, preparation and response capabilities.

Alyeska Pipeline Service Company operates the Trans Alaska Pipeline System ("TAPS") for the seven common carrier pipeline companies that own TAPS.[1] The pipeline carries oil from the Alaska North Slope to Valdez. At the present time, throughput is approximately 1,700,000 barrels per day, all of which serves U.S. energy needs. Tankers that are owned and operated independently of Alyeska, receive the oil at the Valdez Marine Terminal for transportation to refineries that supply the domestic market in the United States. The pipeline has transported over nine billion barrels of oil to Valdez since it started operation in 1977.

After the March 24, 1989 spill of 258,000 barrels of crude oil in Prince William Sound, Congress and the Alaska legislature established new standards that mandate unprecedented response planning requirements. After the spill, Alyeska and its owners assembled a special task force of marine transportation and oil spill experts to prepare and implement programs designed to address the same concerns. Their efforts produced the Prince William Sound Tanker Spill Prevention and Response Plan.

Obviously the most important goal of this public and private effort is to prevent spills in the first place. Prevention of oil spills must be the paramount goal of our response plan.

The second goal of our response plan must be preparedness. Preparedness means having the necessary organizational management, community involvement, personnel, training and strategically-placed oil spill response equipment.

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[1]The owner companies are BP Pipelines (Alaska), Inc., Exxon Pipeline Company, ARCO Transportation Alaska, Inc., Mobil Alaska Pipeline Company, Phillips Alaska Pipeline Corporation, Amerada Hess Pipeline Corporation and Unocal Pipeline Company.

The third goal of our plan focuses on the response itself -- to respond efficiently and effectively in the event of an oil spill. If an oil spill occurs, Alyeska's initial response plan is designed to use strategies, organization, equipment and manpower that provide rapid on-water, near-shore and on-shore responses. Although Alyeska has developed strategies and provided resources to meet a response planning standard based on a catastrophic spill of more than 300,000 barrels, our plan candidly acknowledges -- and it is important for the Committee to understand -- that there are few circumstances in which such a catastrophic spill can be fully contained and recovered. It is for this reason that our public and private efforts must continue to place strong emphasis on prevention of oil spills.

These three goals -- prevention, preparedness and response -- form the backbone of Alyeska's current Prince William Sound Tanker Spill Prevention and Response Plan. Under applicable law, Alyeska is directly responsible for cleanup of spills from the Valdez Marine Terminal. In addition, in the role of initial response action contractor for the ship owners, Alyeska provides an initial response to spills from vessels berthed at the terminal and transiting Prince William Sound to and from the terminal.

Under applicable law, the vessel owners, operators and demise charterers are directly responsible for cleanup of vessel spills. Representatives of these responsible parties have contracted with Alyeska for initial oil spill response in Prince William Sound. The State of Alaska now requires that Alyeska, as the common operating agent of the owners of the pipeline, provide this initial response service by contract. Alyeska has response contracts with ARCO Marine, BP Oil Shipping, Chevron USA, Inc., Exxon Shipping Company and Tesoro Petroleum Company. Each company serves as long term responder for the vessels listed in their particular contract. Each vessel's contingency plan incorporates the Prince William Sound Tanker Spill Prevention and Response Plan to describe prevention measures and initial response to a spill from the vessel. After numerous public hearings on the initial response plan in Prince William Sound and other parts of Alaska, the tank vessel contingency plans for Prince William Sound received conditional approval, requiring development of a near shore response plan, from the State of Alaska in June 1991. The plan holders have submitted their near shore response plan to the state for approval.

On February 18, 1993, Alyeska submitted its Valdez Marine Terminal Contingency plan to the United States Coast Guard (USCG) to meet the requirements for a facility under Oil Pollution Act of 1990 (OPA 90). At the same time the ship owners/operators submitted their vessel plans to meet the vessel requirements. Both plans describe how the existing capabilities developed by Alyeska and the ship owners/operators meet the OPA 90 requirements for Prince William Sound.

The USCG is currently assessing the completeness of the submissions, which we believe meet all the requirements outlined in the interim regulations. Alyeska and vessel plan holders are continuing our dialogue with the USCG to ensure we are in full compliance by August 18, 1993.

Before going into the details of the resources and measures provided in the plan to achieve the goals of prevention, preparedness and response, I'd like to make some general observations.

First, Alyeska's commitment has been serious and substantial. The TAPS owners, though Alyeska, have spent more than $237 million since 1989 to enhance the Prince William Sound oil spill prevention and response capability. Alyeska expects to spend an additional $73 million by the end of 1993. All laden outbound tankers and all partially laden inbound tankers are escorted in Prince William Sound by two specially fitted escort vessels to assist in safe navigation, and to provide immediate assistance in the event of a tanker problem or an oil spill. Alyeska's plan complies with all Federal and state laws and regulations, and provides for more oil spill equipment and manpower for use in a single location than can be found anywhere else in the world.

Second, Alyeska believed it was important to involve the local Prince William Sound community in helping define and develop the contingency plan. This led to the formation of the Prince William Sound Regional Citizens' Advisory Council (PWS RCAC) and has resulted in citizen involvement in both the development of the plan and in any response that might be initiated under the plan. The PWS RCAC is an independent citizen council that provides advice to Alyeska based on independent third party review of the company's Terminal and Prince William Sound operations, as well as response plan review. The 19-member council provides broad representation from the communities, native organizations and special interest groups that could be affected if a spill were to occur in Prince William Sound. With citizen involvement, we now have eight strategically located Community Response Centers and contracts with over 300 fishing vessels.

Third, Alyeska initiated an effort to work cooperatively with other concerned parties in interpreting and carrying out new legal and regulatory requirements. This led to the formation of the Prince William Sound Steering Committee, a forum comprised of representatives from industry, State and Federal agencies, and the RCAC. This Committee works to resolve difficult contingency plan-related issues through working groups selected based upon their expertise in a particular area.

Fourth, Alyeska has adapted the Incident Command System, originally developed for use in fire fighting in California, as a framework for defining the structure and roles of the crisis management team, including federal and state representatives, that will manage the response to a spill. Following Alyeska's lead, many other oil spill response organizations across the United States have now adopted the ICS approach for oil spill management.

Fifth, Alyeska has recognized that effective contingency planning requires more than putting words down on paper and stockpiling equipment. Alyeska concluded that major drills would be undertaken on a regular basis to test and improve response capability, and to maintain a state of readiness. These drills involve hundreds of people and every aspect of response, from on-water containment and recovery to wildlife rescue on shore. They include representatives from the USCG, the Alaska Department of Environmental Conservation, the ship owners and the RCAC, as well as observers from the Federal, State and local levels. Our

oil spill response crews also get hands-on cleanup experience responding to small, operational spills and to spills of unknown origin in Prince William Sound.

Let me now turn to the Contingency Plan itself and its three major goals:

- To prevent oil spills from occurring
- To prepare for possible oil spills
- To respond if a spill occurs.

PREVENTION

ESCORT VESSELS

Alyeska has based a fleet of specially fitted vessels and trained crews in Prince William Sound. Called the Ship Escort and Response Vessel System (SERVS), its job is to assist tankers in safe navigation through Prince William Sound and provide the first level of response in the event of a tanker problem or oil spill.

The SERVS fleet headquarters is in Port Valdez. It is a complete facility with dock, storage, communications and support services. Crews are on duty 24 hours a day, seven days a week, and the fleet is on standby alert whenever a laden tanker is transiting the Sound.

The primary SERVS mission is to help prevent oil spills. All laden tankers leaving the Valdez Marine Terminal and all partially laden inbound tankers are escorted by two SERVS vessels that can be of immediate assistance if a tanker experiences difficulties. At least one of these escort vessels is a specially equipped Escort Response Vessel (ERV).

While the tanker transits the Sound, the two escort vessels stay within one-half mile and maintain radio communication. The escort vessels are closer than one-half mile when safety allows, especially when transiting the Valdez Narrows where a maximum tanker speed of six knots is required. Each escort vessel is positioned to best assist the tanker if help is needed during its transit between the Terminal, through Hinchinbrook Entrance, to Seal Rocks -- a distance of about 65 miles.

PILOT REQUIREMENTS AND PRE-SAILING BRIEFINGS

All laden tankers transiting between the Valdez Marine Terminal and an area south of Bligh Reef are required to have a State of Alaska licensed pilot on the bridge. In addition, a ship's officer, federally-licensed for the waters of Prince William Sound, must be on the bridge of the tanker between the Terminal and Seal Rocks. The captains of the tanker, both escort vessels and the state-licensed pilot participate in a briefing before the vessels leave the Terminal.

RADIO COMMUNICATIONS

Personnel on tankers and escort vessels communicate with each other during their transit and keep in contact with the Valdez Escort Response Base by radio. The tankers inform the escort vessels of all significant changes in course, speed or conditions, and the earliest sign of trouble. The escort vessels warn the tanker of pending dangers and will question any action that raises doubts about the tanker's safe transit. Both the USCG and Alyeska have installed upgraded radio networks to cover the Sound.

UNITED STATES COAST GUARD VESSEL TRAFFIC SYSTEM ENHANCEMENTS

Tanker vessels transiting in the traffic lanes, from the Valdez Marine Terminal to Cape Hinchinbrook, are required to maintain communications and participate in the USCG Vessel Traffic System (VTS). Vessels are also required to notify the VTS before entering or leaving the lanes. Vessel masters must notify the VTS of any operational changes or emergencies that occur while in transit, and must comply with VTS regulations. To assist tankers in their transit of the Sound, the USCG has installed a navigational aid at Bligh Reef and has enhanced its radar coverage of the area.

The USCG and tank vessel owners, operators and charterers are also acquiring a global positioning system that will track the position of tankers throughout Prince William Sound by satellite.

TRANSIT SPEED, VESSEL TRAFFIC LANES AND WEATHER RESTRICTIONS

Alyeska, tanker owners, operators and charterers have agreed to support the adoption of the following prevention measures by the USCG:

Maximum Transit Speed

The maximum speed for laden tankers through Prince William Sound is 10 knots, unless lower speeds are mandated or are requested by the tanker or escort vessels.

Ice Navigation Procedures

When vessels encounter glacial ice in the vessel traffic lanes, tankers will use the lowest speed consistent with safe navigation and remain within the vessel traffic lanes.

Vessel Traffic Lanes

Tankers transiting Prince William Sound will remain in the vessel traffic lanes.

Weather Restrictions

A decision to sail is based on the ERV's ability to assist a tanker in existing weather conditions. Tanker and escort traffic is not allowed to begin if sustained winds reach or

exceed 40 knots in Prince William Sound or the Valdez Narrows. If the winds exceed 40 knots during an escort, the tanker and escorts will slow to a safe speed and maintain course providing both the tanker and escort masters agree. Localized winds and ice are also considered on a case-by-case basis by the USCG.

EMERGENCY SERVICES

The SERVS escort vessels are under contract to provide emergency assistance to tankers. This arrangement allows for rapid decisions by the tanker master for towing or other assistance in the event of an emergency. Other factors that facilitate the rapid rendering of emergency assistance include:

- the close proximity of escort vessels to transiting laden tankers,
- constant radio communications, and
- on-board emergency equipment.

TANKER AND ESCORT EMERGENCY TOWING EQUIPMENT

In the event a tanker loses propulsion or experiences steering gear failure, escort vessels are capable of either towing or pushing the tanker. The escort vessel's excellent maneuverability facilitates securing a tow line to a disabled tanker. In addition, each tanker calling at the Terminal must have a pre-positioned emergency towing package on board. Escort tugs are also equipped with their own towing lines.

TRAINING

Tanker towing drills and exercises are frequently conducted to practice emergency procedures. This type of practice is essential to efficient operations during situations requiring immediate action.

DRUG AND ALCOHOL SCREENING

Alyeska requires periodic certification that owners and operators of vessels comply with applicable government drug testing regulations. Tanker captains are also given alcohol breath tests one hour before the vessel departs from the Terminal. Crew members returning to the Terminal will be tested if intoxication is suspected. A blood alcohol content of 0.04 percent or above will result in denial of access to the Terminal and tanker berths. A report will be made to the vessel's watch officer.

PREPARATION

Acting as the initial response action contractor for the ship owners, operators and charterers, Alyeska's goal is also to be prepared for an emergency: to have the necessary organizational management, community involvement, personnel, training and strategically placed equipment to respond efficiently and effectively in the event of an oil spill.

Alyeska has a number of major skimming systems within Prince William Sound and in Valdez. A skimming task force is normally pre-positioned at Cape Hinchinbrook, Naked Island and in the Port of Valdez. The nameplate skimming capacity for this equipment exceeds 25,000 barrels per hour.

ORGANIZATION

The management organization for the Plan is patterned on the Incident Command System (ICS) concept. If a spill occurs, response management will be organized under ICS. It is a nationally recognized crisis management and communication method first developed for wildland fire fighting in California and pioneered for use in spill response by Alyeska. It is now used in many areas of Alaska. Endorsed by the Alaska Legislature, ICS is designed to respond to small and routine situations as well as to large, complex incidents where many agencies and entities might be involved.

At a minimum, the ICS organization consists of SERVS and Valdez Marine Terminal Personnel. Depending upon the size and location of a spill, ICS can rapidly expand to include a Unified Command consisting of the USCG, the Alaska Department of Environmental Conservation, Alyeska and the spiller; the Alyeska Crisis Management Team; the Community Response Centers; fishing vessels owners and crews who have agreed in advance to perform spill duties; and other resources as are needed.

PERSONNEL AND TRAINING

Alyeska currently has approximately 200 trained and available personnel to respond to an oil spill in Prince William Sound. Several hundred other Alyeska employees have received advanced spill training, continue to participate in drills and exercises, and are available to respond if conditions require. Additionally, over 400 local citizens have received oil spill response training provided by Alyeska.

A core group of 30 fishing vessels is on contract to provide immediate response support. In addition, another 300 fishing vessels are on contract and receive response training to assist in the event of a spill. The fishing boats are called out according to a pre-established procedure.

Alyeska and the tanker owners, operators and charterers also conduct a number of other training drills and exercises involving SERVS, the Valdez Marine Terminal, fish hatcheries, contracted fishing vessels, community liaisons and the crisis management team. Major drills also involve state and federal agencies, the Prince William Sound Regional Citizens' Advisory Council and owner companies with hundreds of people participating. Training is a major aspect of preparation, and it also assists in the evaluation of the response measures in the Plan.

REGIONAL CITIZENS' ADVISORY COUNCIL

The Prince William Sound Regional Citizens' Advisory Council (PWS RCAC) was formed in cooperation with Alyeska to provide citizen comment on the company's operations and to review the Terminal and Prince William Sound contingency plans. Although funded by Alyeska, the Council operates independently and is composed of representatives from communities in Prince William Sound, the Kenai Peninsula, Kodiak and special interest groups from the area including, for example, the National Wildlife Federation and Chugach Alaska Corporation. The PWS RCAC is certified by the President of the United States under the provisions of OPA 90.

In addition, the PWS RCAC provides comment on port operations, Terminal operations, vessel traffic systems, environmental monitoring and community education. The PWS RCAC has eight committees, 14 professional and administrative staff and an annual budget of about $2 million.

EQUIPMENT

Alyeska maintains substantial quantities of oil spill response equipment for use in Prince William Sound. Alyeska has also established pre-staged equipment locations in the Sound. These locations are stockpiled with spill equipment such as boom, skimmers, lightering equipment and storage vessels that allow for rapid deployment if needed. In addition, the five fish hatcheries in the Sound have been supplied by Alyeska with boom and other equipment for their protection in the event of a spill. Community Response Centers have been established within the Sound to provide pre-staged equipment for use in a response.

In total, there are nearly 33 miles of oil spill containment boom, 12 of the highest volume skimming recovery systems in the world, totaling in excess of 25,000 barrels per hour nameplate skimming capacity; 12 ocean going escort/response vessels; storage barges with a total capacity of 450,000 barrels; and a variety of additional skimmers and ancillary equipment.

RESPONSE

The Plan and its equipment and manpower requirements are determined by state and federal regulation and are based on a planning standard set by state and federal law. The plan meets the response planning requirements established after 1989 by Congress and the Alaska Legislature. Review and approval of the plan by federal and state authorities will determine that the vessels' reliance on Alyeska for initial response is consistent with those planning requirements.

Although Alyeska has developed strategies and provided resources to meet a response planning standard based on a catastrophic spill of more than 300,000 barrels, the Plan acknowledges there are few circumstances in which such a catastrophic spill can be fully contained and recovered. Weather conditions, sea state, currents, time of day, time of year,

the nature of the incident, and a host of other foreseeable and unforeseeable factors can impact the effectiveness of a spill response. For this reason, the Plan places a strong emphasis on prevention of oil spills.

However, if an oil spill occurs, the initial response plan is designed to use strategies, organization, equipment and manpower that provide rapid on-water, nearshore and on-shore responses. The vessel operators have developed the nearshore component of the Plan. The SERVS fleet, assisted by fishing vessels and other Alyeska and community resources, is organized to provide oil spill response depending upon the scope of the spill.

EMERGENCY RESPONSE CENTERS

The Valdez Emergency Operations Center (VEOC) is located near the Valdez Escort Response Base in Valdez Harbor, and serves as the center for all major spill operations. Currently the Valdez Civic Center is used, but a new facility is planned and will be built in the City of Valdez in 1994. Until the new VEOC is constructed, initial response to a spill will be handled from the Terminal Emergency Operations Center. Once contingency personnel are mobilized and stored support equipment installed at the Civic Center, the response operations will transfer there.

COMMUNITY RESPONSE CENTERS

Under the Plan, eight Community Response Centers have been established. Each is responsible for coordinating emergency responses, manpower and equipment as part of the ICS organization. The Community Response Centers are located as follows:

- Chenega Bay
- Cordova
- Kodiak (Kodiak Island Borough)
- Seldovia
- Seward
- Tatitlek
- Valdez (Port of Valdez)
- Whittier

Oil spill response equipment such as boom and absorbents are pre-positioned at Community Response Centers within Prince William Sound.

FISH HATCHERY PROTECTION

As part of the protection and response components of the plan, Alyeska developed a Hatchery Protection Program. At five fish hatcheries located in Prince William Sound, Alyeska has stored oil spill response equipment and provides training of local people for its use. Anchors and buoys have been preset for effective boom deployment at several of these hatcheries. These hatcheries are located at Main Bay, Sawmill Bay, Lake Bay, Cannery Creek and Solomon Gulch.

Alyeska has worked with the communities of Whittier, Valdez, Chenega Bay, Tatitlek and Seward to identify sensitive areas that may require protection in the event of a spill. Those areas have been surveyed to determine the amount of boom needed, and the optimum place to position that boom.

CONCLUSION

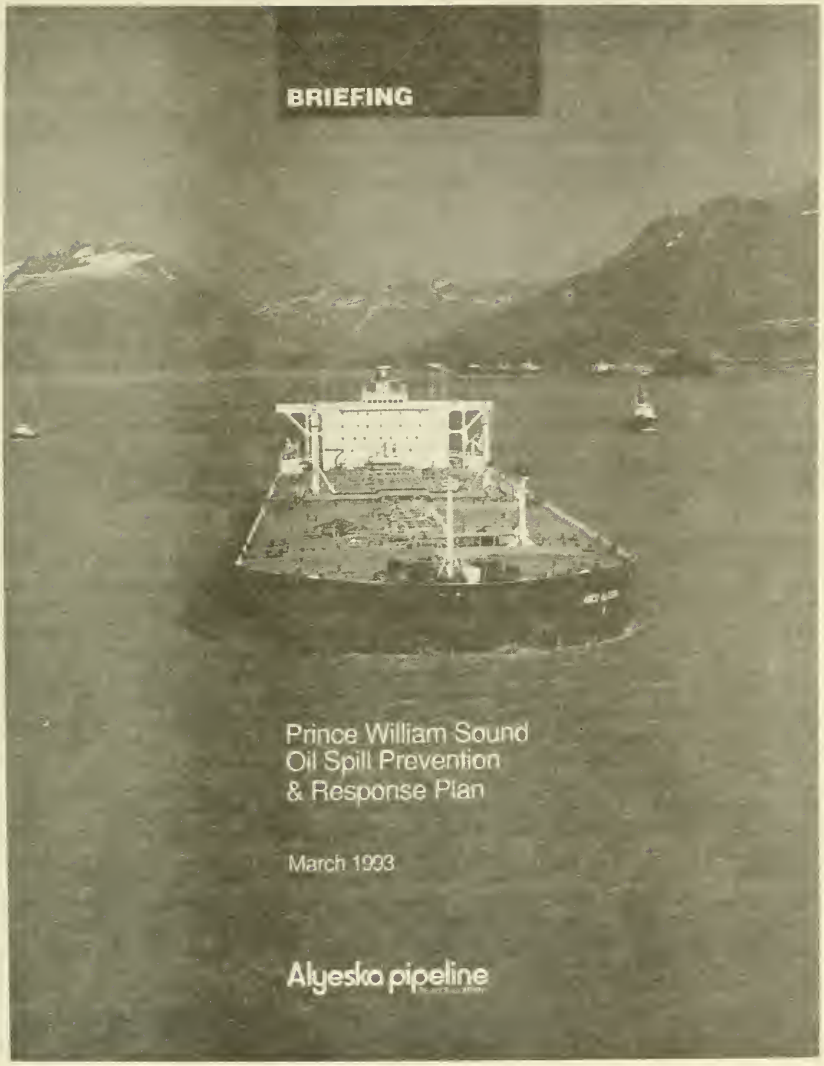
Alyeska's oil spill prevention and response program is an innovative and comprehensive effort. As was recently noted by the Manager of the Prince William Sound District Office of the Alaska Department of Environmental Conservation, "more equipment can be brought to bear on a spill here quicker than anywhere else in the world." (*Anchorage Daily News*, Feb. 16, 1993). In addition to the equipment, we have the manpower we need, we require the training of all involved, and we test the results of our efforts on a frequent basis.

Alyeska has an ongoing commitment to work with federal and state agencies and local citizens to meet our common goals of oil spill prevention, preparation and response in Prince William Sound and to build on the trust that we hope exists there today. Where there are disagreements, we have mechanisms in place, such as the Prince William Sound Steering Committee, to provide the means for addressing and resolving concerns that are raised.

It has taken a great deal of hard work, understanding, and give and take on the part of all the players to get to the level of achievement that we share today. The answer to oil spills is still -- and will always be -- not to have them, and our greatest efforts will continue to focus on prevention as the primary goal.

Alyeska pursues the dual objectives of protecting the environment and ensuring the flow of important energy resources to the people of this country. The pipeline people of Alyeska who live and work in Alaska's beautiful environment are fully committed to realizing both of these goals.

Thank you for the opportunity to testify.


BRIEFING
Prince William Sound
Oil Spill Prevention
& Response Plan
March 1993
Alyeska pipeline

BRIEFING

Prince William Sound Oil Spill Prevention & Response Plan

This booklet describes the key elements of the Prince William Sound Oil Spill Prevention & Response Plan and outlines the prevention and response activities Alyeska has initiated in addition to those required by the Plan.

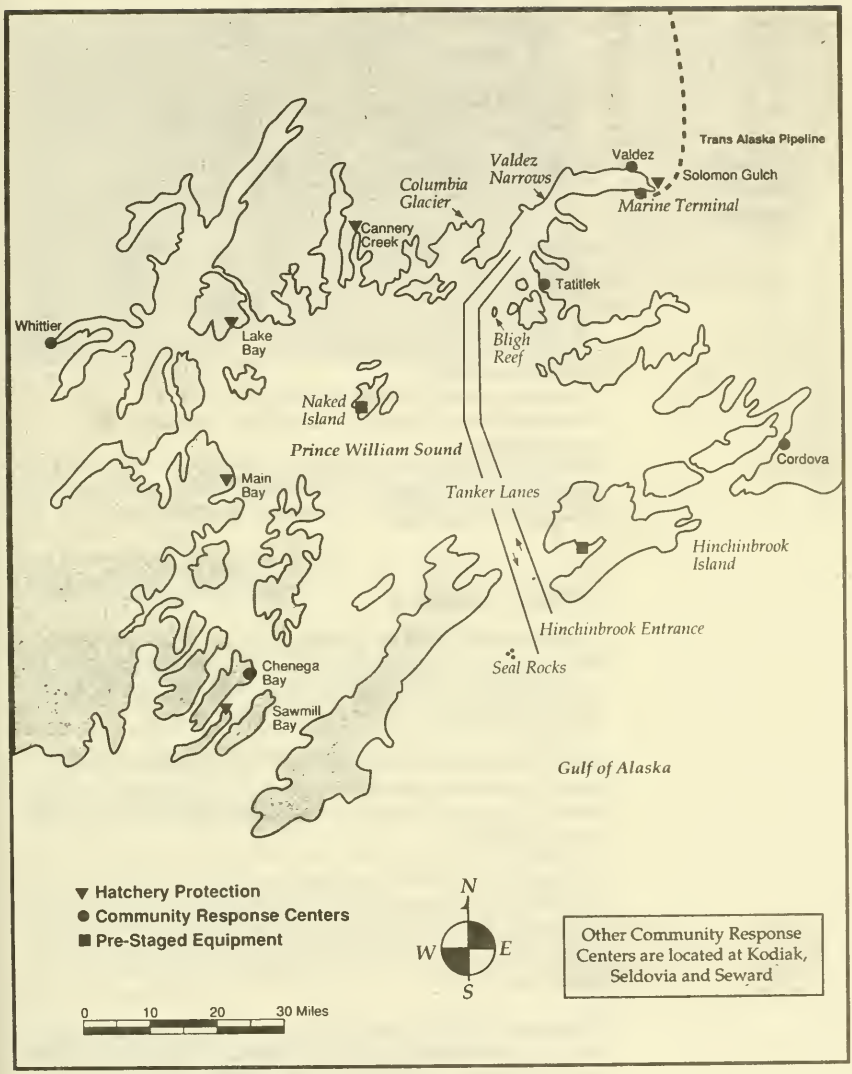
The comprehensive Plan was the subject of multiple hearings across the state. It was approved June 1991 by the Alaska Department of Environmental Conservation (ADEC) to be part of the contingency plan required by the state for all tanker vessels loading at the Valdez Marine Terminal. Using the Ship Escort and Response Vessel System (SERVS), the Plan provides prevention measures and initial oil spill response services to be carried out in response to spills from Trans Alaska Pipeline System (TAPS) -trade tanker vessels in Prince William Sound. It was prepared jointly by Alyeska and the vessel owners, operators and charterers.

Tanker vessel owners, operators and charterers have contracted with Alyeska to act as their initial spill response contractor. SERVS is also available to respond to spills from the Valdez Marine Terminal that might reach Port Valdez.

While the Plan is a complete document, it is not considered final. In addition to meeting state requirements, a complex contingency plan of this type will change over time as new technologies are developed and new information gathered from tests, exercises, public involvement and drills suggest improvements — in short, it is a living document.

Copies of the complete Plan are available at public locations such as community libraries or from Alyeska Pipeline Service Company. For more information about the Prince William Sound Tanker Spill Prevention & Response Plan, please contact:

Alyeska Pipeline Service Company
Environment, Safety and Health Division
1835 South Bragaw Street
Anchorage, Alaska 99512
(907) 265-8740


Trans Alaska Pipeline
Valdez
Solomon Gulch
Marine Terminal
Valdez Narrows
Columbia Glacier
Cannery Creek
Tatitlek
Bligh Reef
Whittier
Lake Bay
Naked Island
Prince William Sound
Cordova
Main Bay
Tanker Lanes
Hinchinbrook Island
Hinchinbrook Entrance
Seal Rocks
Chenega Bay
Sawmill Bay
Gulf of Alaska
▼ Hatchery Protection
● Community Response Centers
■ Pre-Staged Equipment
N
W
E
S
0 10 20 30 Miles
Other Community Response Centers are located at Kodiak, Seldovia and Seward

The focus of the Plan is on three goals:

- *To prevent oil spills from occurring*
- *To prepare for possible oil spills*
- *To respond if a spill occurs.*

- Prevention
- Preparation
- Response

PREVENTION

Preventing oil spills is a paramount goal. Alyeska has taken measures in the following areas to reduce risks:

- Escort Vessels
- Pilot Requirements and Pre-Sailing Briefings
- Radio Communications
- U.S. Coast Guard Vessel Traffic System Enhancements
- Transit Speed, Vessel Traffic Lanes, Weather and Ice Restrictions
- Emergency Services
- Tanker and Escort Vessel Emergency Towing Equipment
- Training, Exercises and Drills
- Drug and Alcohol Screening

ESCORT VESSELS

Alyeska has based a fleet of specially-fitted vessels and trained crews in Prince William Sound. Called the Ship Escort and Response Vessel System (SERVS), its job is to assist tankers in safe navigation through Prince William Sound and provide the first level of response in the event of a tanker problem or oil spill.

The SERVS fleet is headquartered in Port Valdez. It is a complete facility with dock, storage, communications and support services. Crews are on duty 24-hours a day, seven days a week and the fleet is on standby alert whenever a laden tanker is transiting the Sound.

The primary SERVS mission is to help prevent oil spills. All laden tankers leaving the Valdez Marine Terminal and all partially-laden inbound tankers are escorted by two SERVS vessels that can be of immediate assistance if a tanker experiences difficulties. At least one of these escort vessels is a specially-equipped Escort Response Vessel (ERV).

While the tanker transits the Sound, the two escort vessels stay within one-half mile and maintain radio communication. The escort vessels are closer than one-half mile when safety allows, especially when transiting the Valdez Narrows where a

Reducing the risk of future oil spills through prevention is a paramount goal of the Plan. One prevention method is seen here as two escort vessels accompany a laden tanker on its transit through Prince William Sound. The escorts stay within one-half mile of the tanker, maintain radio communication, and are positioned to best assist the tanker on its route from the Terminal, through Hinchinbrook Entrance, to Seal Rocks - a distance of about 65 miles.

maximum tanker speed of six knots is required. Each escort vessel is positioned to best assist the tanker if help is needed during its transit between the Terminal, through Hinchinbrook Entrance, to Seal Rocks – a distance of about 65 miles.

PILOT REQUIREMENTS AND PRE-SAILING BRIEFINGS

All laden tankers transiting between the Valdez Marine Terminal and an area south of Bligh Reef are required to have a state of Alaska licensed pilot on the bridge. In addition, a ship's officer, federally-licensed for the waters of Prince William Sound, must be on the bridge of the tanker between the Terminal and Seal Rocks. The captains of the tanker, both escort vessels and the state-licensed pilot participate in a briefing before the vessels leave the Terminal.

RADIO COMMUNICATIONS

Personnel on tankers and escort vessels communicate with each other during their transit and keep in contact with the Valdez Escort Response Base by radio. The tankers inform the escort vessels of all significant changes in course, speed or conditions, or at the earliest sign of trouble. The escort vessels warn the tanker of pending dangers and will question any action that raises doubts about the tanker's safe transit. Both the Coast Guard and Alyeska have installed upgraded radio networks to cover the Sound.

UNITED STATES COAST GUARD VESSEL TRAFFIC SYSTEM ENHANCEMENTS

Tanker vessels transiting in the traffic lanes, from the Valdez Marine Terminal to

Cape Hinchinbrook, are required to maintain communications and participate in the Coast Guard Vessel Traffic System (VTS). Vessels are also required to notify the VTS before entering or leaving the lanes. Vessel masters must notify the VTS of any operational changes or emergencies that occur while on transit, and must comply with VTS regulations. To assist tankers in their transit of the Sound, the Coast Guard has installed a navigational aid at Bligh Reef and has enhanced its radar coverage of the area.

The Coast Guard and tanker vessel owners, operators and charterers are also implementing a global positioning system that will track the position of tankers throughout Prince William Sound by satellite.

TRANSIT SPEED, VESSEL TRAFFIC LANES AND WEATHER RESTRICTIONS

Alyeska, tanker owners, operators and charterers have agreed to support the adoption of the following prevention measures by the Coast Guard:

MAXIMUM TRANSIT SPEED The maximum speed for laden tankers through Prince William Sound is 10 knots, unless lower speeds are mandated or are requested by the tanker or escort vessels.

ICE NAVIGATION PROCEDURES When vessels encounter glacial ice in the vessel traffic lanes, tankers will use the lowest speed consistent with safe navigation and remain within the vessel traffic lanes.

VESSEL TRAFFIC LANES Tankers transiting Prince William Sound will remain in the Vessel Traffic Lanes.

WEATHER RESTRICTIONS A decision to sail is based on the ERV's ability to assist a tanker in existing weather conditions. Tanker and escort traffic is not allowed to begin if sustained winds reach or exceed 40 knots in Prince William Sound or the Valdez Narrows. If the winds exceed 40 knots during an escort, the tanker and escorts will slow to a safe speed and maintain course providing both the tanker and escort masters agree. Localized winds and ice are also considered on a case-by-case basis by the Coast Guard.

EMERGENCY SERVICES

The SERVS escort vessels are under contract to provide emergency assistance to tankers. This arrangement allows for rapid decisions by the tanker master for towing or other assistance in the event of an emergency. Other factors that facilitate emergency services include: the close proximity of escort vessels to transiting laden tankers, open communications and on-board emergency equipment.

TANKER AND ESCORT EMERGENCY TOWING EQUIPMENT

In the event a tanker loses propulsion or experiences steering gear failure, escort vessels are capable of either towing or pushing the tanker. The escort vessel's excellent maneuverability facilitates securing a tow line to a disabled tanker. In addition, each tanker calling at the Terminal must have a pre-positioned emergency towing package on board. Escort tugs are also equipped with their own towing lines.

TRAINING

Tanker towing drills and exercises are frequently conducted to practice emergency procedures. This type of pratice is essential to efficient operations during situations requiring immediate action.

DRUG AND ALCOHOL SCREENING

Alyeska requires periodic certification that owners and operators of vessels comply with applicable government drug-testing regulations. Tanker captains are given alcohol breath tests one hour before the vessel departs from the Terminal. Crew members returning to the Terminal will be tested if intoxication is suspected. A blood-alcohol content of 0.04 percent or above will result in denial of access to the Terminal and tanker berths. A report will be made to the vessel's watch officer.

PREPARATION

- Prevention
- **Preparation**
- Response

Acting as the initial response action contractor for the ship owners, operators and charterers, Alyeska's goal is also to be prepared for an emergency: to have the necessary organizational management, community involvement, personnel, training and strategically-placed equipment to respond efficiently and effectively in the event of an oil spill.

Alyeska has a number of major skimming systems within Prince William Sound and in Valdez. A skimming task force is normally pre-positioned at Cape Hinchinbrook, Naked Island and in the Port of Valdez. The nameplate skimming capacity for this equipment exceeds 25,000 barrels per hour.

ORGANIZATION

The management organization for the Plan is built around the Incident Command System (ICS) concept. If a spill occurs, response management will be organized under ICS. It is a nationally-recognized crisis management and communication

method first developed for wildland fire fighting in California and pioneered for use in spill response by Alyeska. It is now used in many areas of Alaska. Endorsed by the Alaska Legislature, ICS is designed to respond to small and routine situations as well as to large, complex incidents where many agencies and entities might be involved.

The ICS organization initially consists of SERVS and Valdez Marine Terminal personnel. Depending upon the size and location of a spill, ICS can rapidly expand to include a Unified Command consisting of the Coast Guard, the Alaska Department of the Environmental Conservation, Alyeska and the spiller; the Alyeska Crisis Management Team; the Community Response Centers; fishing vessel owners and crews who have agreed in advance to perform spill duties; and other resources as are needed.

PERSONNEL AND TRAINING

Alyeska has approximately 200 SERVS personnel trained in oil spill response. Crews are available 24 hours a day, seven days a week. In addition, 45 dedicated oil spill response personnel are assigned to the Valdez Marine Terminal. These and several hundred other employees have received advanced spill training and continue to participate in ongoing training, drills and exercises.

A core group of 30 fishing vessels is on contract to provide immediate response support. In addition, another 300 fishing vessels are on contract and receive response training to assist in the event of a spill. The fishing boats are called out according to a pre-established procedure.

Alyeska and the tanker owners, operators and charterers also conduct a number of other training drills and exercises involving SERVS, the Valdez Marine Terminal, fish

Preparation, the second goal of the Plan, involves organization, personnel, training, community involvement and equipment. In this photo, Escort Response Vessels, a skimming barge and fishing vessels deploy boom and skimmers during a training drill.

hatcheries, contracted fishing vessels, community liaisons and the crisis management team. Major drills also involve state and federal agencies, the Prince William Sound Regional Citizens' Advisory Council and owner companies with hundreds of people participating. Training is a major aspect of preparation, and it also assists in the evaluation of the response measures in the Plan.

REGIONAL CITIZENS ADVISORY COUNCIL

The Prince William Sound Regional Citizens' Advisory Council (PWS RCAC) was formed by Alyeska to provide citizen comment on the company's operations and to review the Terminal and Prince William Sound contingency plans. Although funded by Alyeska, the Council operates independently and is composed of representatives from communities in Prince William Sound, the Kenai Peninsula, Kodiak and special interest groups from the area including, for example, the National Wildlife Federation and Chugach Alaska Corporation. The PWS RCAC is certified by the President of the United States under the provisions of the Oil Pollution Act of 1990 (OPA 90).

In addition, the PWS RCAC provides comment on port operations, Terminal operations, vessel traffic systems, environmental monitoring and community education. The PWS RCAC has eight committees, 14 professional and administrative staff and a budget of about $2 million.

EQUIPMENT

Alyeska maintains substantial quantities of oil spill response equipment for use in Prince William Sound. Alyeska has also established pre-staged equipment locations in the Sound. These locations are stockpiled with spill equipment such as boom, skimmers, lightering equipment and storage vessels that allow for rapid deployment if needed. In addition, the five fish hatcheries in the Sound have been supplied by Alyeska with boom and other equipment for their protection in the event of a spill. Community Response Centers have been established within the Sound to provide pre-staged equipment for use in a response.

While the following equipment is in place throughout Prince William Sound, Alyeska expects the locations and types of equipment to change over time as newer equipment is developed and more experience is gained. The SERVS fleet stationed in the Sound is currently composed of the following vessels:

ESCORT RESPONSE VESSELS (ERVs) SERVS has five ERV's whose primary function is to safeguard tankers in transit and provide rapid spill response. The ERVs are equipped to tow or assist tankers with power or maneuvering problems, to carry spill response equipment and contain, recover and store oil. An ERV is accompanied by an escort tug when escorting a laden tanker through Prince William Sound.

SKIMMING BARGES Alyeska has five barges positioned in Prince William Sound

Two Aerial Dispersant Delivery Systems (ADDS Packs) are stored at the Anchorage International Airport along with 60,000 gallons of dispersant. The ADDS Pack is designed for quick mobilization aboard a Lockheed Hercules transport, shown here during an exercise. Alyeska also has helicopter and tug-based systems. In the event of an oil spill, use of dispersants would require approval of the federal on-scene coordinator.

containing boom and skimmers. Storage capacities are from 73,000 and 133,000 barrels. On-board skimmers are capable of recovering 4,200 barrels per hour.

VALDEZ STAR A self-powered 123-foot vessel, using the Dynamic Inclined Plane skimming system. It can hold 55,000 gallons of recovered oil and transfer recovered oil to a storage barge or another vessel while skimming for continuous recovery operations.

LIGHTERING VESSEL A skimming barge has also been outfitted with lightering equipment and is stationed midway in the Sound. The barge is equipped to receive oil from a damaged tanker. It has a storage capacity of 133,000 barrels of oil and carries portable pumping systems that can transfer oil at a rate of 4,000 barrels per hour.

OTHER EQUIPMENT

Alyeska has stored other oil spill response equipment at SERVS, the Terminal and in key areas throughout Prince William Sound. These stockpiles include:

BOOM Types include harbor light duty, inter tidal, and ocean boom as well as fire containment boom for in-situ burning of spilled oil. About 178,000 feet of boom is available in the Sound.

DISPERSANT DELIVERY SYSTEMS Two chemical dispersant delivery systems are stored at the Anchorage International Airport along with 60,000 gallons of dispersant. The integrated systems are designed for quick mobilization aboard a Lockheed Hercules transport, if use is approved by the designated federal on-scene coordinator. Stationed in Valdez are two helicopter aerial dispersant systems. In addition, three Valdez-based tugs are equipped with Spill Spray dispersant application systems.

SKIMMERS A variety of skimmers to meet the many conditions of the Sound are stored and ready for use on SERVS vessels and at SERVS and Valdez Marine Terminal warehouses. In all, about 63 skimmers are available with a combined recovery rate of 55,212 barrels per hour.

FISHING VESSELS More than 300 fishing vessels are on contract with Alyeska throughout Prince William Sound, the Kenai Peninsula and Kodiak Island. A number of specialty vessels such as landing craft and tenders are also included in the Plan. In the event of a spill, the fishing vessels would be used to transport response equipment, deploy and tend boom, mobilize pre-staged hatchery protection equipment and perform other response missions.

HELICOPTERS A BO-105 twin-engine helicopter is based in Valdez for use by SERVS as required for emergency response.

RESPONSE

- Prevention
- Preparation
- **Response**

Although Alyeska has developed strategies and provided resources to respond to a catastrophic spill of more than 300,000 barrels, the Plan acknowledges there are few circumstances in which such a catastrophic spill can be fully contained and recovered. For this reason, the Plan places a strong emphasis on prevention of oil spills.

However, if an oil spill occurs, the initial response plan is designed to use strategies, organization, equipment and manpower that provide rapid on-water, near-shore and on-shore responses. The vessel operators are still developing the

The third goal of the Plan is response to an oil spill of any size. The Plan outlines response strategies that employ equipment such as the Valdez Star skimmer. The 123-foot vessel, shown here, uses the Dynamic Inclined Plan skimming system, which can recover up to 2,000 barrels of oil per hour. It has a recovered oil storage capacity of 55,000 gallons and can transfer recovered oil to a storage barge or another vessel while skimming for continuous recovery operations.

near shore component of the Plan. The SERVS fleet, assisted by fishing vessels and other Alyeska and community resources, is organized to provide oil spill response depending upon the scope of the spill.

EMERGENCY RESPONSE CENTERS

The Valdez Emergency Operations Center (VEOC) is located near the Valdez Escort Response Base in Valdez Harbor, and serves as the center for all major spill operations. Currently the Valdez Civic Center is used, but a new facility is planned and will be built in the City of Valdez in 1994. Until the new VEOC is constructed, initial response to a spill will be handled from the Terminal Emergency Operations Center. Once contingency personnel are mobilized and stored support equipment installed at the Civic Center, then response operations will transfer there.

COMMUNITY RESPONSE CENTERS

Under the Plan, eight Community Response Centers have been established. Each is responsible for coordinating emergency responses, manpower and equipment as part of the ICS organization. The Community Response Centers are located as follows:

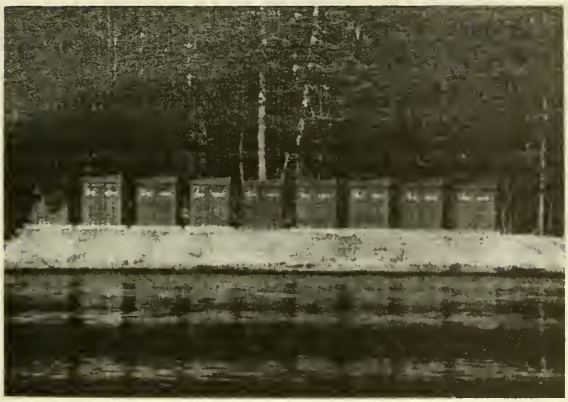
- Chenega Bay
- Cordova
- Kodiak (Kodiak Island Borough)
- Seldovia (Kenai Peninsula Borough)
- Seward
- Tatitlek
- Valdez (Port Valdez Area)
- Whittier

Oil spill response equipment such as boom and absorbents are pre-positioned at Community Response Centers within the Prince William Sound area.

FISH HATCHERY PROTECTION

As part of the protection and response components of the plan, Alyeska implemented a Hatchery Protection Program. At five fish hatcheries located in Prince William Sound, Alyeska has stored oil spill response equipment and provides training of local people for its use. Anchors and buoys have been pre-set for effective boom deployment at several of these hatcheries. These hatcheries are located at Main Bay, Sawmill Bay, Lake Bay, Cannery Creek and Solomon Gulch.

Alyeska has worked with the communities of Whittier, Valdez, Chenega Bay, Tatitlek and Seward to identify sensitive areas that may require protection in the event of a



Pre-staged oil spill containment and cleanup equipment is stored in shipping containers near Prince William Sound hatchery sites. The containers are placed on a prepared gravel pad and equipped with roofs to protect against heavy snowfall. To minimize visual impact, the storage containers are painted to match the surrounding landscape.

spill. Those areas have been surveyed to determine the amount of boom needed, and the optimum place to position that boom.

RESPONSE STRATEGIES

In the event of an oil spill, the Plan outlines strategies based upon situations and procedures for rapid response, containment, lightering, surveillance of the spill, and the use of chemical dispersants or in-situ burning if approved.

The plan identifies the following critical steps in responding to any spill incident:

- Inform local communities and authorities
- Determine location, size, threat of further discharge, and ERV response
- Determine strategy of containment
- Formulate and execute a plan for dealing with containable and uncontainable oil
- Assess and implement longer term requirements

Sections of the plan discuss the many factors in tailoring a specific response to the situation, area and conditions of spilled oil. These factors include conditions such as weather, tides, currents, anchor points, sea conditions and effective booming techniques.

RESPONSE SCENARIOS

For planning purposes, and to show what might happen if a spill were to occur under specific conditions, the Plan contains three scenarios that illustrate hypothetical spill responses:

SCENARIO 1 covers the response strategies for a 2,000 barrel spill at the Valdez Terminal.

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SCENARIO 2 outlines the strategies for a 35,000 barrel spill in Valdez Arm.
SCENARIO 3 describes the actions for responding to a 300,000 barrel spill at Hinchinbrook Entrance.

NEARSHORE OIL SPILL RESPONSE PLAN

The *Prince William Sound Nearshore Oil Spill Response Plan* (Nearshore Plan) was submitted to the Alaska Department of Environmental Conservation by the shippers in May, 1992. The Nearshore Plan is a supplement to the *Prince William Sound Oil Spill Prevention and Response Plan* (Oil Spill Plan). Its purpose is to provide additional guidelines and direction for response to oil that has escaped initial on-water containment and recovery activities. Nearshore can be defined as the area where on-water equipment loses effectiveness due to shallower water. This usually takes place between the shoreline and deep water areas. The Nearshore Plan is the result of a cooperative effort by industry, regulators and citizen groups. It is an integral part of the Oil Spill Plan and is structurally similar. It provides for reporting procedures, management structure, resources, response techniques and logistics. Additional equipment will also be purchased to provide adequate resources to carry out the plan.

SHORELINE CLEANUP PLAN

The *Prince William Sound Shoreline Cleanup Plan* (Shoreline Plan) was completed in September 1990 as a supplement to the *Prince William Sound Oil Spill Prevention and Response Plan*. The Shoreline Plan provides a spill responder with assistance in making decisions on shoreline cleanup operations. It describes shoreline cleanup techniques should an oil spill reach land, and is the third element of oil spill response plans that include on-water and near-shore response. During 1992 and 1993, about $3.3 million will be spent to purchase equipment to implement the Shoreline Plan. This equipment includes boom, skimmers, pumps and shoreline clean-up tools. The equipment is stored in Valdez and packaged for mobilization anywhere in the Sound.

QUESTIONS AND ANSWERS ABOUT ALYESKA'S PRINCE WILLIAM SOUND OIL SPILL PREVENTION & RESPONSE PLAN

Q: What is different about this plan from other oil spill plans.

A: The Prince William Sound Tanker Spill Prevention & Response Plan, developed with task force participation of local communities and federal and state agencies, implements a number of new strategies and programs that are uniquely tailored to the conditions and geography of Prince William Sound. The presence of the SERVS fleet, the escort, navigation and communication procedures, alcohol testing, and increased community involvement all combine to make it a very comprehensive plan. Indeed, this Plan provides for more oil spill response equipment for use in a single location than can be found anywhere else in the world.

Q Does this Plan "guarantee" no more large oil spills?

A: No. There isn't a way to guarantee no more oil spills. However, because the Plan is based on extensive prevention efforts. Preparation and response are for maximizing containment and clean-up after a spill has occurred. These strategies have been developed from experience, current studies and community involvement; as a result the risk of a major oil spill occurring again is significantly reduced.

Q If a spill occurs, who will be in charge?

A: As defined in the Plan, Alyeska will provide initial oil spill response services to tankers calling at the Terminal whose owners, operators or charterers have entered into a contract with Alyeska. Thereafter, with approval by the state and federal on-scene coordinators, the vessel owner, or a state- and federally-approved designee of the owner, will assume management and control of the spill response.

Q Is Alyeska adding employees for this Plan?

A: Alyeska has already added more than 200 personnel as a result of this Plan. Almost all of these are staff and crew attached to the SERVS unit in Valdez.

Q How are communities in Prince William Sound involved?

A: Communities throughout the Sound, as well as in the Boroughs of Kenai and Kodiak have been and continue to be involved in key aspects of this Plan. These include the review and comment on the content and implementation of this Plan, serving as sites for resource centers and stockpiles of spill response equipment, and providing fishing vessels and local support in the event of a spill. Through the Prince William Sound Regional Citizens' Advisory Council they have an information link to and from spill response control centers.

Q: How does Alyeska know that enough equipment is on hand to deal with another spill?

A: The Plan and its equipment and manpower requirements are determined by state and federal regulation and are based on a planning standard set by state and federal law. The plan has evolved to meet the response planning requirements established after 1989 by Congress and the Alaska Legislature. Review and approval of the plan by federal and state authorities will determine that the vessels' reliance on Alyeska for initial response is consistent with those planning requirements

Q: What function does the Prince William Sound Regional Citizens' Advisory Council fulfill?

A: The PWS RCAC is an independent citizens council which provides advise to Alyeska based on independent third party review of the company's Terminal and Prince William Sound operations, as well as contingency plan review. The 19-member council provides broad representation from the communities, native organizations and special interest groups that could be impacted if a spill occurred.

Testimony of

RICK STEINER

University of Alaska Marine Advisory Program

Cordova, Alaska

before

The United States House of Representatives

Committee on Merchant Marine and Fisheries

on

Prince William Sound Four Years After the Exxon Valdez Oil Spill

March 24, 1993

Mr. Chairman and members of the committee; thank you for holding this hearing on the state of Prince William Sound four years after the Exxon Valdez disaster. Those of us in the oil spill region are relieved to know that this disaster is still important to the American people, and that Congress is responding. I will be speaking today not on behalf of the University, but rather on behalf of the damaged environment. I have lived in Cordova for 10 years, am the University of Alaska's marine advisor for the Prince William Sound region, and am co-owner of a Prince William Sound salmon seine permit.

There are many dimensions to the Exxon Valdez Oil Spill (EVOS); far too many to cover here. You have asked to be informed in three areas--

1. Damage
2. Settlement and Restoration
3. Lessons learned

Before going into the details of your request, it seems necessary to provide a brief context for you to appreciate Prince William Sound before the spill.

John Muir, sailing as naturalist aboard the Harriman expedition in the late 1800s, wrote the following passage, an eloquent expression of what it is like to first see the place:

> "...just as we entered the famous Prince William Sound that I had so long hoped to see, the sky cleared, disclosing to the westward one of the richest, most glorious mountain landscapes I ever beheld--peak over peak dipping deep in the sky, a thousand of them, icy and shining, rising higher, higher, beyond and yet beyond one another, burning bright in the afternoon light, purple cloud-bars above them, purple shadows in the hollows, and great breadths of sun-spangled, ice-dotted waters in front. The nightless day circled away while we gazed and studied, sailing among the islands, exploring the long fjords, climbing mountains and glaciers and hills clad in blooming heather--grandeur and beauty in a thousand forms awaiting us at every turn in this bright and spacious wonderland."

And in this "bright and spacious wonderland" lived some of the most self-sufficient people on Earth. They had lived here for millennia, hunted and fished here, but had hardly left a mark.

Even in the twentieth century, humans lived in a somewhat dynamic balance with the place--fur hunting, mining, commercial fishing. But the region's future seemed cast with the decision to site the Trans Alaska Pipeline into Valdez. Cordova's fishermen opposed this decision, but ultimately lost. The oil industry and

the federal government made promises they knew they couldn't keep, and public attention drifted away with a false sense of security. An Exxon Valdez was bound to happen, sooner or later.

Now to your request for information.

Damage

The Exxon Valdez was the most damaging oil spill in human history -- more birds and marine mammals were killed than in any other ever recorded. The chronic sub-lethal biological effects were profound and in many instances on-going -- debilitating brain lesions, reproductive failure, genetic damage, curved spines, lowered growth and body weights, altered feeding habits, reduced egg volume, liver damage, eye tumors, physiological impairment.

None of this is all that surprising. Whenever 40,000 tons of a toxic persistent chemical spills into a pristine, biologically productive, sub-arctic marine environment, we should expect the damage to be extensive. The damage was extensive, and will probably persist for many more years.

The oil eventually spread over some 10,000 square miles of Alaska's costal ocean, and oiled 1200 miles of some of the most magnificent, beautiful shoreline in the world, including several national parks, wildlife refuges, and a national forest. Oil still remains trapped in mussel mats and in some beach sediments. Population levels of some injured species such as bald eagles have recovered fairly quickly, many have not. Some populations, notably murres, are not expected to show complete recovery for as long as 70 years. Although pink salmon returned to Prince William Sound in high numbers for two years after the spill, they are now showing evidence of genetic injury. Last year's return was disastrous, and included the first significant failure ever of runs returning to commercial hatcheries in the Sound. Natural processes, most notably winter storms, deserve the credit for cleaning most of the exposed shores. The document included here as Appendix I, released by the federal and state agencies which serve as Trustees of the natural resources settlement, February 8, summarizes injury, geographic extent of injury, and the status of recovery as of December 1992. This document lists the following resources as showing evidence of continuing sublethal or chronic effects and measured declines in populations after the spill: sea otters, river otters, black oystercatchers, common murres, harlequin ducks, pink salmon, sockeye salmon, intertidal and subtidal communities. In several species it is unknown whether they are recovering at all.

Social and psychological effects on the region's 25,000 residents were enormous -- stress disorders, crime rates, anger and distrust of government and industry, uncertainty about the

future, and general anxiety all soared after the spill. Some of these effects abated somewhat with time, but many persist.

Economically, the spill was devastating. It had an extraordinary, destabilizing effect on the region's economy. Exxon promised to make us whole economically. Over the past 4 years, however, Exxon has done everything imaginable to resist compensating victims of its oil spill.

In 1989 suits were filed against Exxon (for causing the spill) and Alyeska (for being unprepared to contain and clean up the spilled oil), on behalf of tens of thousands of injured people including commercial fishermen, seafood processors, cannery workers, subsistence natives, native corporations, municipalities, landowners, aquaculture associations, area businesses and sportsmen. Expert witnesses document the economic losses to these groups at more than $2.6 BILLION. (Support for these figures has been submitted to the record.) Ninety percent of those losses remain uncompensated, four years after the spill.

From the outset in 1989, all the victims have wanted is an impartial jury to decide whether they are right, or Exxon is right, about what represents fair compensation for the losses people suffered as a result of the spill. Exxon and Alyeska have employed, and continue to employ, every legal maneuver they can think of to prevent the case from coming to trial, while they fight a war of attrition. Apparently, they prefer to spend more than $1 million a month on lawyers to fight the claims in court, rather than make reasonable payments in settlement.

In 1991, Anchorage Superior Court Judge Brian Shortell scheduled an April 1993 trial in his court. Exxon and Alyeska employed a series of questionable legal maneuvers to hijack the cases from the state court to federal court, in a desperate attempt to avoid a 1993 trial. The result was postponement of the trial date until June 1994. Undoubtedly further legal maneuvers will be attempted.

Meanwhile, the past two years of pretrial discovery have produced evidence of the following:

- Captain Hazelwood (who has refused to answer any questions on grounds of Fifth Amendment privilege) had a half-empty bottle of Jack Daniels in his quarters at the time of the spill, in violation of regulations.

- Contrary to Exxon's public representations, including representations to the U.S. Congress, Exxon officials knew that Cpt. Hazelwood had a serious drinking problem, knew he had been through a rehabilitation program in 1985, knew that he had resumed drinking,

and did nothing to monitor his sobriety or to replace him as Master of the Exxon Valdez. Specifically, they had been told prior to March 1989 that Hazelwood had a habit of leaving the bridge while his ship was in confined waters, in violation of Exxon policy and Coast Guard regulations, yet Exxon did nothing about it.

- Alyeska officials and the seven oil companies that control Alyeska knew for at least two years before the spill that they did not have the ability to deal with a major tanker spill in Prince William Sound, yet they did nothing about it until it was too late. Phone tapes show that their main focus after the spill was to avoid negative publicity and reopen the terminal.

Until victims are fairly compensated, the spill's socioeconomic wounds will fester.

The Settlement

The government's economic valuation of natural resource damages, as difficult as it was to put a price on the priceless, amounted to about $2.8 billion. Residents of the region first proposed a $2 billion out-of-court settlement of government claims against Exxon in the summer of 1990. The final settlement, approved October 8, 1991, collected only $25 million as a criminal fine, $100 million in criminal restitution (split between the state and the federal government) and $900 million over 10 years for civil damages. The present day value of the settlement; i.e., the real cost to Exxon, was only about $434 million.

The people in the region were reluctant to accept such a low settlement for the extraordinary damage done by this spill, but agreed largely because we all recognized that an immediate settlement would provide money necessary to aid the recovery of the damaged ecosystem. Years of litigation would not. Since the settlement, however, not one cent has been spent on any substantive restoration.

Although the governments sold the idea of an early settlement solely on the basis of "getting money to the environment now, as opposed to years from now," the first thing Governor Hickel and then Interior Secretary Manuel Lujan proposed after settlement was to just put all of the Exxon money into an "endowment," i.e., just leave it all in the bank.

Today, a year and a half after the settlement, the $100 million criminal restitution lies idle in state and federal treasuries, while several popular plans for spending this money on restoration projects were killed by gubernatorial veto or failed

to pass Congress. In their pleadings before the U.S. District Court asking for approval of the plea agreement, U.S. Department of Justice attorneys told Judge Holland that restitution for environmental crimes should go largely for environmental purposes. The public has spoken loudly and clearly that they would like most of it spent on habitat acquisition. State and federal administrators however, seem to have other agendas to advance here. The state administration is presently putting together their plan for spending this money, which is said to be largely "bricks and mortar." And in an internal document we have obtained entitled "Federal Restitution Funds-Suggested Projects," the three federal Trustee agencies show just how far from public opinion they have drifted.

Of the $20 million in projects suggested by the federal Trustee agencies, only $366,000, less than 2%, is suggested to go toward acquisition and protection of threatened coastal habitat. On the list, instead, are projects to build facilities, increase human use of the area, cleanup several hazardous waste sites in the region, trap foxes in the Aleutians, millions in further studies, and incredibly, intentionally spill more oil for research purposes.

The irony of using criminal restitution funds from the Exxon Valdez spill to intentionally spill more oil is obvious. This list of suggested projects to 'restore' the environmental damage of the Exxon Valdez spill confirms the public's fear about agency agendas. Building facilities and increasing human use of the area are at best neutral, at worst detrimental to recovery; cleaning up hazardous waste sites, many left by federal agencies (F.A.A., NMFS, etc.) is certainly worth doing, but is also certainly a normal agency duty; and spending millions to further document damage helps nothing to recover.

The Trustees Council that administers the $900 million in civil recoveries, is moving at a glacial pace. The people in the oil spill region are furious that the largest expenditure out of the Council to date has been the reimbursement of spill response expenses to the agencies. Of the $240 million paid so far to the Trustees, about $40 million was refunded to Exxon, and $110 million was gobbled by government agencies as reimbursement. The only other monies actually spent so far have gone to further studies and administrative overhead.

It is widely felt in the region, that the federal government should not be taking additional reimbursement out of the limited Restoration Fund. Until the completion of the ongoing G.A.O. audit (requested by Congressman Miller) looking at agency spill expenses, no more expenses should be taken as reimbursement. Those expenses that are found to have not been legitimate spill response expenses should be left in the Restoration Fund. At the very least, any further reimbursement of agency expenses out of

the settlement money ought to be spread equally over the remaining life of the settlement, or taken at the end of the period. This will maximize money available for restoration purposes up front.

One of the greatest fears the region's residents have is that the Trustee agencies will be tempted to use restoration dollars to fund normal agency research and management duties. The Trustees are established by court order "to act on behalf of the public as Trustees of injured natural resources." There is concern that they often lose sight of this charter, and instead act on behalf of their agencies, not as Trustees of injured natural resources.

The government settlement of claims against Alyeska, the pipeline consortium, was terribly inadequate. Alyeska, who fully knew they had no capability of responding to an Exxon Valdez size spill and did absolutely nothing about it, paid only $32 million to settle all its liability with the state and federal governments. This is approximately the value of the oil that goes through the pipeline each and every day. One reason this was so low, of course, was that the settlement with Exxon completely released Alyeska from any responsibility for natural resource damages.

RESTORATION

Damaged species will recover on their own if allowed to, that is, if the ecosystem is afforded as much protection as is possible from further stress, while ensuring a healthy and stable economy in the region. Anything practical that can be done to directly aid recovery of injured resources should be done, but, unfortunately not much can be done in the way of direct restoration.

It is time we admitted that there really is no such thing as oil spill restoration. We simply cannot fix a broken ecosystem like we can a broken car engine. It is, in the end, pretentious to suggest that we can put Prince William Sound, the outer coast of the Kenai Peninsula and the Kodiak/Afognak area back together.

But there is something we can do to help the damaged ecosystem heal itself and to help offset the extraordinary loss from this spill. Here is the key to this entire process. The proposal being put forward by residents of the region is to restore what we can - impacted fish resources deserve special attention because they are so important to the region's economy and character - and use most of the remaining funds to purchase privately-owned coastal habitat to protect it for species impacted by the spill and to offset what was lost here. There are willing sellers of land, timber rights and conservation easements. All waters in the region below the level of high tide are in public ownership and can be managed to assist recovery. Much of the

uplands, though, are in private ownership and thus any altered management sought in the interests of restoration will have to acquired on a willing seller basis. Monies paid by the Trustees to acquire coastal habitat will provide an important economic stimulus to local communities in that dollars will flow directly to local Native Corporations and their shareholders while preserving other, more sustainable economic growth options for the future.

Hundreds of thousand of acres of coastal rainforest are scheduled to be clearcut in the next few years. This will only compound oil spill damages. Forests in the oil spill region represent the northernmost extension of the world's coastal temperate rainforests. They form only a thin band on steep slopes between the sea and high, glacier-capped mountains. As such, they provided critical habitat for species injured by the spill such as bald eagles, harlequin ducks, marbled murrelets, and protect the water quality essential to the health of salmon spawning streams. These forests are also important to the region's scenic beauty and thus, its rapidly developing tourism industry. Areas considered important for protection include: Eastern and Southwest Prince William Sound, within Chugach National Forest; inholdings within Kenai Fjords National Park; inholdings within Kachemak Bay State Park; lands adjacent to or within the Kodiak National Wildlife Refuge.

The "services" provided by these intact watersheds/ viewsheds are real. The largest part of the government economic valuation of the natural resources damage was based on what is known as "contingent valuation." This methodology, now widely accepted by economists as one of the best ways to put a price on non-market resources, assigns considerable value to "non-use" values and services of a resource. Things such as the very existence of an unspoiled area, its availability to future generations, its wilderness and aesthetic value all figure heavily into the full value of what is lost in environmental crimes such as this. The government economic studies document that these sorts of resource services were seriously damaged by the Exxon Valdez oil spill. Thus, if we can do little else with the settlement money, we certainly can contribute to the replacement of such damaged non-use values through the intact retention of adjacent areas that were not damaged by the spill, but are currently threatened.

The preservation of the most important areas of coastal forest habitat is considered by many to be the most feasible means of aiding recovery and compensating for this environmental disaster. Federal Trustee agencies acknowledge this reasoning in their internal February 25, 1993 document "Federal Restitution Funds-Suggested Projects":

> In addition to what can be accomplished by means of direct restoration and replacement of specific injured resources/services, A MORE ENCOMPASSING STRATEGY FOR MITIGATING THE SPILL IMPACTS IS TO PROTECT THE SPILL-AFFECTED ECOSYSTEM AS A WHOLE. Many coastal and upland areas provide critical lifestage components to a variety of species, including those injured by the oil spill. Many of these areas make up the visual and recreational experiences enjoyed by visitors. Acquisition of inholdings within federal conservation areas inside the oil spill zone will provide a long-term, and stable complex of habitat types necessary for a variety of species and will make those lands less susceptible to deleterious effects associated with developmental activities.

A comprehensive acquisition program will also help ensure a sustainable future for commercial fishing, sport fishing, hunting, tourism, recreation, subsistence and other economic and cultural activities important to the region's economy.

Ironically, since the spill, several thousand acres of coastal forest have been clearcut along shores of the oil-impacted region. There has yet to be one inch of habitat protected, even though many of the imminently threatened areas are considered by the Trustee agencies themselves to be high priority to be protected for the recovery of the region. The Trustees have initiated a process to begin considering this imminent threat issue, and should be encouraged to expedite it as much as possible. Congress must not come away from this hearing with the idea that the restoration process has proceeded well. There is a very large amount of frustration with it in the oil spill region. The Alaska Center for the Environment summarizes the overwhelming sentiment of the environmental community as follows:

> Unless the Trustees embark immediately on an aggressive campaign to use the $500 million primarily for acquisition of habitat . . . the opportunity to leave a grand and lasting legacy in the wake of this environmental tragedy will be lost, and the Settlement will be a failure.

Congress can help to stretch the limited amount of money available for habitat acquisition by exempting any transaction on behalf of restoration from federal income tax requirements. Thus, perhaps 30% more habitat can be protected by the same amount of money.

The sluggishness of the restoration process in Prince William Sound demonstrates the need for a national interim restoration policy that can be used in the next large spill. An interim restoration program would do those things that aid natural resource recovery, such as the protection of an injured ecosystem from further human induced impacts and disturbance, even before the scientific damage assessment is complete or money is collected from the responsible party.

Whenever there is a big pot of money available, there will inevitably be wild proposals. Some talk about building roads and tourist facilities-- things that could place more stress on an already stressed ecosystem. We must be careful that our restoration efforts do not interfere with any natural recovery processes. Further, it must be remembered that this settlement is a natural resources settlement, and represents the only compensation available to restore the damaged environment. Human communities have their claims pending with Exxon and Alyeska. THIS FUND, THEREFORE, SHOULD BE SPENT LARGELY IN AN ENVIRONMENTAL MANNER.

There is a limit to what science can now provide. Many people feel that while there is an on-going need for a focused program of long-term recovery monitoring, there is little reason to continue research just to document damage. We know oil and water and fish and wildlife don't mix.

People also feel that science policy in the Trustee Council agencies needs considerable improvement. Congress could help by asking the National Academy of Sciences (NAS) to convene a panel to review what research has been done to date and to suggest what studies ought to be done to satisfy the legal requirements of the settlement and to get the most scientific bang-for-the-buck. The NAS could also recommend a more workable administrative structure, such as a research fund administered somewhat independently of the agencies. At the very least, this could help us conduct a better Natural Resource Damage Assessment program on the next spill.

The world is watching us here. We are the only nation in the world that acknowledges and accepts "natural resource damages" as a compensable loss. What we do with this natural resource settlement has enormous implications. If we spend it wisely, buying the protection of areas that are important to local people and the nation, we will have done something, however small, to compensate for the extraordinary damage done by the Exxon Valdez spill. This will clearly demonstrate that in technological accidents that cause a large amount of environmental damage, while we often cannot fix much of the damage directly, we as a society damned well intend to collect an amount of money comensurate to the damage from whoever is responsible, and at least do something positive for the environment to offset what we lost. This sends a

powerful message to industry throughout the world. In this case, the rest of the world will react in a positive manner, and hopefully follow suit. If we, however, can't get it together to accomplish anything of substance out of this settlement, the international community will probably remain adverse to the entire notion of natural resource damages. What happens with this pot of money is considered by many to be the bellweather case for how humanity intends to care for its environmental mishaps. It is one thing to drive a boat on a rock. A lot of us know how that's done. But it's quite another to have the political will to attend to the damage caused as a result.

LESSONS

Perhaps the most straightforward lesson out of all this is that WE SIMPLY HAVE TO DO BETTER AT PREVENTING OIL SPILLS. The National Research Council estimates that about 3 million barrels oil are spilled through tanker accidents into the world's oceans each year--that's over 10 Exxon Valdez spills. Experience shows us that once the oil is in the water, the battle has really been lost. Seldom is more than 10% recovered. The damage has been done.

We have improved, to some extent, tanker safety as a result of the Exxon Valdez. But, there is still a great deal of room for improvement. The OPA '90 was a sincere attempt by Congress to improve the safety of oil shipment along U.S. coasts. Two problems exist, though: OPA '90 didn't go nearly far enough, and OPA '90 has not been fully implemented.

In Prince William Sound, we have a vastly improved system of spill prevention and response preparedness, including escort vessels, expanded pilotage, better communication protocols, enhanced Vessel Traffic System (VTS), transit speed limits at 10 knots for laden tankers, weather restrictions that prohibit tankers from sailing when winds reach or exceed 40 knots, towing drills, spill response drills, a lot of response equipment, community response centers, more than 300 fishing vessels trained and under contract for spill response, a Regional Citizens Advisory Council to oversee spill prevention and response preparedness, and a more rigorous response command structure.

But even in Prince William Sound, there is still room for improvement. We need tractor tugs instead of the anchor handling tugs now escorting or assisting a loaded disabled tanker. We also need a large, ocean-going salvage vessel to render assistance to disabled tankers outside the entrance to the Sound. The VTS should be operated by licensed mariners, and their shifts should be reduced from the present 12 hours to no more than 6 hours, in order to improve vigilance.

Incredibly, there is still confusion regarding Alyeska's statutory duty to respond to oil spills. We feel strongly that federal law is clear on this, that Alyeska does have a duty to respond, but apparently, Alyeska still considers themselves voluntary responders. It would be helpful to have Alyeska's confusion on this important issue clarified by the Committee.

The double hull phase-in schedule should be accelerated and proposed standards for double hulls need to be improved. Inter-hull spacing should be set at the vessel width divided by 15, or 2 meters, whichever is greater. And scantlings (steel strength) should be increased by at least another 30%. During the phase-out of single-hulled vessels, interim regulations should at the very least require them to load only their center cargo tanks, leaving their wing tanks empty. This will only reduce their cargo-carrying capacity by about 15-20%, and will significantly reduce the amount spilled in most groundings and collisions. Additional interim measures for single-hulled vessel safety should include tug escorts, expanded VTS coverage, and tank level monitoring devices.

The Coast Guard's Port Needs Study, mandated by OPA '90, identified 11 U.S. ports that would be safer with expanded VTS coverage, but the Coast Guard has gone no further with the issue. The Coast Guard was required by OPA '90 to identify areas that should have tug escorts for laden tankers, beyond what was required in Prince William Sound or Puget Sound. They have yet to do this. Tanker-free zones should be made mandatory along both the U.S. east and west coasts. There is no reason for transiting tankers to sail any closer than 50 miles from shore. The Coast Guard's attention to this issue should be given a high priority. It should be noted that the U.K. government has now asked for voluntary compliance with several new areas-to-be-avoided as a result of the Braer disaster in Shetland.

Tanker owners and key shoreside personnel should be licensed, as in the aviation industry. Classification societies that survey and certify vessels for insurers, should involve the public in their operation and oversight. Vessels sailing with certificates from classification societies that are not members of the International Association of Classification Societies should be more thoroughly and more frequently inspected. Voyage data recorders (analogous to flight recorders) should be required on all vessels calling at U.S. ports. Lloyd's of London has developed a "black box" that automatically records vital vessel data for 40 days, and it is ejected if the vessel sinks and can then be recovered. Electronic chart display information systems (ECDIS) should be improved and installed on vessels to plot exact position and sound an alarm if needed.

The material condition of many of the tankers hauling oil in U.S. waters is substandard, and the Coast Guard's marine

inspection program is not sufficient to detect many of the problems. Foreign tankers carry almost all of our oil imports into the United States, and present real safety problems. (See appendix II) The Tanker Advisory Center in New York rates over one hundred of these tankers at its very lowest safety rating.

The Coast Guard admits, "Increased vessel size, sophisticated automation systems, quick in-port turn around, and limited Coast Guard resources create formidable problems impacting the their ability to reasonably ensure that U.S. ports are not exposed to a high degree of risk from tank vessel operations." The Coast Guard has identified the need to improve inspector quality, retain good inspectors on the job, reduce administrative burdens on inspection personnel, improve the accountability of the shipping industry to properly schedule and prepare for an inspection. To improve the Coast Guard's ability to better inspect tankers, THE COAST GUARD ABSOLUTELY MUST BE GIVEN MORE MONEY TO DO THE JOB. Perhaps a mechanism can be established where the oil shippers provide the money necessary to make the Coast Guard's Tank Vessel Examination program the best in the world.

The pressures exerted by ship owners and charterers on tanker masters to minimize time at sea and in port provides a dangerous incentive for masters to take risks in navigation and to drive the vessel too hard in heavy weather which increases structural fatigue of the hull, leads to crew fatigue, and does not allow sufficient time for in-port inspection and repair. Ship owners should be discouraged from exerting such pressures. Human factors contribute to over 90 percent of tanker groundings and collisions, and thus deserve considerably more attention than what they have received to date. (See Appendix III.) Manning levels should be increased both on the bridge and in the engine room, and training standards, particularly on foreign tankers, should be more closely scrutinized.

Given the present state of the shipping industry, it can be predicted that BEFORE THE CLOSE OF THIS DECADE, THERE WILL OCCUR A TANKER SPILL OFF THE UNITED STATES COAST THE LIKES OF WHICH WE CAN ONLY BARELY IMAGINE. The only time to deal effectively with spills is before they occur.

Another lesson the Exxon Valdez suggests is that we should make policy decisions much more carefully. For instance, the existing Outer Continental Shelf (OCS) leasing schedule proposed for Alaska should be very carefully considered before any action is taken. The federal government has an obligation to Alaska on these issues. Is it safer, for instance, to drill for oil in the Gulf of Alaska or the Chukchi Sea than in the eastern Gulf of Mexico or off New England? If we decide to go ahead with any of these leases, the federal government owes it to the people of Alaska and the entire United States to make absolutely certain that we do it right this time. The federal government abandoned

such responsibility in oversight of tanker traffic in Prince William Sound, and we had the Exxon Valdez spill. Let's not make the same mistake again.

The Alaska Legislature is presently considering a bill (drafted, I understand, by British Petroleum) that would seriously weaken many of the State's programs to prevent and respond to oil spills that had been implemented as a direct result of the Exxon Valdez spill. This indicates a dangerous return to the complacency of the mid-1980's that led to the Exxon Valdez. This is a good example of why we desperately need increased federal oversight in Alaska. Apparently, the United States cannot trust the management and protection of important natural interests solely to the whims of Alaska politics, which we all know runs on oil.

Finally, the fact that America has done little since the Exxon Valdez in the way of energy conservation is perhaps the greatest tragedy of all here. In an article on the oil industry's expectations and fears concerning the Clinton Administration's policy on oil in the February issue of "Alaska Business Monthly," one quote says it all:

> ... but oil prices are closely linked to demand in the profit equation, and many in the industry fear that oil consumption will suffer under an administration dedicated to energy conservation...

As long as the most powerful industrial complex in human history - the oil industry - fears the reduced consumption of oil, and governments are unwilling or unable to correct the situation with a genuinely aggressive energy conservation strategy, the U.S. will continue importing 2-3 billion barrels of oil a year in generally substandard ships and with substandard crews, and we will without question continue to suffer the biological, social, and economic devastation of major tanker spills along U.S. shores. The true lesson of Exxon Valdez will have been lost.

Thanks very much for your attention, and I will be available at any time to assist the committee on any of these matters. Also, it would be wonderful for the full Committee to visit Prince William Sound.

Resources: Summary of Results of Injury Assessment Studies

The next few pages summarize the results of the injury assessment studies for resources completed after the *Exxon Valdez* oil spill. The table has been reviewed by the Restoration Team and the Chief Scientist.

The "Description of Injury," columns focus on injury that took place during 1989. The table shows whether there was initial mortality caused by the spill, whether the spill caused a population-level injury, and whether there is evidence of sublethal or chronic effects on the resource. For some resources, an estimate is available for the total number of animals initially killed by the spill. When available, that estimate is shown in parentheses under the initial mortality column. For many resources, the total number killed will never be known.

The "Status of Recovery" columns show the best estimate of recovery using information current through 1992. These columns show resources' progress toward recovery to the population levels that scientists estimate would have occurred in the absence of the spill. The "Current Population Status" column shows a resource's progress from any "Decline in Population after the Spill." Similarly, the column labeled "Evidence of Continuing Sublethal or Chronic Effects" shows whether a initial chronic or sublethal injury is continuing.

The "Geographic Extent of Injury" column shows whether the injury occurred in the geographic areas shown in Figure X. (Injury may have been more extensive in some regions than others.)

TABLE X Natural Resources: Summary of Results of Injury Assessment Studies Done After the *Exxon Valdez* Oil Spill

Resource	Description of Oil Spill Injury			Status of Recovery in December, 1992		Geographic Extent of Injury (a)				Comments/Discussion
	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
MARINE MAMMALS										
Harbor Seals (d)	YES (345)	YES	YES	POSSIBLY STABLE, BUT NOT RECOVERING	NO	YES	YES (e)	UNKNOWN	UNKNOWN	Many seals were directly oiled . There was a measurable difference in populations between oil and unoiled areas in PWS in 1989 and 1990. Population was declining prior to the spill and r recovery evident in 1992. Oil residues found in seal bile were 5 to 6 times higher in oiled area than unoiled areas in 1990.
Humpback Whales	NO	NO	NO	(f)	(f)	(f)	(f)	(f)	(f)	Other than fewer animals being observed in Knight Island Passage in summer 1989, which did not persist in 1990, the oil spill did not have a measurable impact on humpback whales.
Killer Whales	POSSIBLY (g)	POSSIBLY (g)	POSSIBLY (g)	RECOVERING	UNKNOWN	YES	UNKNOWN	UNKNOWN	UNKNOWN	13 whales of the 36 in AB pod are missing and presumed dead. Circumstantial evidence links wh disappearance to oiling. Several adult males ha collapsed dorsal fins. Social disruption of fam units has been observed. In AB pod, no new birth were recorded in 1989 or 1990; one birth was recorded in 1991; and two births were recorded in 1992.

(a) There may have been an unequal distribution of injury within each region, see map for location of regions;
(b) Adjusted for carcasses not found, not reported, scavenged, or otherwise lost;
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(d) Population was declining prior to the spill;
(e) Based on recovery of dead animals from this region of the spill zone;
(f) If no injury was detected or known, no assessment of recovery could be made.
(g) "Possibly" was used if there was disagreement over the conclusions to be drawn from the results of the damage assessment studies.

Resource	Description of Oil Spill Injury			Status of Recovery in December, 1992		Geographic Extent of Injury (a)				Comments/Discussion
	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
Sea Lions (d)	UNKNOWN	UNKNOWN	NO	CONTINUING DECLINE	(f)	(f)	(f)	(f)	(f)	Several sea lions were observed with oiled pelts and oil residues were found in some tissues in 1989. It was not possible to determine populatio effects or cause of death of carcasses recovered in 1989. Sea lion populations were declining pri to the oil spill.
Sea Otters	YES (3,500 TO 5,000)	YES	YES	STABLE, BUT NOT RECOVERING	YES	YES	YES	YES (e)	YES (e)	Post-spill surveys showed measurable difference i populations and survival between oiled and unoile areas in 1989, 1990 and 1991. Survey data have n established a significant recovery. Carcasses of prime-age animals were found on beaches in 1989, 1990 and 1991. Proportions of prime-age carcasse found on beaches in 1992 is not significantly different from pre- or post-spill data. Sea otte feed in the lower intertidal and subtidal areas a may still be exposed to hydrocarbons in the environment.

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Resource	Description of Oil Spill Injury			Status of Recovery in December, 1992		Geographic Extent of Injury (a)				Comments/Discussion
	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
TERRESTRIAL MAMMALS										
Black Bear	NO	UNKNOWN	UNKNOWN	(f)	(f)	(f)	(f)	(f)	(f)	No field studies were completed.
Brown Bear	NO	NO	NO	(f)	(f)	(f)	(f)	(f)	(f)	Hydrocarbon exposure was documented on Alaska Peninsula in 1989 including high hydrocarbon leve in the bile of one dead yearling, although it is unknown if this was the cause of death. Brown be feed in the intertidal zone and may still be exposed to hydrocarbons in the environment.
River Otters	YES (NUMBER UNKNOWN)	UNKNOWN	YES	UNKNOWN	YES	YES	UNKNOWN	UNKNOWN	UNKNOWN	Exposure to hydrocarbons and sub-lethal effects were determined, but no effects were established population. Sub-lethal indicators of possible ol exposure remained in 1991. River otters feed in the intertidal and shallow subtidal areas and may be still be exposed to hydrocarbons in the environment.
Sitka Black-tailed Deer	NO	NO	NO	(f)	(f)	(f)	(f)	(f)	(f)	Elevated hydrocarbons were found in tissues in deer in 1989 in PWS.

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Resource	Description of Oil Spill Injury			Status of Recovery in December, 1992		Geographic Extent of Injury (a)				Comments/Discussion
	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
BIRDS										
Bald Eagles	YES (more than 200 to 300)	POSSIBLY	YES	RECOVERED OR RECOVERING	UNKNOWN	YES	YES	YES (e)	YES(e)	Productivity in PWS was disrupted in 1989, but returned to normal in 1990. Exposure to hydrocarbons and some sub-lethal effects were lou in 1989 and 1990, but no continuing effects were observed on populations. In 1989, 151 carcasses were recovered from beaches.
Black-legged Kittiwakes	YES (ESTIMATE UNKNOWN)	NO	NO	NO CHANGE	NO	YES	YES (e)	YES (e)	YES (e)	Total reproductive success in oiled and unoiled areas of PWS has declined since 1989. Hydrocarbc contaminated tissues were detected in 1989. Hydrocarbon contaminated stomach contents were detected in 1989 and 1990. This species is know for great natural variation and reproductive failure may be unrelated to the oil spill. In 1989, 1225 carcasses were recovered from beaches.
Black Oyster-catchers	YES (ESTIMATE UNKNOWN)	YES	YES	RECOVERING	YES	YES	YES (e)	YES (e)	YES (e)	Differences in egg size between oiled and unoiled areas were found in 1989. Exposure to hydrocarb and some sublethal effects were determined. Populations declined more in oiled areas than unoiled areas in post-spill surveys in 1989, 199 and 1991. Black oystercatchers feed in the intertidal areas and may be still be exposed to hydrocarbons in the environment. In 1989, nine carcasses were recovered from beaches.

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Resource	Description of Oil Spill Injury			Status of Recovery in December, 1992		Geographic Extent of Injury (a)				Comments/Discussion
	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
Common Murres	YES (175,000 to 300,000)	YES	YES	DEGREE OF RECOVERY VARIES BY COLONY	YES	NO	YES	YES	YES	Measurable impacts on populations were recorded 1989, 1990 and 1991. Breeding was still inhibit in some colonies in the Gulf of Alaska in 1992. 1989, 10,428 carcasses were recovered from beach
Glaucous-winged gulls	YES (ESTIMATE UNKNOWN)	NOT DETECTED	NO	NO CHANGE	NO	YES (e)	YES (e)	YES (e)	YES (e)	While 555 dead birds were recovered in 1989, the is no evidence of a population level impact when compared to historic (1972, 1973) population levels.
Harlequin Ducks	YES (423)	YES	YES	STABLE OR CONTINUING DECLINE	YES	YES	YES (e)	YES (e)	YES (e)	Post-spill samples showed hydrocarbon contaminat and poor body conditions in 1989 and 1990. Surv in 1990-1992 indicated population declines and t total reproductive failure. Harlequin ducks fee in the intertidal and shallow subtidal areas and may still be exposed to hydrocarbons in the environment. In 1989, 213 carcasses were recove from beaches.
Marbled Murrelets (d)	YES (8,000 TO 12,000)	YES	UNKNOWN	STABLE OR CONTINUING DECLINE	UNKNOWN	YES	YES (e)	YES (e)	YES (e)	Measurable population effects were recorded in 1989, 1990 and 1991. Marbled murrelet populati were declining prior to the spill. In 1989, hydrocarbon contamination was found in livers o adult birds. In 1989, 612 carcasses were recov from beaches.

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Resource	Description of Oil Spill Injury			Status of Recovery in December, 1992		Geographic Extent of Injury (a)				Comments/Discussion
	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
Peale's Peregrine Falcons	UNKNOWN	UNKNOWN	NO	(f)	(f)	(f)	(f)	(f)	(f)	When compared to 1985 surveys a reduction in population and lower than expected productivity measured in 1989 in the PWS. Cause of these changes are unknown. In 1989, two carcasses were recovered from beaches.
Pigeon Guillemots (d)	YES (1,500 TO 3,000)	YES	NO	STABLE OR CONTINUING DECLINE	UNKNOWN	YES	YES (e)	YES (e)	YES (e)	Pigeon guillemot populations were declining prio to the spill. In 1989, hydrocarbon contaminatio was found in birds and, externally, on eggs. In 1989, 614 carcasses were recovered from beaches.
Storm Petrels	YES (ESTIMATE UNKNOWN)	NO	UNKNOWN	NO CHANGE	UNKNOWN	YES (e)	YES (e)	YES (e)	YES (e)	Although 363 carcasses were recovered in 1989 an petrels ingested oil and transferred oil to thei eggs, reproduction was normal in 1989.
Other Seabirds	YES (ESTIMATE UNKNOWN)	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	YES (e)	YES (e)	YES (e)	YES (e)	Seabird recovery has not been studied. Species collected dead in 1989 include 216 common, 87 yellow-billed, 18 pacific, 5 red-throated loon; red-necked and 277 horned grebe; 426 northern fulmar; 360 sooty and 2,460 short-tailed shearwater; 38 double-crested, 418 pelagic, and red-faced cormorant; 8 herring and 33 mew gull; arctic and 1 Aleutian tern; 67 Kittlitz's and 3 ancient murrelet; 48 Cassin's, 5 least, 31 parakeet, and 141 rhinoceros auklet; and 139 hor and 361 tufted puffin.

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Resource	Description of Oil Spill Injury			Status of Recovery in December, 1992		Geographic Extent of Injury (a)				Comments/Discussion
	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
Other Sea Ducks	YES (ESTIMATE UNKNOWN)	NO	UNKNOWN	UNKNOWN	UNKNOWN	YES	YES (e)	YES (e)	YES (e)	Species collected dead in 1989 include 4 Stellar' 9 king and 17 common eider; 342 white-winged, 17 surf and 132 black scoter; 185 oldsquaw; 21 bufflehead; 6 common and 33 Barrow's goldeneye; 2 common and 33 red-breasted merganser. Sea duc tend to feed in the intertidal and shallow subti areas which were most heavily impacted by oil.
Other Shorebirds	YES (ESTIMATE UNKNOWN)	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	YES	YES (e)	YES (e)	YES (e)	Species collected dead in 1989 include 1 golden plover; 2 lesser yellowlegs; 1 semipalmated, 5 western, 4 least and 1 Baird's sandpiper; 3 surfbird; 1 short-billed dowitcher; 1 common sni 2 red and 7 red-necked phalarope.
Other Birds	YES (ESTIMATE UNKNOWN)	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	YES (e)	YES (e)	YES (e)	YES (e)	Species collected dead in 1989 include 2 emperor and 1 Canada goose; 3 brant; 11 mallard; 4 north pintail; 5 green-winged teal; 27 greater and 2 lesser scaup; 1 ruddy duck; 1 great blue heron; long-tailed jaeger; 1 willow ptarmigan; 3 great horned owl; 1 Steller's jay; 7 magpie; 18 common raven; 34 northwestern crow; 2 robin; 1 varied 1 hermit thrush; 3 yellow warbler; 1 pine grosbe 1 savannah and 4 golden-crowned sparrow; 8 white winged crossbill.

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Resource	Description of Oil Spill Injury			Status of Recovery in December, 1992		Geographic Extent of Injury (a)				Comments/Discussion
	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
FISH										
Cutthroat Trout	YES	POSSIBLY (g)	YES	UNKNOWN	UNKNOWN	YES	UNKNOWN	UNKNOWN	UNKNOWN	Differences in survival and growth between anadromous adult populations in the oiled and unoiled areas persisted from 1989 to 1991 despite decrease in exposure indicators. This could be due to continuing injury to the food base.
Dolly Varden	YES	POSSIBLY (g)	YES	UNKNOWN	UNKNOWN	YES	UNKNOWN	UNKNOWN	UNKNOWN	Differences in survival between anadromous adult populations in the oiled and unoiled areas persisted from 1989 to 1991 despite a decrease in exposure indicators. This could be due to continuing injury to the food base.
Pacific Herring	YES, IO EGGS AND LARVAE	UNKNOWN	YES	UNKNOWN	NO	YES	UNKNOWN	UNKNOWN	UNKNOWN	Measurable difference in egg counts between oiled and unoiled areas were found in 1989 and 1990. Lethal and sublethal effects on eggs and larvae were evident in 1989 and to a lesser extent in 1990; in 1991 there were no differences between oiled and unoiled areas. It is possible that the 1989 year class was injured and could result in reduced recruitment to the adult population.

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	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
Pink Salmon (Wild) (d)	YES, TO EGGS	POSSIBLY (g)	YES	UNKNOWN	YES	YES	UNKNOWN	UNKNOWN	UNKNOWN	There was initial egg mortality in 1989. Egg mortality continued to be high in 1990 and 1991. Abnormal fry were observed in 1989. Reduced gro of juveniles was found in the marine environment 1989 and 1991, which correlates with reduced survival.
Rockfish	YES (ESTIMATE UNKNOWN)	UNKNOWN	YES	UNKNOWN	UNKNOWN	YES	YES	UNKNOWN	UNKNOWN	Twenty dead fish were found in 1989, but only a were in condition to be analyzed. Exposure to hydrocarbons with some sub-lethal effects was determined in those fish, but the effects on the population was unknown. Closures to salmon fisheries increased fishing pressures on rockfis which may be impacting population.
Sockeye Salmon	UNKNOWN	YES	YES	SEE COMMENTS	YES	UNKNOWN	YES	YES	NO	Smolt survival continues to be poor in the Red L and Kenai River systems due to overescapements Red Lake in 1989, and in the Kenai River in 1987 1988, 1989. As a result, adult returns are expected to be low in 1994 and successive years. Trophic structures of Kenai and Skilak Lakes hav been altered by overescapement.

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	Initial Oil Spill Mortality (total mortality estimate)(b)	Measured Decline in Population after the spill	Evidence of Sublethal or Chronic Effects (c)	Current Population Status	Evidence of Continuing Sublethal or Chronic Effects	PWS	Kenai	Kodiak	Alaska Penin.	
SHELLFISH										
Clam	YES (ESTIMATE UNKNOWN)	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	YES	YES	YES	YES	Native littleneck and butter clams were impacted both oiling and clean-up, particularly high pressure, hot water washing. Additional data ar still being evaluated.
Crab (Dungeness)	UNKNOWN	UNKNOWN	UNKNOWN	(f)	(f)	(f)	(f)	(f)	(f)	Insufficient data to determine injury.
Oyster	UNKNOWN	UNKNOWN	UNKNOWN	(f)	(f)	(f)	(f)	(f)	(f)	Although studies were initiated in 1989, they we not completed because they were determined to be limited value.
Sea Urchin	UNKNOWN	UNKNOWN	UNKNOWN	(f)	(f)	(f)	(f)	(f)	(f)	Studies limited to laboratory toxicity studies.
Shrimp	UNKNOWN	UNKNOWN	NO	(f)	(f)	(f)	(f)	(f)	(f)	No conclusive evidence presented for injury link to oil spill.

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INTERTIDAL/SUBTIDAL COMMUNITIES										
Intertidal Organisms/ Communities	YES	YES	YES	VARIABLE BY SPECIES	YES	YES	YES	YES	YES	Measurable impacts on populations of plants and animals were determined 1989 to 1992. The lower intertidal and, to some extent, the mid intertid is recovering. Some species (e.g. Fucus) in the upper intertidal zone have not recovered, and oi persists in and under mussel beds. Intertidal organisms were impacted by both oiling and clear up, particularly high pressure, hot water washir
Subtidal Communities	YES	YES	YES	VARIABLE BY SPECIES	YES	YES	UNKNOWN	UNKNOWN	UNKNOWN	Measurable impacts on population of plants and animals were determined in 1989. Eel grass and some species of algae appear to be recovering. Amphipods in eel grass beds recovered to pre-sp densities in 1991. Leather stars and helmet cr. show little sign of recovery through 1991.

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TABLE XXX Other Natural Resources and Archaeology: Summary of Results of Injury Assessment Studies Done After the *Exxon Valdez* Oil Spill (b)

RPWG draft 2/8/93

Resource	Description of Injury	Status of Recovery in December, 1992	Geographic Extent of Injury (a)				Comments/Discussion
			PWS	Kenai	Kodiak	Alaska Penin.	
Air	Air quality standards for aromatic hydrocarbons were exceeded at the spill site. Health and safety standards for permissible exposure levels were exceeded up to 400 times.	Recovered	YES	UNKNOWN	UNKNOWN	UNKNOWN	Impacts diminished as oil weathered and lighter factions evaporated.
Sediments	Oil coated beaches and became buried in beach sediments. Oil laden sediments were transported off beaches and deposited on subtidal marine sediments.	Oil remains intertidally on rocks and beaches and buried beneath the surface at other beach locations. Oil concentrations have increased in subtidal marine sediments and have spread to greater depths (to 720 meters) over time.	YES	YES	YES	YES	Unweathered buried oil will persist for many years in protected low-energy sites in Prince William Sound.
Water	State of Alaska water quality standards were not exceeded in open sea conditions. In small bays and near shore, hydrocarbon concentrations may have exceeded the 10 micrograms per liter standard immediately after the spill. Federal oil discharge standards of no visible sheen were exceeded.	Recovered	YES	UNKNOWN	UNKNOWN	UNKNOWN	Impacts were patchy and transient during the early stages of the spill. Impacts diminished as oil weathered and lighter factions evaporated.
Archaeologic sites/artifacts	Currently, 24 sites are known to have been adversely affected by oiling, clean-up activities, or looting and vandalism linked to the oil spill. 113 sites are estimated to have been similarly affected. Injuries attributed to looting and vandalism (linked to the oil spill) are still occurring.	Archaeological sites and artifacts cannot recover, they are finite non-renewable resources.	YES	YES	YES	YES	* Injury studies are not yet complete (January 1993).

(a) There may have been an unequal distribution of injury within each region, see map for location of regions;
(b) This page has not yet been reviewed by the Chief Scientist;

APPENDIX II

SOME FACTS WHICH CHART "THE COURSE FOR DISASTER"

Compiled by NUMAST (U.K. Seafarers Union)

Ship Inspections - Port State Control

1. world ship losses are at the highest level since 1979 - rising 40% of in 1991 alone

2. more than 7,000 foreign ships visited British ports in 1991: some 30% of these were checked by government surveyors and defects were found on 60% of these

3. the number of ships having to be detained in British ports because their defects were so serious has trebled in the past five years

4. checks in European ports showed the number of ships with defects threatening their seaworthiness to have risen by 20 % in 1991

5. nearly 10% of oil tankers inspected in 1991 had to be detained in European port because of defects threatening their seaworthiness

6. the number of foreign ships found to have pollution defects after checks in British ports trebled between 1950 and 1951

7. in 1988 port state control inspectors in Europe found that 81% of major faults found in routine safety inspections were on ships flying a flag of convenience

Flags of Convenience/Foreign Tonnage

8. around 90% of Britain's oil imports and exports are carried by foreign ships

9. analysis of the world's 68 biggest oil spills between 1967 and 1984 showed that 66% involved flag of convenience or Greek registered tonnage

10. almost one-third of the world's tanker fleet is under either Liberian of Panamanian registry

11. insurance records show Panama's ship loss rate to be almost 10 times worst than the UK fleet's. Liberia's record (which is better than the world average) is some five times worse than the British register's.

12. St. Vincent (with a fleet two-thirds the size of Britain's) has the world's worst safety record: some 40 times worse than Britain

13. flags of convenience are among the fastest growing in the world: 1987-92 Liberia grew by 7%; Panama by 15%, Cyprus by 30%; the Bahamas by 120%; Malta by 487%

14. many flags of convenience lack the resources to enforce standards; in 1991, the Bahamas had 973 ships on its register, but on 15 full-time surveyors and Cyprus had more than 1,350 ships but only nine surveyors. Britain has 187 professional marine surveyors.

15. many flags of convenience bear no relationship to the country they purport to represent: the Liberian register is an incorporated company based in New York, St. Vincent -- which has the world's worst safety record -- operates from Geneva.

Crews of Convenience

16. most flags of convenience ships employ multinational crews

17. multinational crews have been proved to be a contributory factor in a number of shipping disasters: there have even been cases where language problems mean that orders have to be issued in sign language

18. the British government is currently planning to scrap rules requiring the master and senior officers to have British or Commonwealth certificates. NUMAST is urging the government to abandon these plans

19. 80% of accidents at sea are attributed to human factors: 90% in collisions and groundings. Yet only 5% of government spending on ship safety goes into research on the human element

20. cutbacks in training are forecast to leave the world short of 750,000 seafarers by the end of the decade. Barely 250 cadets began training in the UK last year, compared with more than 1,300 in 1975

UK Fleet

21. no other maritime nation has experienced a bigger decline in its fleet size than Britain: a slump of 73% in tonnage terms over the past 10 years

22. the British fleet has one of the world's best safety records, yet it has fallen from over 1,640 ships in 1975 to fewer than 300 today

Ageing Fleets

23. more than two thirds of all marine casualties involve ships aged over 14 years

24. more than three-quarters of all oil tanker accidents involve ships aged over 15 years

Pollution Warnings

25. in 1989 NUMAST warned the government, in its Charter for Clean Seas report: "Accidents this year indicate that it is not a matter of 'if' a major maritime catastrophe occurs off our coast, but of 'when'."

26. two years later the Public Accounts Committee warned of "a significant risk of a major pollution incident occurring in the future."

27. annual cases of oil pollution in UK waters rose two-and-a half times between 1985 and 1990.

* * * *

ON COURSE FOR DISASTER

Extracts from comments received by NUMAST during December 1992 and January 1993 from British officers on foreign flag ships. We should expect similar conditions on foreign ships hauling oil into U.S. ports.

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1. "Foreign crews and officers often eager to please - will answer "Yes" to any question. Particularly misleading when answering to "do you understand?"; when they don't have a clue." Chief Engineer on Liberian flag container ship.

2. "Chinese, Korean and Filipino ratings say they understand but do not" - Chief Engineer, Liberian flag tanker.

3. "Inability to operate basic safety equipment is now very common amongst new crew joining" - 2nd Engineer, Bahamian flag tanker.

4. "Filipino officers and ratings when under pressure converse between themselves in Filipino, which makes my position as Master difficult."

"I have to handle all routine ship avoidance myself, due to navigating officer's lack of understanding of collision regulations."

"Collision avoidance rules are ignored by other vessels around the UK, resulting in 'near miss' situations" - Master, Bahamian flag tanker.

5. "Crew say that they understand instructions and then go and do the opposite!"

"Reduced manning = increased workload. This means spreading yourself more thinly to keep job going." Master, NIS, flag chemical tanker.

6. "We have Filipino seamen - fewer of which seem to be comfortable with English. Since losing our British crew, general standards of seamanship have definitely deteriorated. Some Filipino crew have no idea of their duties, even to the extent of being unable to steer." 2nd Officer, Hong Kong flag tanker.

7. "My last ship had seven nationalities on ship at the same time - not a good idea" - Master, Liberian flag bulk carrier.

8. "The difference in national certification between countries is glaringly obvious at times. Serving on a tanker which is sailing on minimum manning means that we are stretched at the best of times." ETO, Bermuda flag tanker.

9. "Reduced manning has occurred on all vessels in my experience. This coupled with long hours at very low pay results in a great deal of 'Lets take a chance'" - 1st Engineer, Liberian flag tanker.

10. "General misunderstandings occur frequently. Lack of basic training (of Filipino crew) necessitates checking all aspects of work carried out on every occasion..... lack of basic training of third world officers and crews who now make up a significant proportion of seafarers" - Master, Liberian flag container ship.

11. "Telephone conversations are impossible with both officers and crew, because you need to see their facial expression to know whether they understand. We have Polish junior officers who have no basic safety training, cannot read or understand statutory notices. Practical skills in firefighting inadequate. We are receiving staff who cannot steer and officers who have little or no prior safety training who would turn a serious incident into a fatality" - Chief Engineer, Bahamiam flag tanker.

12. "I returned to sea in 1991 after ten years away and was very shocked by the standard of foreign crews compared to British crews" - Engineer, Bahamian tanker.

13. "Reductions in manning coupled with 'cheaper' staff is escalating the chances of a catastrophe" - Master, Panamanian flag tanker.

14. "The English of the Polish crew is very poor ..... would seem that Filipinio and Polish certificates are of poor quality" - Master, Maltese flag tanker.

15. "Many Filipino officers and ratings have very poor command of English they have to be given orders via another crew member. Filipinio officers have been supplied without even the basic watchkeeping training" - Engineer, Bahamian flag vessel.

16. "Shipowners must adopt an improved recruitment and training scheme and stick with officers/crew from one country rather than mixed officers. This will give a better cohesion, trust and understanding" - Engineer, Bahamian flag tanker.

17. "The most frequent problem being officers and ratings who state that they understand orders or instructions and do not. They then proceed to do the wrong thing at the wrong time and place" - Master, Liberian flag tanker.

18. "The standard of English of agency supplied Indian and Filipino crews is so poor that orders 'passed down' lose sense" - Chief Engineer. Hong Kong flag vessel.

19. "Polish officers and Filipinio crew may be satisfactory in English language for routine matters, but rapidly revert to native tongue when excited or stressed, i.e. in emergencies" - Master, Bermudan flag tanker.

20. "Communications with Polish crew is a problem. The Filipino officers often have the correct paper qualifications, but little idea of what they are doing. I have come across Filipino officers with no idea of the regulations for prevention of collisions at sea" - Master, Liberian flag tanker.

21. "Inability of junior officers to comprehend routine instructions given in plain simple English" - Master, Liberian tanker.

(This is only a limited - random list of members' comments, received on this subject during December 1992 and to date during January 1993. We could provide many more in much the same vein.)


ONLY HUMAN ? The human element in safe shipping
A NUMAST REPORT

EXECUTIVE SUMMARY

More than 200 ships are lost each year. Maritime disasters annually account for the deaths of thousands of seafarers and passengers, and create widespread and long-lasting environmental damage.

Around 80 per cent of these disasters are attributed to human factors. But the role of the human element in maritime safety is being ignored.

Cost cutting in the industry has resulted in widely adopted crewing policies which reduce safety at sea. The existing systems of controlling crew quality and policing standards are demonstrably inadequate.

Responses to major disasters, such as the Herald of Free Enterprise capsize and the Exxon Valdez oil spill, largely overlook the crucial role of the human element.

The growing national and international shortage of skilled seafarers threatens to exacerbate these problems. And UK government proposals to relax rules for officers on British ships threaten to undermine the UK fleet's traditionally excellent safety record.

This report details these problems and suggests measures which would make our seas much safer.

INTRODUCTION

Safety at sea is the highest priority for every seafarer. Accidents involving ships can cause hundreds of deaths or widescale pollution.

But in recent years there have been disturbing signs of a decline in maritime safety standards. Despite advances in ship design, equipment and technology, the end of the 1980s saw an increase in the number of ship losses.

During the past two decades intense competition has dominated international shipping. Cost-cutting policies have produced the retrograde results of dramatically reduced seafarer training, cuts in crew numbers, increased use of flags of convenience, widespread use of low cost seafarers from non-traditional maritime nations and severely curtailed investment programmes for new ships.

A series of major disasters appears to have triggered a response from the shipping industry to these concerns. Measures have been proposed to improve ro-ro ferry design, a fierce debate has been raging over the use of double hulls on tankers, and ship managers have drawn up a 'code of conduct' to govern their operations.

But despite these welcome, if long overdue, moves to improve standards, much of the debate, research and response to the concerns has overlooked what NUMAST believes to be the most important factor in safe shipping operations: the human element.

There is a desperate need for concrete progress in this issue; a need to focus the effort and to gain momentum from the slowly emerging awareness that the industry, the environment and seafarers' lives are paying a high price for the policies of neglect pursued over the past decade.

HUMAN FACTORS

The sea is a dangerous place Ships are dangerous workplaces It is estimated that since 1960 nearly 10,000 ships have been lost In the last decade an average of more than 250 ships have been lost each year and it was estimated recently that the number of accidental seafarers' deaths in the past decade totals more than 130,000

The human element is central to such statistics More than 80 per cent of accidents at sea are attributed to human error A recent study for the Department of Transport stated that human factors were present in 90 per cent of collisions and groundings and more than 75 per cent of contacts, fires and explosions

The chairman of the London Club (Protection & Indemnity insurers), Holger Castenkiold, said in his annual report last year that in nearly all recent major maritime disasters it was significant to note that 'human error has so completely tended to overshadow technical and mechanical faults ' It was, he added, disappointing 'that the consequential reaction on the part of official entities has predominantly been to focus upon and lay down ever increasing requirements for further technical gadgetry, instanced by remote close-circuit television controls or double skins for tankers.'

Despite the inarguably dominant role of human factors in shipping casualties, there is a dearth of research and statistics on the issue There has been no systematic assessment of human elements in casualty investigations

This seeming lack of interest in the human element is starkly illustrated by statistics for the Department of Transport's expenditure in marine safety research. Last year a total of 74 per cent of research expenditure went on ship construction and stability, 10 per cent on navigation and communication - and only 5 per cent on safety, health of seafarers and the role of the human element in maritime casualties

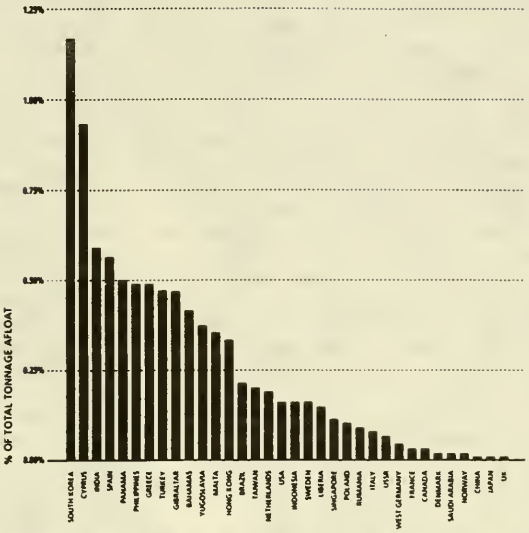
But the industry appears still to be driven by cost-cutting imperatives in its approach to human issues. Flagging out and the use of flag of convenience registers have continued as significant operational practices

The concerted downward pressure in crewing standards is acknowledged by some of those involved in world shipping Marine insurers, for instance, have made repeated warnings, from the early 1980s, of the danger posed by reduced crewing standards

In 1989, the Institute of London Underwriters warned: 'Manning levels, and the quality and skills of officers and crew, need the most careful monitoring - particularly where flagging out has taken place.'

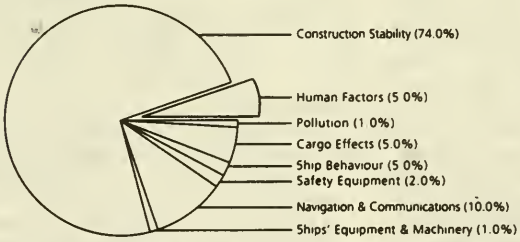
But no-one is conducting the sort of monitoring suggested by the ILU. The international shipping

AVERAGE LOSS RATIOS 1985 TO 1989



The UK fleet has the world's best safety record, according to marine insurance records. But this is threatened by government plans to dilute officer nationality rules.

Department of Transport Safety Research Expenditure 1990



Only 5 per cent of UK government maritime safety spending went on human factors. NUMAST believes this figure should be raised to at least 50 per cent.

industry fails to create systems which impose or maintain sufficient policing of crew quality and skills.

The International Maritime Organisation's Standards of Training, Certification and Watchkeeping Convention of 1984 is the most significant attempt to produce worldwide controls on crewing standards. But the Convention — which, as some recent incidents have shown — is frequently ignored by operators and imposes only minimum standards which do not in themselves guarantee total competence. The Convention was an international agreement in which much compromise was made. It fails to lay down standards, or assess standards, for the training of seafarers in signatory countries. Higher standards are required, in the long-term interests of the shipping industry.

Given the difficulties implicit in policing crewing standards, it is all the more important that some attempt is made to monitor the human element in safe shipping operations.

There is presently a distinct absence of international research and statistics on the impact of crewing factors in shipping casualties. Governments and the industry do not gather or maintain accident and casualty information which covers such human factors as crew size, fatigue or nationality.

Casualty investigations, both in the UK and abroad, make no attempt to systematically assess human element factors. This obviously means that potentially valuable sources of information on the role of crewing elements in disasters are being missed.

This prevents any constructive analysis being made on such important issues as crew size, crew nationality, crew training and onboard operational practices.

To begin any serious attempt to improve crew standards, there must be a concerted effort to improve the flow of information on human factor issues and to build up knowledge in this much-neglected area.

More can and should be done to improve the policing of existing standards. Port state control, acknowledged as the most effective way of ensuring that ships do conform to requirements, concentrates on the ship and its equipment, rather than crewing. Inspection can cover crew certification, but leave untouched many other important human elements.

A graphic example of the inadequacies of the existing arrangements was given to NUMAST by a member serving as master of a Liberian registered 130,000 dwt bulk carrier. Complaining of the language problems caused by his vessel's multi-national crewing, he stated that ... 'communications with the crew by any officer was impossible, except in sign language.'

He concluded: 'I believe that our communication problems produced an inherent state of continuous danger to the ship far greater than a piece of equipment being out of date or not working.'

This case illustrates the desperate need for the scope of port state control inspections to be widened to enable checks to be carried out on the competence and quality of crews and their ability to properly communicate with each other. Checks also need to be made on the actual living and working conditions of seafarers, for these also have an important effect upon safe operations.

THE HAZARDS

Over the past 20 years there has been a general improvement in ship safety. Casualty rates today are much lower than they were in the 1960s and early 1970s. However, this masks disturbing evidence of dramatically declining standards and an increase in incidents during the past few years. And the lack of research on human factors leaves the question open as to whether the general improvement has been brought about simply by advances in technology, equipment and navigational aids.

What is certain is that there is now a recognition within the international shipping industry that all is not well on the crewing front.

There are many well-documented cases of ships which, by all measurable standards, have fallen lamentably below acceptable crewing criteria.

One of the most marked trends in the past 20 years has been the widescale reductions in crew complements. In very rough terms, these have on average almost halved in that period. There are now very large containerships in operation with crews ranging between 18-14. And Denmark has recently introduced 16,600 dwt refrigerated cargo vessels designed to sail with a crew of just six.

Yet despite this marked and

CASE HISTORIES

Some of the most dominant themes and concerns raised in this report by NUMAST are best illustrated by three of the biggest recent shipping disasters: the Herald of Free Enterprise; the . Scandinavian Star and the Exxon Valdez.

1987

A total of 188 passengers and crew died when the ro-ro ferry capsized off Zeebrugge. The disaster generated intense public and political concern and has resulted in far-reaching and fundamental changes to ferry design and operation.

Overlooked in the ensuing reaction and response has been the role of human factors in the disaster — even though the official inquiry report makes it clear that these were a crucial element in the disaster.

Firstly, there was a lack of clarity in the organisation of the seafarers' duties on board the vessel. The officer loading the main vehicle deck was meant to ensure the bow doors were secure before leaving port. But this officer was also required to be at harbour station on the bridge as the vessel left port. This conflict of duties was highlighted during the inquiry. It had also been a concern among the officers on the Dover-Zeebrugge run, who had made repeated requests to the company for an additional deck officer to be carried to enable the first mate to go safely to the bridge to help the master while the ship left port.

The inquiry report also reveals how safety concerns expressed by masters and officers had been ignored by the company: requests for action on the carriage of excess passengers; for bridge indicator lights showing the status of the doors; complaints about the difficulty in reading the draught of the ships; and a request for a high capacity ballast pump had all fallen 'on deaf ears ashore.'

The attitudes reflected in the facetious comments attached by shore management to some of these written requests are symptomatic of the way in which seafarers' concerns are often ignored. Managements often appear reluctant to accept the concerns expressed by their seafarers, demonstrated most recently in negotiations over radical changes in working practices.

Of equal concern is the way in which the response to the disaster has failed to address such issues. Most of the subsequent debate, research and regulations has concentrated on the design of ro-ro ferries. The Department of Transport spent around 1 million on a research programme prompted by the Herald disaster, but the ensuing report devoted fewer than four pages of a 190 page document to the human factor — even though it acknowledges the significance of the issue.

A further response came in the shape of draconian legislation imposing tough new penalties on masters and officers. Within a few months of the disaster, the government had drafted regulations which make masters and officers liable to up to two years imprisonment and fines of up to £2,000 for going to sea with bow or stern doors open.

NUMAST research showed that, before the Herald disaster, masters were exposed to more than 200 offences, over £300,000 in specified fines and up to 50 years in prison. The inclusion of massive £50,000 fines on summary conviction and yet more exposure to prison sentences made the task of keeping track of the potential penalties virtually impossible.

Yet despite this, the thrust of much of the legislative response to the disaster was a dramatic increase in the responsibilities and accountability of masters and officers, which was coupled with an erosion of their actual powers and authority.

And this legislative process culminated in the imposition of plainly ridiculous duties: such as the master bearing responsibility for the design of equipment fitted to his ship.

The steady flow of new regulations and associated paperwork (such as M-notices) since the Herald disaster has obviously been inspired by the best motives: to prevent a repetition of the accident. But nowhere in this flow of material is there any provision for the additional crew and the additional resources required to carry out these new duties and to shoulder the subsequent heavy workloads.

Indeed, since the disaster there has been a concerted drive by ferry operators to further reduce crewing levels, to make fundamental changes in working practices and to remove radio officers from vessels. These moves have been pursued despite warnings from officers on the retrograde effects upon safety and in some cases despite independent expert verification of the officers' arguments.

long-running trend towards smaller crews, once again there has been very little research into 'human factor' effects resulting from such a development

As a recent US National Research Council report found, there is simply not enough data to make any safe conclusions about the relationship between crew reductions and safe operations

But there can be little doubt that reduced crew sizes present and — in some cases — demonstrate such adverse effects on safety as increased fatigue, additional stress, reduced on-board training and maintenance, and additional demands on individual seafarers — particularly in emergencies

Some owners and operators demonstrate a cavalier attitude towards the safety implications of reduced crewing. A prime example of this is the case of the Irving Forest, a Bermuda registered cargo ship which collided with a North Sea oil rig because no-one was on watch

Although the ship's master and second officer were prosecuted and jailed as a result of the collision, the judge at their trial made the point that the ship's owners had instigated the inadequate — and illegal — watchkeeping system which neglected to have a rating on lookout duties on the bridge at night. A system about which the master had made complaints to management

Indeed, the judge remarked: 'How many times has there got to be appalling accidents at sea before companies stop putting commercial considerations before safety?'

Reduced crew sizes have also been a key factor in changing the quality of life at sea during the past 20 years. Changes in ship design have brought sharp reductions in the number of port calls and in opportunities for going ashore

There has, again, been little research into the safety and psychological effects of such changes. With continuing pressures towards further reductions in crew levels, NUMAST believes there is an urgent need for studies into the social, psychological and safety implications

Quality of life at sea and — arguably — safety with it, has also been eroded by reductions in crew numbers on existing vessels. This has led to such changes as ending planned maintenance programmes and stopping steward services. It has also meant profound changes, such as those now being introduced on British ferries, where crew members are being required to 'live aboard' ships never originally intended to be occupied for any length of time

Retrograde changes like this certainly lower morale and reduce the perceived status of senior seafarers. Ultimately, this increases the drift to jobs ashore, but may also contribute to reduced application, alertness and attention to safety while on duty

While shipowners have made concerted moves to reduce the crew levels on their new and existing vessels, both in the UK and internationally there is no effective control on the link between crew size and the type of ship, its commercial operation and the nature of the cargo it carries.

This means that the authorised crew levels may not always accurately reflect the pressures facing the seafarers or the potential dangers posed by a ship or its cargo

One of the most glaring examples of this was the case of the Perintis, a 999 tons gross Panamanian registered cargoship which sank in the Channel while carrying a cargo of the toxic chemical lindane. NUMAST has already raised with the Department of Transport its doubts over the suitability of such a vessel (and its crew) for the carriage of a lethal cargo on the long voyage between Antwerp and Jakarta and has sought to have the matter raised at the International Maritime Organisation

Another development which has produced significant changes on both British and foreign ships has been the increased use of mixed nationality crews

Such policies have been implemented with little regard for the psychological and social effects on the seafarers involved. And they have also ignored the inherent communication problems posed by polyglot crews.

There is now increasing evidence of the dangers posed by communication problems, yet — certainly in Britain — there is a continued move towards the use of mixed nationality crews. The government's current proposals for relaxing the nationality requirements for senior British officers on British ships will not only pose safety problems, but may also ultimately exacerbate the existing skills shortage by undermining any

moves towards increased training by British companies.

A further development in international crewing policies has been the increased use of manning agencies. Many of these agencies have supplied demonstrably inadequate crews. Yet there is no international system for assessing the standards of such agencies, or for taking action against those which continually flout acceptable standards.

An example of the poor quality of some agencies was given to NUMAST by a member serving on a European registered chemical tanker. Within three and a half years he had been supplied with the following personnel he deemed unacceptable:

- one second mate
- two third mates
- one first assistant engineer
- one second assistant engineer
- three third assistant engineers

And he wrote: 'In addition, we have been put in a position where we have been perilously short of knowledge and experience, with the chief engineer, chief officer and myself being the only ones on board with any knowledge and experience.'

The resulting dangers were shown by one incident caused by what he termed 'an incompetent second mate' in which his chemical tanker narrowly missed a collision with a cross-Channel ferry at night.

Another important area of maritime safety in which crewing and shipboard management issues have been overlooked is in the classification of ships.

The classification societies have traditionally concentrated on ship design, equipment and physical condition when certifying vessels. Crewing arrangements — including the competence, training, experience and the ability of crew members to communicate with each other — have not featured in the societies' criteria for assessing ship safety.

This is plainly inadequate, given the importance of crewing factors in safe operations. Recent moves by some of the leading socities to introduce quality assurance standards for ship management systems are a welcome, if long overdue, move towards the recognition that sound management and operational practices are equally — if not more — important as properly equipped and maintained vessels.

However, a lot more clearly remains to be done to impose such quality assurance standards throughout international shipping. And the standards themselves need to be carefully developed to ensure that they truly act as a check on standards and practices, rather than being laudable theoretical objectives.

DANGERS AHEAD?

Triggered by the world recession and the decline in seaborne trade, shipping has spent much of the 1970s and 1980s locked in a downward spiral in terms of standards and conditions.

There are now signs that many elements within the world maritime scene both accept this decline and are aware of the need to reverse it. In recent months much has been made of attempts by leading ship management companies to establish quality management systems. Some classification societies are now going down this path. And there are a number of moves within the International Maritime Organisation to set higher worldwide standards and controls in crucial areas of crewing, including training, certification and communications.

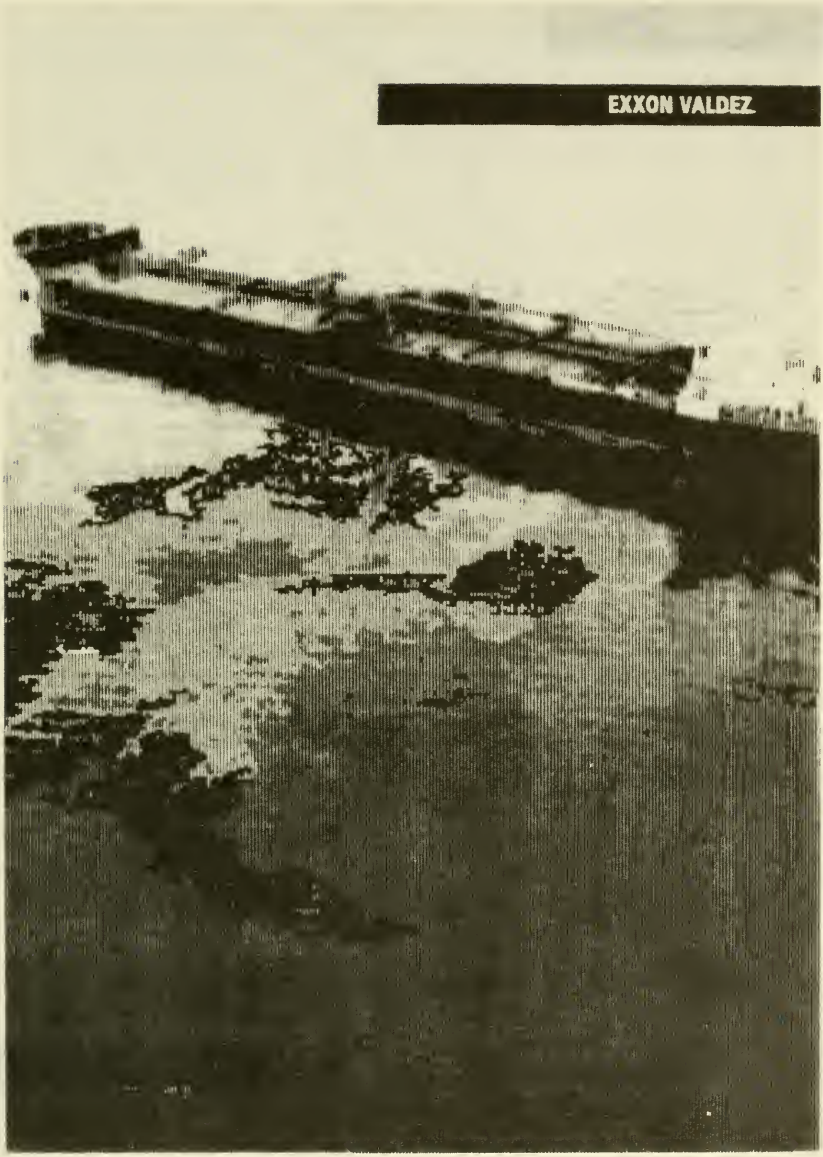
However, in both the UK and on the international maritime scene, there are a number of developments which threaten to undermine any progress on this issue.

Perhaps the single most important factor is the growing shortage of seafaring skills, in the UK and internationally. The drastic cutbacks in seafarer training of the past decade have created a 'generation gap' and, according to an international owners' report, will leave the world short of 750,000 seafarers by the end of the 1990s.

In the UK these already apparent shortages have been used as a justification for the further relaxation of controls on crews. The government is planning to relax the nationality rules requiring senior British officers on British ships, despite the mounting evidence of safety problems arising from communication difficulties among multinational crews.

Such shortages may also be used to support measures enabling owners to obtain dispensations from existing crewing requirements.

And they may also be used as an argument for diluting training quality, such as curtailing college time and lowering entrance


EXXON VALDEZ

Coinciding with the dawning of the 'green decade', the biggest oil spill in US history has sparked far-reaching debate and decision making about the future shape of tanker operations.

Responses to the disaster have been varied — but, once more, have largely overlooked the human factors involved in the events.

Much of the ensuing debate and, in the US, legislative response has centred on tanker design and the fitting of double hulls or double bottoms. There has also been a subsequent drive by many operators to adopt tough alcohol policies for their crews, even though there is little hard evidence to show that alcohol actually played a major contributory role in the disaster.

In stark contrast, there has been very little attention paid to the human element. The NTSB report on the disaster concluded that the most immediate factor in the vessel's grounding was 'the failure of the third mate to properly manoeuvre the vessel because of fatigue and excessive workload.'

The NTSB report also underlined many shortcomings which, NUMAST believes, demand urgent attention. It showed how inadequate are the methods used to determine safe manning levels and also illustrated the way in which crew reductions are brought in without proper reflection upon their ramifications for safe operations.

Most worryingly, in the context of learning from disasters, the report warned that Exxon directives issued in response to the incident had imposed additional burdens on crew members 'without compensation for the human factors involved.' NUMAST believes the same comment can be applied to the response to the Herald disaster.

It should also be emphasised that these shortcomings were found on what is regarded as one of the most tightly regulated and closely controlled registers in the world. If such conditions can exist there, serious questions have to be asked about registers which have few regulations or little machinery to enforce standards on their ships.

qualifications Owners already admit to 'managing' the existing worldwide officers shortage by such measures as reduced training and reductions in crewing levels.

Such steps must be resisted, because developments in the international industry dictate a need for even greater levels of skills and competence

The lack of investment in new tonnage during the past decade has produced a marked increase in the average age of the world fleet. Insurance records show that two-thirds of ship losses involve ships of 14 or more years old and, largely as a result of that lack of investment, around half the world fleet now falls into that age bracket. The age of these ships and the frequent lack of maintenance in recent years requires a high level of crew competence and vigilance to avoid disasters.

But it is also clear that the ships of the future will also require high levels of skill, intelligence and technological awareness The low-crew vessels already introduced by such countries as Denmark utilise officers trained in both deck and engineering disciplines. The calibre of individual required for such responsibilities and the training needed to meet such a role is clearly high and the increasing need for solutions to the seafarer shortage should not be used to dilute those standards.

If the Danish ships are an accurate guide to future developments, it is clear that the next generation of ships will be technologically advanced vessels using high levels of automation to produce radically reduced crew levels

NUMAST believes there is an urgent need for more research into the 'human' effects of such developments before their widespread use by the industry. The psychological, social and safety implications of such technology need careful analysis. Technology can solve many problems, but it can also create new ones and NUMAST believes that no proper assessment has been, or is being, made of such problems

Technology has been used by the shipping industry in an ad hoc and fragmented manner, with new advances applied largely as they have been developed rather than in a planned and coordinated programme This means that onboard organisation, training and crewing policies have not always been adapted to reflect such change

There has been, and still is, a tendency to accept unproven technologies simply because of the cost savings they offer. Most notable, at present, is the drive towards the adoption of the Global Maritime Distress and Safety System and the consequent demise of the dedicated radio officer — despite the well-founded reservations about the performance and capabilities of the proposed new system

Similarly, the growing pressure for one man bridge operations has been inspired by technological advances and cost-cutting — and also requires careful scrutiny of the 'human' effects (such as stress, alertness and psychology) before it is brought in

WHAT IS TO BE DONE?

NUMAST believes radical and fundamental changes are required in the way in which the shipping industry and maritime authorities consider and respond to human factor issues

There are tangible measures which can be taken, as well as more subtle changes in attitudes and philosophies

Above all, there should be a recognition by all concerned of the basic importance of crewing skills and competence

Among the measures NUMAST seeks are:

- a tougher STCW convention, to impose standards — and an assessment of standards — on the quality of training in signatory countries

- much greater research on the role of human factors in marine accidents The UK should increase its current 5 per cent of total research expenditure to at least 50 per cent.

- the collection and analysis of human elements data during ship casualty investigations

- authorities to create and implement minimum manning policies that reflect actual shipboard operating conditions, a ship's commercial operation and human factors - as well as equipment, and the nature of the cargo carried

- research on the effects of cutbacks in crew levels and conditions on ships already in service

- checks on crewing factors to be included in port state control inspections

- rules requiring that all crew members are capable of effective communication through a common language

- the development of confidential reporting systems

- international controls and standards for manning agencies

Any progress on the above points is threatened by the increasing shortage of seafaring skills Existing UK and international training programmes are completely inadequate to produce anything near the anticipated numbers required within the next decade

Therefore, there has to be:

- a big increase in maritime training, in the UK and abroad

- but this increase must not be achieved at the expense of reduced entry standards, training levels or relaxation of existing requirements

- the UK government should drop its plans to relax officer nationality requirements

- the UK government should adopt fiscal measures designed to encourage investment in British registered shipping, given the UK merchant fleet's record as the register with the lowest ratio of losses to tonnage in the world.

Less tangible, but equally essential changes include:

- an end to the 'blame' culture and the adoption of a 'supportive' culture, in recognition of the value and sensitivity of the human element

- increased emphasis on the value of safety of operations; which in turn places a value on experienced, well trained and qualified seafarers

- a willingness to listen to and learn from seafarers themselves.

Finally, NUMAST believes that a radical review of the legislative framework affecting shipping is long overdue. Most of the regulations affecting ships and seafarers originate from the mid-Victorian era and the guiding philosophy behind them fails to reflect the widespread changes in the industry since then.

Such a review should consider whether the interests of maritime safety and the human element in particular are best served by the Department of Transport bearing simultaneous responsibility for promoting the industry and policing health and safety standards.

It should also examine ways in which such standards might be better enforced. A licensing system for ship operators, for instance, might provide much tighter control over owners and managers who are found to flout those standards.

We cannot expect acceptable safety records when an industry is still governed by archaic rules and ways of thinking. As the 21st century approaches, it is time for shipping to shed these 19th century shackles.


SCANDINAVIAN STAR

1990

A grim illustration of the dangers posed by ignoring the importance of the human factor is contained in the case of the Scandinavian Star.

In 1988 fire broke out in the engine room of the ship, which was then operating as a cruise liner in the Gulf of Mexico. When the fire broke out, the Honduran motorman had to raise the alarm by using hand signals because he had no common language with the Filipino watch engineer.

A subsequent report by the US National Transportation Safety Board revealed that the crew came from a total of 27 different countries and that language problems had hindered firefighting efforts. It also blamed inadequate crew training for the rapid spread of the fire.

Two years later, fire again broke out on the vessel. This time the ship was being used as a ferry. A total of 161 passengers and crew died.

Evidence given by crew members and the subsequent joint Nordic inquiry report showed how the same fundamental faults uncovered by the NTSB were instrumental in the rapid spread of the fire two years later.

Most of the mixed nationality crew had been taken on only one week before the disaster and few had the necessary certificates or safety training required for the vessel's Scandinavian operations. The report makes it clear that, once again, language problems inhibited an effective response to the blaze. Apart from confusion between the mainly Scandinavian officers and Portuguese and Filipino ratings, safety notices on board the ship were in English, Spanish and Portuguese — but not in Scandinavian languages.

It is to be hoped that the deaths of more than 160 people will be sufficient to ensure that this time the lessons of the Scandinavian Star will be learned and acted upon.

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Testimony Before the House Committee on
Merchant Marine and Fisheries

by Michelle Hahn O'Leary, Representative for
Cordova District Fishermen United
Vice President of
Prince William Sound Regional Citizens' Advisory Council
March 24, 1993

Background

My name is Michelle Hahn O'Leary. I have lived and fished commercially in the state of Alaska for the last 19 years. I hold and work a Prince William Sound herring spawn on kelp pound permit and a Bristol Bay salmon gillnet permit. I'm here today as a fisherwoman representing Cordova District Fishermen United (CDFU) and the Prince William Sound Regional Citizens Advisory Council (RCAC).

CDFU, founded in 1935, is the oldest regional commercial fishing organization in Alaska. It is a non-profit corporation whose purpose is to preserve, promote and perpetuate the fishing industry in Area E of the State Alaska and to promote safety at sea, legislation, conservation, management and the general welfare for the mutual benefit of all members.

RCAC is a national experiment in providing citizens with a voice in corporate and regulatory decisions that affect them and their communities. RCAC is certified by the USCG as a voluntary alternative council that meets the requirements of the Oil Pollution Act of 1990 for a citizens advisory council. At its core, the RCAC is citizens promoting environmentally safe operation of the Alyeska terminal and the tankers that transit the Sound.

On going Damages

Prince William Sound (PWS) has not recovered from the Exxon Valdez oil spill. Contrary to what some might have you believe the Sound is not okay. It is not back to normal.

If you tour the Sound in a boat and look at the shorelines, you probably won't see any obvious damage. If you take the time to visit heavily oiled areas such as Seal Rocks near Green Island and Herring Bay and dig into the sediments, you will still find oil. Yet major and extensive damages remain hidden from the casual observer. If you live in the Sound or know anything about the population structure and life histories of species impacted by the spill, you can identify the changes that have taken place. While visual impacts fade, dramatic and long-term damages continue.

Herring As An Example

Pacific herring are an integral part of the food chain and are representative of the health of the ecosystem. They are a critical food source for Steller sea lions, seals, several species of whales, sea ducks (such as scoters and murres), gulls and several varieties of fish, including salmon and halibut.

Herring represent a multi-million dollar fishery in Prince William Sound ($11.7 million total estimated ex-vessel value for all gear types in 1991) and are an important food source for subsistence use in local communities.

The Exxon Valdez oil spill coincided with the annual spring migration of herring spawners to nearshore staging areas. Over 40 % of areas used by herring to stage, spawn or deposit eggs and over 90% of areas needed for summer rearing and feeding were exposed to crude oil.[1]

During the 1992 past field season, state biologists noted that the 1989 year class of three-year old herring returned as first-time adult spawners at the lowest level measured since 1967. This is particularly disturbing when noting that they were the offspring of the largest spawning population in PWS since the early 1970's. [2]

In 1989 3.3 billion herring eggs were laid. 61 % of the hatched eggs never made it off the spawning beds and died. 85 % of the larvae that made it off the spawning beds suffered abnormalities such as missing lower jaws. In a normal year 50 % might be expected to swim off the spawning grounds and join the plankton population. By best estimates, of the 3.3 billion potential larvae of the 1989 egg lay, 3.16 billion or 96 % died. [3]

Four years after the spill, herring continue to suffer from the oil residue in egg laying areas. In 1992, adults from the 1988 year class (which were one-year old fish in the 1989 spill) demonstrated significantly reduced reproductive capabilities. The hatching success in oiled areas eggs was 20 % versus 56 % from unoiled area eggs. The 1988 year class currently represents 81 % of the Sounds herring spawning population. Impaired ability to reproduce successfully may adversely affect future population stocks. [4]

The reproductive effects on the 1988 class combined with the massive loss of the 1989 class and possible injuries to other adult classes could significantly impact the food chain and the future of herring fishing in the Sound. Reductions in the herring fisheries, and resulting economic losses, would be a blow to communities dependent on the fishing economy.

It is important you understand that we don't yet know the full extent of the damage from the Exxon Valdez oil spill. The damage is still on-going and how it will affect all the resident species including man is unknown. While I have focused on herring, other commercial species have suffered greatly, and their needs have not been fully

addressed. Since 1989, studies have been done without a restoration framework which has resulted in a checkerboard approach to research.

Herring were studied and extensive damages to the embryonic life stages were documented. However, many species near the bottom of the food chain, such as the pollock and northern smooth tongue, have not been adequately studied. Who knows what the compounding effects may be to other injured species farther up the food chain which rely on these large populations of fish as their primary food source. At this point there are too many pieces of the puzzle missing to get a clear picture of how and to what extent the environment was damaged. However, every indication is that the fallout from the spill will continue to harm the communities and fishermen.

Who Knows?

What have fishermen gained from the science? For four years we've been kept in the dark. We've been forced to make all of our business decisions on buying, selling or upgrading permits and equipment in a vacuum, without benefit of the scientific knowledge documenting damages that resulted from the spill.

The facts and figures on herring presented above were released at the February 2nd Exxon Valdez Oil Spill Symposium held in Anchorage. This information has not been distributed to the majority of fishermen or to the communities that suffered the greatest impacts from the spill. Trustees should tour these communities and hold mini-symposiums to bring the damage assessment information to the public.

Now Exxon has determined that the best place to release their large body of scientific evidence is in Atlanta, far from those who have the greatest need to know and at a time in April that finds fishermen both too broke and too busy fishing to be able to attend.

The Trustee Council

CDFU feels the agreement between Exxon and the federal and state governments was hastily negotiated with the hope that there

would be immediate money available for restoration. To date, not one dollar has been spent on restoration projects in the spill impacted area. This has been largely due to the highly politicized and unresponsive nature of the Exxon Valdez Trustee Council. One of the biggest problems is that the Trustee Council cannot make a decision or take any action without unanimous consent. This makes it very easy for a single agency to control the process with a dissenting vote.

The Trustee process is driven by the state and federal agencies and their agendas, with little room for public involvement. Prospective research and restoration proposals submitted to the Trustee Council are screened by the "chief scientist," a contractor to the Trustees. This contractor serves as a filter to determine which proposals will be passed on to the Restoration Team for further consideration and possible inclusion in the annual work plan. It isn't until the Restoration Team assembles and publishes a draft work plan that the public becomes involved in the process. CDFU believes by that time, the only role left for the public is to rubber stamp the plan or to complain about its shortcomings and omissions. At no time is the public made aware of the range of restoration options and research proposals that were originally submitted for consideration.

One project, a herring reproductive impairment study, has twice been submitted for consideration and failed to make it through the "chief scientist's" initial review. The most recent reason for the project's rejection was that the study was not "time critical." This is particularly ironic since the Summary of Injury in the 1993 Draft Work Plan stated:

> "A large percentage of abnormal embryos and larvae were found in samples from oiled areas of Prince William Sound collected during the 1989 reproductive season....Whether the adult population has been affected by these larval injuries and lesions will not be determined until the 1989 and 1990 cohorts return to spawn in 1992 and 1993."

While the Trustee Council recognized that herring were severely impacted by the oil spill, they did not include any projects in the 1993 work plan to address herring injury.

Fishermen's Claims

Exxon came to Cordova four days after the spill and said "We will make you whole." Right now, there are a lot of people in Cordova who have not been made whole. The community continues to suffer, as do other communities in the spill affected area. CDFU believes that despite the impressions created by Exxon's multi-million dollar public relations campaign, fishermen and other victims of the spill have never been fully or fairly compensated.

Economic losses to fishermen and other members of the public have been documented at more than $2.6 billion. The amounts paid out voluntarily by the Exxon Claims Program in 1989 and 1990 represent only an estimated 10% of the losses suffered by the people impacted by the spill. Four years after the spill, CDFU is disappointed that Exxon and Alyeska are still unwilling to sit down at the settlement table to discuss a global settlement of all claims.

The Trans-Alaska Pipeline Liability (TAPL) Fund was mandated by Congress as part of the price of building the pipeline in an area that is dependent on natural resources. Instead of being part of the solution, as it was originally intended the Fund has been part of the problem experienced by fishermen and other claimants . In short, the TAPL Fund is controlled by the oil companies. Seven of the ten trustees of the Fund are appointed by the oil companies who own Alyeska. Not surprisingly, four years after the spill the Fund has not yet paid a single claim.

Lessons Learned, More To Do

RCAC believes the greatest lesson is the importance of prevention. People have a tendency to assume that OPA 90 is more comprehensive than it is. The oil industry can learn much from the

people who live and work in the areas at risk - the very people with the most to lose .

In terms of response equipment and resources, the situation in Prince William Sound is much better than it was in 1989 and compares quite favorably with other ports. However, while we are on the way toward prevention there are still many gaps. We are seriously deficient in response capabilities outside Prince William Sound.

We need weather reporting buoys stationed in the Sound. At the present time, the only way to know what weather conditions are in the Sound is for tankers or escort vessels to venture out. Many of us believe that bad weather and loss of tanker power will account for the next big spill, just as it did in January 1993 when the tanker Braer lost power and went aground in the Shetland Islands. RCAC is working with NOAA and the National Data Buoy Center on a project to place weather buoys in Prince William Sound. Funding is needed for that project. Perhaps you can help.

Questions have been raised about the adequacy of the current towing packages on the oil tankers. Towing equipment is so buried on some tankers that it could take a crew of 8 up to four hours to deploy, if they still have the power to use the winches. Lacking power, it could take the crew two days. In rough weather, crews may be unable to get forward to the towing equipment or the anchors to deploy them, as was the case with the tanker Braer.

We need international monitoring systems (such as the Global Positioning Based System -GPS-) to expedite assistance to tankers in distress. Perhaps the Exxon Valdez and the Braer spill in the Shetlands might have been prevented if such a system were in place.

A more aggressive approach is needed to implement the provisions of OPA 90. The Braer spill was a strong reminder that we are working against the clock of the next spill. We strongly urge you to

give the Coast Guard more resources to focus on marine safety and protecting the marine environment.

RCAC has learned that we can't assume that the jobs of prevention, regulation and enforcement are being done and done right. The Exxon Valdez oil spill should have been lesson enough. Those of us who care about the world we live in must continue to pay close attention. We must be vigilant - whether it's implementing OPA 90 in a timely fashion or testing spill response plans. As citizens we have to make sure that someone is paying attention. You must do the same.

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[1] Exxon Valdez Oil Spill Trustee Council; University of Alaska Sea Grant College Program; American Fisheries Society, Alaska Chapter, Exxon Valdez Oil Spill Symposium Abstract Book (Anchorage, Alaska: 1993) pp. 247-267.

[2] Ibid.

[3] Evelyn D. Biggs, Fisheries Biologist, Alaska Department of Fish and Game, interview.

[4] EVOS Trustee Council, pp.247-267

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March 3, 1993

The Honorable Ted Stevens
United States Senate
260 Russell Building
Washington, D.C. 20510

Dear Senator Stevens:

I'm writing to express our disgust and on-going frustration with the Exxon Valdez Trustee Council. The recent actions (or should I say, inactions) of the Trustee Council clearly demonstrate that we are working with a system that is designed to fail. CDFU has offered comments and testimony to the Trustee Council at every opportunity and participated in the public process to the fullest extent possible. However, working within the present Trustee Council framework is about as productive as digging a hole in the ocean.

One of our greatest concerns at this time is the Council's process for screening prospective restoration and research proposals. The current policy involves an individual under contract with the Council who acts as "chief scientist" to review proposals and evaluate their merits. This person serves as a filter to determine which proposals will be passed on to the Restoration Team for further consideration and possible inclusion in the annual work plan. Interestingly, only projects proposed by state or federal agencies ever make it through the chief scientist's review process, while third-party proposals by universities and independent researchers never make the first cut. Rather than having an objective review of prospective research and restoration projects, the public has been stuck with a heavily politicized decision-making process with a bias toward funding projects sponsored by state and federal agencies.

CDFU respectfully requests that you look into this situation and ask the National Academy of Sciences to convene a panel to evaluate what science has been done to date and to identify areas that need further research or restoration work. The Academy could recommend appropriate administrative models to make the project review process more objective and less biased toward agency proposals.

We need to make the Trustee Council more responsive to the restoration and research needs of resources and services injured by the Exxon Valdez oil. The present system is driven by inter-agency rivalries and political agendas and does not serve the public good. An audit by the National Academy of Sciences might help to orient the process in a more productive direction.

We appreciate your consideration.

Sincerely,
CORDOVA DISTRICT FISHERMEN UNITED

Mary McBurney
Executive Director

cc: EVOS Trustee Council
Congressman Don Young
Congressman Gerry Studds

COMPARISON OF ALTERNATIVES

Alternatives:	1	2	3	4	5
Administration	1%	4%	6%	7%	7%
Monitoring	5%	5%	7%	8%	10%
Other Restoration	--	--	7%	10%	22%
Other Restoration Reserve	--	--	7%	12%	14%
Habitat Protection	--	91%	73%	63%	47%
Uncommitted Balance	91%	--	--	--	--

Table ____. Comparison of Alternatives by Allocation of Cost

	Alternative 1 Natural Recovery	Alternative 2 Habitat Protection	Alternative 3 Limited Restoration	Alternative 4 Moderate Restoration	Alternative 5 Comprehensive Restoration
THEME	No action other than monitoring and normal agency management.	Protect injured resources and services from further degradation or disturbance.	Take highly effective actions to protect and restore injured services and resources whose population has declined. Maintain the existing character of the affected area.	Take highly effective actions to protect and restore all injured resources and services. Increase, to a limited extent, opportunities for human use in the affected area.	Take all effective actions to protect, restore, and enhance all injured resources and services. Increase opportunities for human use in the affected area.
VARIABLES					
Injuries Addressed	N/A	All injured resources and services.	Injured services and resources whose populations declined.	All injured resources and services.	All injured resources and services.
Status of Resource Recovery	N/A	Resources not recovered and resources recovered.	Resources not recovered.	Resources not recovered.	Resources not recovered and resources recovered.
Effectiveness of Restoration Actions	N/A	All effective habitat protection actions.	Only highly effective actions.	Only highly effective actions.	All effective actions.
Strategies for Public Use	N/A	Protect or increase existing use through habitat protection.	Protect existing use.	Protect or increase existing use.	Protect or increase existing use or encourage appropriate new use.

Monitoring and information programs are included in all alternatives.
Restoration actions may be undertaken for injured resources, services, or their equivalents in all alternatives.

Table ____. Summary of Draft Restoration Plan Alternatives

Summary of Injuries to Fish and Shellfish Associated with the *Exxon Valdez* Oil Spill

Charles P. Meacham and Joseph R. Sullivan
Alaska Department of Fish and Game

On March 24, 1989, the *Exxon Valdez* oil tanker ran aground on Bligh Reef in Prince William Sound and spilled nearly 11 million gallons of crude oil. In the days and weeks that followed, oil spread across much of Prince William Sound, the waters off the Lower Kenai Peninsula, Afognak Island, Kodiak and the Alaska Peninsula. Birds, otters and seals were obviously in harm's way, but since oil floats, many thought that fish could swim away from the danger above. Not all could.

Rockfish were the only adult fish found dead following the spill (Andrew G. Hoffman, personal communication). Determining the cause of death in a fish is difficult unless it recovered shortly after the animal has died. Nevertheless, five rockfish were found sufficiently fresh to determine oil as the cause of death. Despite this, most rockfish live at depths that oil was not known to have reached in the first few months following the spill. Nevertheless, demersal rockfish in early May 1989 had significantly higher concentrations of hydrocarbons and hydrocarbon metabolites in their bile in oiled than in non-oiled areas. Over time, more of the heavier fractions did reach these depths and rockfish tissues collected in the fall of 1991 (the most recent samples tested) still showed signs of chronic histopathology (Gary D. Marty, personal communication).

Though rockfish were the only adult fish observed dead following the spill, small intertidal and juvenile fish which may have been killed would not have been noticed in the omnipresent mousse.

It was unfortunate that herring were just beginning their near-shore and intertidal spawning when the oil spill occurred. The oil did not deter them, however, and they spawned on the oiled shores and kelps with their usual abandon. Adults, eggs and juveniles were exposed to oil. The hatching rate was lower, there were more chromosomal aberrations in the larvae and the proportion of viable larvae was lower in the oiled areas (Evelyn D. Biggs, personal communication).

Three years later when the fish in this year class began to mature, they represented the next to smallest recruitment of 3-year olds to the spawning population in 25 years despite that they themselves were the result of a strong year class. Every four to six years, one year class of herring usually recruits to the spawning population at a significantly higher level than other year classes and dominates the spawning population until its numbers decline with time and another large year class takes its place. The 1988 year class was such a class. During the oil spill, the 1988 year class was exposed to oil in its rearing areas. It began to dominate the spawning population in 1992, yet the fertility rate of the eggs it produced was significantly lower in the oiled areas than in the unoiled areas (Richard M. Kocan, personal communication).

During the time of the oil spill, young

salmon were leaving their natal streams and hatcheries for the open ocean. The oil did not seem to diminish the available food for salmon juveniles in the oiled areas (Alexander C. Wertheimer, personal communication), but the extra metabolic energy expended by juveniles to detoxify the water soluble fractions of oil to which they were exposed may have been the cause of slower growth rate found in oiled areas compared to unoiled parts of Prince William Sound (T. Mark Willette, personal communication). Reduced growth rate, according to Willette, results in poorer juvenile to adult survival. This was observed when the following year pink salmon adults returned at half the rate to a hatchery in an oiled area as to hatcheries in the unoiled parts of Prince William Sound.

In the fall of 1989, pink salmon returned to spawn in the intertidal portions of Prince William Sound streams. Where oil was present in the spawning gravel, eggs and fry suffered higher mortalities than in areas of clean gravel (Samuel Sharr, personal communication). The upper region was the most heavily oiled of the intertidal areas, and it was the slowest to be cleaned by tides and waves and other natural scouring actions. The following year, egg and fry mortalities were significantly higher only in the upper intertidal portions of oiled streams. However, in 1991, mortalities in all intertidal regions were higher in the oiled than in the unoiled areas. The same phenomenon appeared in 1992 as well. It is theorized that genetic damage occurred when the adults spawning in 1991 and 1992 were incubating as eggs and fry in oiled gravel two years earlier. Genetic and environmental causes of this apparent functional sterility are currently being investigated (Samuel Sharr and James E. Seeb, personal communication).

Oil was still present in the salmon fishing areas when adult salmon returned in the summer of 1989. Nets could not avoid straining oil and water; oiled nets contaminated the salmon held by them; and oil-tainted salmon could not be sold. Fishing seasons were closed and many more adults returned to some spawning streams than was desired. It appears that the excess sockeye salmon returning to Red Lake on Kodiak Island and to the Kenai River system on the Kenai Peninsula produced more juvenile salmon than the ecosystems' food webs could support (Kenneth E. Tarbox, personal communication, Dana C. Schmidt, personal communication). Apparently, many young fish starved, fewer than normal outmigrated in the following years as smolts and fewer than normal are expected to return as adults; so few in fact, that commercial and sports fishing seasons may be closed. If this happens, hundreds of millions of dollars will be lost from the commercial and sports fishing industries.

In the Kenai system, the effects of other overescapements in the two years prior to the *Exxon Valdez* oil spill combined with the effect of the 1989 oil spill to severely impact that river system. There has been no indication of recovery to date.

Dolly Varden and cutthroat trout were overwintering in freshwater lakes when the spill occurred in Prince William Sound, but they soon left these lakes to forage in the near shore areas until they once again entered freshwater in the fall. The rocks and sediments of the near-shore areas were coated with oil and long after oil had left the pelagic waters, the near-shore was still contaminated. Some of those areas which were

cleaned by response crews were devoid of life because of the cleaning process. Dolly Varden and cutthroat trout frequenting these areas may have found less food in the cleaned areas and toxic hydrocarbons in the oil-contaminated locations. Subsequent sampling found their growth rates and annual survival were less in the oiled than in the unoiled areas (Kelly R. Hepler, personal communication). Some populations of cutthroat have declined to such critically low levels that these areas are now closed to fishing.

Clams were impacted by some of the methods used to clean the beaches following the oil spill. Many clams on oiled but uncleaned beaches survived, but their growth rates appear to be lower than in the unoiled areas (J.D. Johnson, personal communication).

Oil is known to have a very severe impact on crustaceans, but commercial fishing and heavy predation by an expanding sea otter population prior to the *Exxon Valdez* oil spill made it very difficult or impossible to determine the effect of oil on some species. A dungeness crab project quickly came to an end when only one crab could be found in the impacted area of Prince William Sound (Charles Trowbridge, personal communication). The Green Island area was directly in the path of much of the oil passing through Prince William Sound and it had once been a very productive area for commercial shrimp fishing. But the population crashed before the spill and therefore determining injury due to oil is very difficult. Nevertheless, in the absence of commercial fishing over the last several years, this population has not recovered (Trowbridge, personal communication). As noted earlier, recent evidence suggests that rockfish continue to be exposed to oil. It logically follows that shrimp in the same habitats would also be exposed, but whether this is preventing these populations from recovering is unknown.

The fish and shellfish of the spill areas were impacted by the oil even though they were beneath the surface. Because many of the fish and shellfish examined are commercially important species, it has often been difficult to separate the effects of oil from fishing mortality. Nevertheless, within sometimes broad boundaries, it has been shown that even the adult populations of fish and shellfish were affected by impacts even to the juvenile stages of these animals. Restoration considerations are warranted and may be necessary in order to bring some of these stocks back to healthy levels.

Assessment of Injury to Pink Salmon Eggs and Fry

B. G. Bue, S. Sharr, S. D. Moffitt, and A. Craig
Alaska Department of Fish and Game

This study is part of an integrated group of Natural Resources Damage Assessment Fish/Shellfish Studies (NRDAF/S) conducted to quantify damage to pink salmon *Oncorhynchus gorbuscha* as a result of the *Exxon Valdez* oil spill. Each study attempted to determine the injury to salmon at different stages of the life cycle. Wild pink salmon play a major role in the Prince William Sound ecosystem. Salmon are prey to a variety of terrestrial and marine mammals and birds, while also providing a pathway for nutrient transfer from marine to near-shore and terrestrial ecosystems. Wild pink salmon also contribute to the region's commercial fisheries.

Up to 75% of the wild pink salmon which spawn in Prince William Sound use intertidal areas (Helle et al. 1964). These areas are highly susceptible to contamination from marine oil spills. Moles et al. (1987) and Rice et al. (1975) found that pink salmon eggs and pre-emergent fry were adversely affected by exposure to crude oil and that the effect was most acute in intertidal environments. The 24 March 1989 spill from the *Exxon Valdez* occurred just prior to the spring migration of salmon fry and contaminated many intertidal spawning areas in central and southwest Prince William Sound.

This study evaluated (1) the immediate effects of oil exposure on pre-emergent pink salmon numbers in the spring of 1989, (2) the effect of intertidal oil exposure on pink salmon egg mortality, and (3) the effect of intertidal oil exposure on pink salmon egg to pre-emergent fry survival. Samples were also collected for histopathological and mixed-function oxidase analysis. This project concentrated on southwestern Prince William Sound although streams from Montague Island and eastern Prince William Sound were sampled to provide a broader perspective.

Study streams were selected using the following criteria: (1) adult salmon returns were expected to be large enough to provide a high probability of success in egg and fry sampling, (2) egg and fry sampling had been done in past years, and (3) streams which had low to no oil impact (controls) were selected near high oil impact streams. Pink salmon fry remain in the area in the stream where they were deposited as eggs. This trait allowed oiled and control sites to be located in close proximity to each other, thus reducing any geographical effect on the findings.

Forty-eight streams were sampled for pre-emergent fry in 1990, 1991, and 1992. These included 25 streams historically sampled to forecast adult pink salmon returns and 23 additional streams from the oil impact area. Thirty-one streams were sampled for pink salmon egg mortality in 1989, 1990, and 1991. The streams sampled for egg mortality were included in the group of streams sampled for pre-emergent fry.

The methods used for both egg and pre-emergent fry sampling were similar to those described by Pirtle and McCurdy (1977). Sampling was stratified by tide zone to control for possible differences in

egg mortality or overwinter survival due to salinity, temperature, predation, oil, or a combination of these factors. Four zones, three intertidal and one above tidal inundation were sampled, whenever possible, for each stream: 1.8 - 2.4 m, 2.4 - 3.0 m, and 3.0 - 3.7 m above mean low water, and upstream of mean high tide (3.7 m). Zone boundaries were established with a surveyor's level and stadia rod and staked prior to sampling. No sampling was done below the 1.8 - 2.4 m zone as survival was expected to be low (Helle et al., 1964). Upstream sample areas were often within the reach of extreme high tides (3.7 - 4.6 m) since ice and snow often limit the extent of upstream sampling.

Separate linear transects were established within each zone for egg and pre-emergent fry surveys. Although most transects were 30.5 m long, some were shorter due to steep stream gradients. Transects were placed in riffle areas where spawning was observed during escapement surveys conducted by NRDA F/S Study 1. Transects ran diagonally across the stream: fry survey transects started downstream against the right bank and moved upstream to the left bank, while egg survey transects started downstream against the left bank and moved upstream to the right bank. This placement of egg and fry transects reduced sampling overlap and the influence of fall egg sampling on spring fry abundance.

Fourteen circular digs, each 0.186 m^2, were systematically made along each transect. The number of digs was a compromise between reducing variance and the practicality of conducting the study. Fewer digs were completed in narrow stream channels to avoid excessive sampling of the stream.

Stream oil exposure classifications were based on visual observations (NRDA F/S Studies 1 and 2) and hydrocarbon content of 1989 mussel tissue (*Mytilus sp.*) samples (NRDA F/S Study 1). Hydrocarbon analysis of mussel tissue and mixed-function oxidase analysis of pre-emergent fry generally agreed with visual observations of stream oil contamination. Histopathological analysis failed to detect lesions in pre-emergent fry, although results from another study (Fink, 1992) indicate the fry may have been collected too early in their life to have developed lesions.

Since the annual pre-emergent pink salmon fry density survey conducted by the Alaska Department of Fish and Game, Division of Commercial Fisheries, was underway at the time of the spill, many streams were sampled for pre-emergent fry density prior to or immediately after oil exposure. An additional session of sampling was also done approximately two weeks after the spill. This second survey allowed some streams examined during the first sampling session to be examined for immediate effects of oil contamination.

Few dead pink salmon fry were found either prior to or shortly after oil exposure. Only nine of the 52 transects examined contained more than five dead fry. No increase in fry mortality was detected between the first and second samplings, although only three of the 14 streams examined were oiled. Likewise, no difference in fry density was detected between the first and second sampling.

Egg mortality was significantly greater in oiled streams in 1989, 1990, and 1991. We believe these differences indicate an effect due to oil exposure. The 1989 investigation detected a statistically significant difference in egg mor-

tality (p=0.0001) between oiled and control streams. Examination of stream zone contrasts indicated that egg mortalities were greater in oiled streams and that statistical differences were due to elevated egg mortality in the intertidal zones. Mean mortalities for the oiled and control streams were 0.174 and 0.104, respectively.

The 1990 egg mortality study also showed a statistically significant difference (p=0.0008) between oiled and control streams. Again, examination of stream zone contrasts indicated greater mortalities in oiled streams with the statistical difference confined to the upper intertidal zone. Mean egg mortalities for the oiled and control streams were 0.295 and 0.195, respectively.

Egg mortality results were consistent with perceived oil contamination: among oiled streams, all intertidal zones were contaminated in 1989 whereas in 1990 oil remained only in the upper intertidal zone.

The 1991 evaluation demonstrated very significant egg mortality differences between oiled and control streams (p=0.0001). Inspection of stream zone contrasts indicated that egg mortalities in all zones were greater for the oiled streams. Mean mortalities for the oiled and control streams were 0.433 and 0.221, respectively. This finding was unexpected and at this time remains unexplained. We have hypothesized that the continuing and increased mortality is the result of genetic damage sustained by the eggs and alevins which incubated in oiled gravel during the fall of 1989 and spring of 1990. We are presently evaluating this hypothesis through a series of controlled rearing experiments.

No significant difference in egg-to-fry survival was detected between oiled and control streams for 1989 to 1990, 1990 to 1991, or 1991 to 1992. We feel these results were due to insufficient power in the sampling design or sampling levels to detect differences rather than a true lack of change.

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The Prince William Sound Herring Recruitment Failure of 1989: Oil Spill or Natural Causes?

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In 1989, herring spawned in Prince William Sound 2-4 weeks after the T/V *Exxon Valdez* ran aground. The resultant oil spill contaminated some herring spawning beaches and may have affected food chains used by larval herring. The Alaska Department of Fish and Game (ADF&G) has routinely collected a variety of assessment information on the Prince William Sound herring stock since the early 1970's. We sought to use this information to determine whether the abundance of the 1989 year class of herring was different than might have been expected from historical data.

Information about the abundance of a year class of herring is first obtained when herring begin to return to spawn in their third year of life; therefore, 1992 was the first opportunity to assess the effect of the oil spill on the abundance of the 1989 year class. Stock assessment data routinely collected by ADF&G include age compositions of the catch and spawning populations, aerial survey estimates of biomass, miles of milt observed from aerial surveys, and spawn deposition survey estimates of biomass.

We used an age-structured assessment (ASA) model to synthesize all of the available stock assessment information into a single time series of historical abundance. In this paper the ASA model of Funk and Sandone (1990) was updated to include additional sources of auxiliary information, additional gear types, and natural mortality estimation; we also extended the time series of data to include information through the spring of 1992. Our goal was to produce a historical abundance time series that "smooths" or averages the often-conflicting stock assessment information. We then sought to examine how the strength of the 1989 year class compared with that predicted from the spawner-recruit model developed from the historical abundances and environmental conditions during early life history.

In a similar herring population in Sitka Sound, sea surface temperature anomalies explained at least 40% of the variability in recruitment patterns (Zebdi 1991). Because herring year class strength in Prince William Sound is correlated with the year class strength of other herring stocks around the Gulf of Alaska coast, we also sought to compare the relative strength of the 1989 year class in Prince William Sound with that in Sitka Sound.

Our approach uses an ASA model which incorporates auxiliary information, similar to that used by Deriso et al. (1985). The ASA model estimates initial cohort abundances which best fit observed age composition and abundance information, after accounting for removals at each age and year. Deviations of model estimates from observations are ascribed to measurement error in the observations.

While our primary goal was to use the model to estimate the historical

abundance time series, the model also estimates natural mortality, maturity, and gear selectivities for purse seine, gillnet, pound, and food and bait fisheries, and a coefficient which relates miles of milt observed in aerial surveys to spawning biomass.

The ASA model begins tracking herring cohorts at age 3, the first year that a measurable proportion usually return to spawn. The survival model accounts for natural mortality and harvest processes with a difference equation which describes the number of fish in a cohort at each age and year. The survival model removes the catch at each age resulting from the spring purse seine and gillnet and pound fisheries, and the fall food and bait fishery. The number of fish in a cohort includes both mature and immature herring measured at a time after annulus formation but before the spawning run or spring roe fisheries. The biomass of herring spawning at each age and year was estimated in the ASA model from the survival model's estimated number of fish at age, weight at age sampling, and the proportion mature at each age. The model estimated the proportions mature at each age and the proportion mature at each was assumed not to change from 1973 to 1992.

The harvest of herring by age for purse seine sac roe, gillnet sac roe, pound, and food and bait fisheries was tabulated for the 1973 to 1992 period from ADF&G catch records. Observed numbers of fish in the catch for each gear were also converted to age composition (percent by age) for each gear, for comparison to age compositions estimated from ASA model. Gear selectivity was defined to include both the effects of immature fish not being present on the fishing grounds (partial recruitment or maturity), and active selection or avoidance of certain fish sizes by the gear or fishermen's behavior. A logistic selectivity function was used for gears which were thought to have asymptotic selectivities (purse seine, pound, and food and bait); a gamma-type function was used for gillnet gear where selectivity might decrease at the older ages.

The volume of milt deposited by male herring each year was assumed to be proportional to the mature biomass. Since 1972, ADF&G aerial herring surveys have routinely recorded the miles of shoreline adjacent to milt discolorations visible in the water. A goodness of fit measure for miles of milt was developed by assuming that this linear measurement was directly proportional to the mature biomass. Spawn deposition surveys were conducted in 1984, and 1988-92. These surveys estimate biomass by back-calculation from the numbers of eggs deposited, using additional sampling to estimate fecundity and sex ratio. A goodness of fit measure for the ASA model was developed from the differences between ASA estimates of mature numbers at age and the spawn deposition survey estimates of numbers at age.

In addition to the time series of the catch by age, a relatively long time series of age compositions of the spawning population are available. Since 1984, age samples have been collected from spawning herring. Sampling effort was lower for years prior to 1984, and spawning age compositions were reconstructed primarily from purse seine catch samples from each area. Sample sizes were judged to be too small in 1973, 1974-78, and 1980-81 to reliably construct estimates of spawning age composition. A goodness of fit

measure was developed from these age compositions as the difference between the ASA model's estimated age compositions and those observed during ADF&G sampling.

A total sum of squares was computed by adding each of the component goodness of fit measures where each component was assigned an ad hoc weight. The ad hoc weights reflected our attempt to weight data equitably, but also incorporate some prior knowledge of our confidence in each component. The model estimates a total of 37 parameters: 23 initial cohort sizes, 10 gear selectivity function parameters, 2 maturity function parameters, 1 aerial milt survey biomass coefficient, and 1 survival rate parameter. The combined weighted sum of squares was minimized using nonlinear least squares techniques to estimate values for the 37 parameters.

Biomass estimates from the ASA model were relatively low (20,000-40,000 metric tons) during the 1970's and increased to higher levels (50,000-110,000 metric tons) in the 1980's. Recent trends in abundance, indicated by the age composition and aerial milt survey data, are different than the abundance trend from the spawn deposition survey. While the strong 1984 year class began dominating the age compositions in 1987, the spawn deposition survey biomass did not increase until 1990. The cause for this discrepancy is unknown, but it may indicate that spawn survey measurement error is much greater than anticipated.

While the design goal for spawn deposition surveys was a precision such that 95% confidence intervals would be ±25% of the true biomass value, the absolute deviations of spawn deposition survey biomass estimates from the ASA biomass estimates averaged 48%. The ASA model reflected these inconsistencies by essentially scaling the biomass to a "smooth" of recent spawn deposition survey biomass estimates, while manipulating year class strengths to track trends in age composition data more closely. The estimated survival rate of 65% (equivalent to an instantaneous natural mortality rate of 0.43) was very similar to the midpoint of the range used by Funk and Sandone (1990). The ASA model estimated that, on average, one mile of milt from aerial surveys corresponded to be 821.2 metric tons of spawning herring.

Year class strength in Prince William Sound is characterized by occasional years of very strong recruitment. Beginning with the 1976 year class, these strong year classes have occurred every four years. The 1989 year class is among the smallest observed since the beginning of the data series in the early 1970's and resulted from one of the largest egg depositions. First quarter sea surface temperatures in 1989 were also relatively low and low sea surface temperatures tend to be associated with weak year classes.

However, corresponding data from Sitka Sound indicate that the 1989 year class there was not as weak. Because the 1989 year class has appeared in assessment samples only for a single year, the precision of the estimate of its abundance is not high.

Precision is further reduced because only a portion (approximately 25%) of a year class is recruited at age 3, and the proportion recruited varies somewhat from year to year. The precision of the abundance estimate of the 1989 year class will continue to improve with additional years of sampling. However, most of the

improvement in the precision of the abundance estimate for the 1989 year class will be realized by 1995.

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Summary of Known Effects of the *Exxon Valdez* Oil Spill on Herring in Prince William Sound, and Recommendations for Future Inquiries

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The herring population in Prince William Sound, because of its size and biomass, is a critical food source for many avian, mammalian, and subtidal predators, is an important subsistence food, and a target for a multi-million dollar commercial fishery. Unfortunately, the grounding of the *T/V Exxon Valdez* on March 24, 1989 and its resulting 11-million-gallon oil spill coincided with the annual spring migration of herring spawners to nearshore staging areas. Over 40% of areas used by herring to stage, spawn, or deposit eggs and over 90% of areas needed for summer rearing and feeding were exposed to crude oil.

From 1989 to 1992, the Alaska Department of Fish and Game, the University of Alaska, and the National Marine Fisheries Service conducted studies describing the damage done to Prince William Sound herring as a result of the spill. Herring embryos (live eggs) and hatched larvae were studied in the field and in the laboratory, juvenile herring were trawled during the summer of 1989, and adults were enumerated and collected for various laboratory tests. The total numbers of herring spawning were estimated annually. Since the herring population is composed of up to ten year classes, or fish born in different years, the age composition was determined annually through an intensive sampling program. In the laboratory, damage observed in eggs, larvae, and adult herring was related to known concentrations of oil in dose-response experiments. In 1992, eggs were collected from adult female herring that were artificially spawned and reared separately for each female. The hatching success of these eggs and larval abnormalities were measured to look for residual effects of oil on the adult herring population.

Potential injury to the herring population in Prince William Sound was studied in three life history stages. First, the early life stages, from egg to hatched, free-swimming larvae were studied for each year from 1989 to 1991. Second, larval-juvenile fish were collected by trawl and studied in 1989. Third, adult herring were collected from 1989 to 1992 and analyzed.

Damage summaries for each of the three categories were synthesized separately because important biological information needed to link the information between life stages was missing. Information needed to link life stages and create a complete population dynamics model include: (1) the number of their stocks and their distribution in Prince William Sound; (2) rates of herring immigration and emigration in Prince William Sound; (3) how environmental factors influence survival of larvae, juveniles and thus affect recruitment; and (4) how population levels affect survival of young fish (density-dependent factors).

Damage to Prince William Sound herring is described in detail in the indi-

vidual project reports. Although egg mortality was slightly elevated in oiled areas, lethal and sublethal genetic damage and physical abnormalities were much greater in oiled areas than in non-oiled areas in 1989. Injuries were more common and more severe in oiled than unoiled areas, and in all aspects, injuries declined in 1990 over 1989. Most of the damages documented in 1989 and 1990 were similar to impacts recorded from other oil spills and laboratory experiments. Genetic damage (anaphase aberrations) was the most sensitive measure of oil damage, measurable even at the lowest concentrations of oil used in the laboratory studies. Survival from egg to free-swimming larvae was three times greater in unoiled areas, however, environmental and biological factors confounded the results. A model to estimate total damage from egg to free-swimming larvae and combining all the effects measured in 1989 to 1991 will be completed soon.

The juvenile fish trawl survey confirmed that herring larvae hatching in 1989 followed the same path as the oil trajectory through Prince William Sound which may have further impacted that year class. Measurements of physical abnormalities, chromosomal breakages, and tissue or histopathological injury are currently being summarized to estimate the extent of the damage.

Internal tissue damage found in adult herring resulting from direct exposure to oil suggests that this toxic event may have weakened the fish's ability to resist diseases and parasites. In addition, certain gut-dwelling parasites were found to have migrated deeper into the adult herring musculature, possibly a response to oil in the digestive tract (Moles et al., in press). Juvenile pink salmon were stunted by ingestion of oil (Moles et al., in press), so a similar effect may have occurred with juvenile herring.

The absence of three-year-old herring, born in 1989, sampled from the spawning population in 1992 and possible reproductive impairment of the four-year-old herring, born in 1988 may indicate further effects from the spill. Environmental factors affecting the 1989 year class confound a clear understanding of the oil spill impact on the adult population.

The 1988 year class was one and a half years old during the spill year. The hatching success of eggs collected from four-year-olds at an oiled area was less than half that of eggs collected in an unoiled area, even though no oil remained at the sites. The 1988 year class currently dominates the Prince William Sound herring spawning population and if a portion of them cannot reproduce successfully, this may affect the population in the future.

The reproductive study conducted in 1992 was a pilot project initiated to measure if differences in reproductive rates could be detected between areas. Further study might resolve whether the reproductive differences measured were due to oil or were due to natural biological variation.

The 1988 year class as well as others (e.g. 1984 and 1989 year classes, if available) should be tracked in future studies, to look for differences between ages. Until some of the linkage data between life stages and environmental parameters affecting the Prince William Sound herring population are understood, it will be difficult to project exactly how the potential reproductive impairment measured in adults spawning in 1992 will affect the future population.

With a better understanding of fac-

tors affecting survival and recruitment, a population simulation model could be constructed and used to predict damage in the case of another spill or toxic event. Some of the basic information needed to study the natural recruiting process is present and is ready for a modeling exercise. This model could also incorporate the reproductive impairment information and be used to predict future impacts.

Natural restoration of the Prince William Sound herring population is probably the best tool available to mitigate oil damage to herring stocks. Because artificial propagation of juvenile herring is not currently being done and because it is difficult to enhance spawning substrates due to movements of the exact spawning locations of herring from year to year, it is probably not practical to use these hands-on techniques.

Since herring are harvested in large numbers by humans, alteration of human use could be an effective restoration tool. However, using alteration of human use or fisheries management to avoid oil-damaged stocks or to mitigate damage can be successful only if precise stock assessment tools or a good understanding of the Prince William Sound population exists. At this time, we do not possess a precise enough description of the Prince William Sound stock or an estimate of the total damage accrued to accurately adjust fishing pressure and protect future populations from a possible oil-induced decline. In addition, as an agency mandated by state law and policy, we cannot make adjustments to the current management plan without sufficient justification because we are held liable for resulting losses.

From my observations while implementing the herring program over the last four years, I have some recommendations concerning future planning in spill response, damage assessment and restoration that could improve the process.

First, a response plan is sorely needed that incorporates all the agencies (with cooperative agreements in place), puts appropriate expertise in advisory roles available to all levels of responders and planners, that defines appropriate chain of command and roles for each staff person involved, and that sets some emergency administrative procedures in place.

Secondly, a similar plan for damage assessment is needed to coordinate responders and researchers, make experts available to assist in survey design, and include baseline information (from previous research and ongoing monitoring) from which to build studies. As part of summarizing damage assessment, a panel of experts would conduct an environmental modeling exercise to link damages between species, guide research, and estimate damage for the legal process.

Finally, restoration planning should start the same day as the spill and coordinate intimately with damage assessment using the results of the environmental monitoring exercise and drawing from technical information available on effective restoration techniques. Out of the restoration planning process, a list should be constructed of needed studies or enhancement projects so that proposals could be solicited from interested researchers and resource managers. Norcross (1993) refers to Norwegian response plans that accomplish many of the goals listed above.

In lieu of having none of the above available at the time of the *Exxon Valdez* spill and a very primitive understanding

of the Prince William Sound ecosystem and detailed population damage information, I recommend, as an absolute minimum, that we proceed rapidly with habitat protection and monitoring before all of the settlement monies are spent. Habitat protection will prevent the exacerbation of oil spill damage (known and unknown) and a comprehensive monitoring plan will provide baseline information needed for the planning process described above. Much time and money could be saved in the future if some were invested now in planning.

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STATEMENT PRESENTED TO THE U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON MERCHANT MARINE AND FISHERIES IN THE MARCH 24, 1993 HEARING ON THE CONDITION OF PRINCE WILLIAM SOUND, ALASKA, FOUR YEARS AFTER THE EXXON VALDEZ OIL SPILL

by

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I have prepared this statement based upon my experience as a peer reviewer of the damage assessment studies and of the restoration studies done in response to the Exxon VALDEZ oil spill (EVOS). I have been involved as an outside reviewer since the peer reviewers were first engaged in late summer 1989. My level of involvement is probably second only to the Chief Scientist. The following are my responses to the four questions posed in today's hearing.

I. HOW HAVE THE SOUND AND ITS RESOURCES RECOVERED?

The extensive set of state and federal Natural Resource Damage Assessment studies has successfully identified what are probably the major damages caused by the EVOS. The subsequent monitoring during restoration studies has added to that understanding by documenting the progress of recovery. I can only highlight some of these findings in my remarks here; more detailed background information can be found in the expert summary reports which have been provided to the Committee.

Damages to Prince William Sound and extensive regions of the Kenai Peninsula-Lower Cook Inlet and Alaska Peninsula-Kodiak areas affected four largely separate subsystems of the coastal ecosystem of this Gulf of Alaska spill area: the coastal terrestrial system; the intertidal system; the subtidal system; and the pelagic system.

A. Damages to the Coastal Terrestrial System

Only a small area of terrestrial habitat was oiled by the EVOS. Consequently, little attention was devoted to study of possible injury to terrestrial systems. Damage and recovery in the terrestrial ecosystem is probably best evaluated species by species for those few prominent species that demonstrated injury, notably bald eagles. Over the spill region, eagles were reduced by about 11 percent and recovery is proceeding at a pace that suggests another decade to reach pre-spill levels. Sitka black-tailed deer and brown bears show little evidence of injury despite some documented damage to food resources for each (rye grass and

rockweed for deer; clams and other intertidal invertebrates and pink salmon for bears).

B. Damages to the Intertidal System

Damages to the quality and quantity of biotic resources in intertidal habitats were extensive, deeply pervasive into the ecosystem, and persistent. A large fraction of the over 11 million gallons of spilled oil was estimated to have been grounded directly in the intertidal habitat. Much of this oil was rapidly removed from the intertidal zone by artificial and natural clean-up processes, especially winter storms. However, those areas that are protected from natural wave and current action have been extremely slow to exhibit loss of oil. Extensive pockets of subsurface oil as well as surface asphalts continue to persist inside and outside of Prince William Sound, where they continue to contaminate the intertidal habitat and its biological resources. Thus, the initial rapid rate of disappearance of oil from intertidal shores was seriously misleading because it reflected only those most readily removed accumulations of surface oil in the higher-energy areas.

Biotic damages in the intertidal habitat are extensive and have not exhibited recovery to date. The dominant intertidal plant, rockweed, was decimated on intertidal rocky shores and has not recovered, especially in the high intertidal zone. This seaweed normally functions by providing habitat for many invertebrates and by generating detritus to fuel growth of subtidal resources. Abundances of key resident invertebrates, notably blue mussels, limpets, and periwinkles, were greatly reduced by the oil spill and have also not recovered. On sandy beaches, littleneck and butter clam abundances were drastically reduced and show no sign of recovery to date.

Oil persists in virtually unweathered form underneath many intertidal beds of blue mussels throughout the spill region in Prince William Sound. These mussels continue to become contaminated with oil, which inside these oiled mussel beds has shown no change in concentration or character over time since the spill. This represents a route of continuing injury to the entire coastal ecosystem because the blue mussel is such an important prey resource that it can be considered as almost a "universal prey" in this system. Continuing reproductive and other damages to harlequin ducks, black oystercatchers, marbled murrelets, pigeon guillemots, sea otters, river otters, harbor seals, pink salmon, cutthroat trout, and possibly also other unstudied consumers of intertidal invertebrates are probably caused by the ingestion of contaminated mussels and other intertidal prey. Consequently, the massive levels of contamination of the intertidal habitat have produced correspondingly large amounts of damage to intertidal resources, which in turn persist in injuring those several important bird, mammal, and fish predators that

depend on intertidal prey resources. Ecosystem recovery in the intertidal system will necessarily be retarded for an indefinite, but clearly long, time into the future, dependent first upon the slow rate of oil disappearance from underneath oiled mussel beds and other protected environments, and then second upon the recruitment and reproductive rates of component organisms.

I should emphasize here that this list of species of predators that suffered damages from the EVOS through damage to their intertidal prey resources does not include all damaged intertidal consumers. Other species of ducks, black-legged kittiwakes and other gulls, other shore birds, Dolly Varden char and many other species exhibited substantial mortality from the oil spill. This list represents those species for which there is evidence of continuing damages. These are mostly in the form of reproductive failures or inhibitions that persist in damaged populations. Not only has recovery for these species not yet occurred but the toll of damages from which recovery must arise is still mounting with each failure to reproduce and to replace the dead of older generations.

C. Damages to the Subtidal System

The overall picture that has emerged from study of the subtidal environment and ecosystem is one of extensive impacts of the spilled oil over a large range of depths and over a wide expanse of habitat that extends long distances from the source of the spill. Because of the mobility of the epibenthic invertebrates (crabs, shrimps, etc.) and demersal fishes (halibut, sole, flounder, pollock, cod, etc.) of importance in the subtidal ecosystem, direct studies of the EVOS' impact on population level were impossible in most cases. Nevertheless, exposure and contamination of a broad spectrum of these subtidal resources is evident in the data.

-- The Cascading Effect of Sea Otter Losses

The continued presence of hydrocarbon contamination in subtidal sediments and the continued damages to some communities of benthic invertebrates in subtidal sediments imply that the effects of the spill in the subtidal ecosystem persist and are likely to have continuing impacts on important higher-level predators. The well-documented reductions in sea otter abundance that resulted from oil-induced mortality and reproductive damages may have a major cascading effect on the shallow subtidal ecosystems in the spill area. When sea otter abundances are sufficiently reduced, sea urchins (a preferred prey) undergo dramatic increases in density. They overgraze their own food, the large macroalgae of the shallow subtidal zone, producing what are termed "urchin barrens." Absence of these small kelps has further large effects on the intertidal ecosystem, as it removes nursery habitat for important subtidal crabs, shrimps, and fishes, and as

a major source of detritus of subtidal ecosystems is destroyed. Consequently, loss of sea otters may induce subsequent major alterations in the entire shallow subtidal ecosystem of the spill area.

D. Damages to the Pelagic Ecosystem

The injury to the pelagic ecosystem (the ecosystem of organisms that live in the open ocean) with the greatest implication for pervasive effects is the damage to the herring stock. 1989 Production of herring eggs in Prince William Sound was one of the heaviest on record. During the 1992 field season, however, state biologists noted that the 1989 year class of three-year old herring returned as first-time adult spawners at the lowest level measured since 1967. As one of the three most important forage fishes, herring is a critical prey resource to over 40 groups of predators in the pelagic ecosystem, including especially several species of salmon, harbor seals, Steller sea lions, harbor porpoises, Dall's porpoises, glaucous-winged gulls, puffins, murres, and others. Consequently, the probable year-class failure of what would have otherwise been one of the dominant year-classes of herring, feeding consumer populations for many years to come, denotes a substantial reduction in food abundance for the broad suite of pelagic predators. This is likely to induce population declines in pelagic predators, with potential for cascading impacts on top-level carnivores, such as killer whales. Because the EVOS reduced abundances of pink and sockeye salmon directly, reduction in food stocks such as herring is likely to represent an additional indirect effect, intensifying the damage over time and delaying recovery of the entire pelagic ecosystem.

E. Damages to Birds and Sockeye Salmon

Some final comments are needed to emphasize some of the critical problems inhibiting recovery of certain key biological resources. The most serious ongoing injury to birds probably is represented by the ongoing reproductive failure of common murres. An estimated 60 percent of the 130,000 birds present at the breeding colonies in the Barren Islands at the time of the spill was killed by the EVOS. Subsequently, those colonies have suffered complete reproductive failure each year as the birds have initiated breeding too late in the season and without the colony syncrony needed to provide group protection against predators. Thus, the losses of murres mount up and the very fate of these colonies remains in doubt.

One damaged fish resource also deserves particular comment: the sockeye salmon. Because the oil spill required closure of the sockeye fishery in 1989, far more fish escaped into the river systems to spawn than fisheries managers would have allowed. The overescapement in the Kenai, Skilak, and Red Lakes damaged the

ability of those lakes to produce juvenile sockeye salmon by overloading their carrying capacity for juvenile salmon production and by altering their trophic aquatic communities. This overescapement will result in drastically reduced future numbers of sockeye returning to the Upper Cook Inlet fisheries than would have occurred in the absence of the spill. Furthermore, remedial actions may need to be taken to restore the lakes that were damaged by overabundance of juvenile sockeyes.

II. WHAT LESSONS HAVE WE LEARNED FROM THE CLEAN-UP AND DAMAGE ASSESSMENT?

From the extensive network of natural resources damage assessment studies, we have gained a much improved understanding of how the impact of a large oil spill spreads through and pervades essentially the entire coastal ecosystem. I have summarized this knowledge in my answer above to the question on the status of recovery. Here I suggest two types of lessons that we should be able to take away from this experience but as of now cannot. The tasks outlined below would be appropriately addressed by the Restoration Team.

1. Several natural resource damage assessment and other related studies following the EVOS have collected data relating to the effectiveness and consequences of various response actions taken after the spill. For example, evidence exists to show that the application of pressurized hot water clean-up of oiled beaches was at least as damaging to the intertidal plants and invertebrates as the oil itself. In addition, evidence exists to show that the rehabilitation process for oiled sea otters had low success, caused added stress through handling of the oiled animals, and perhaps even introduced infectious disease into unoiled areas of Prince William Sound as otters were released from rehabilitation. These and all other results of study of the impacts of the emergency management responses should be collected together into a manual that improves the ecological sensitivity of response practices in preparation for the next oil spill.

2. Now that a relatively clear understanding of the present extent of natural resource damages has been achieved, it would be appropriate to compare these impacts to what was anticipated in the many ecological impact and risk analyses prepared prior to receipt of permits for installation of the pipeline to Port Valdez. This comparison would represent a test of how well the public can rely upon the present process of environmental impact analysis as specified by NEPA and other environmental protection legislation.

III. WHAT IS THE STATUS OF THE NATURAL RESOURCES RESTORATION PLAN?

In my judgment, there are two different responses that should be given to this question. First, I am convinced that those individuals working on the Restoration Team and on the Trustee Council are thoughtful and conscientious professionals who have taken very seriously their large responsibility to the public for accountable use of the settlement monies. No approval for restoration funding occurs without careful consideration by the Restoration Team, agency personnel, and the trustees. In addition, there has remained in place a system of independent review of the proposals submitted for possible funding under the restoration process. There is detailed and coordinated planning and preparation to achieve an integrated restoration program. I consider this process to be progressing in a reasonable, but perhaps overly cautious fashion.

The second answer that I provide to this question actually represents somewhat of a consensus view among the peer reviewers, and expresses some of the frustrations that we have had with the process. I consider each of the issues that I list below to be worthy of consideration.

1. The make-up of the Trustee Council and the Restoration Team tends to exclude at least two major organizations from active involvement in the restoration planning and funding process. The University of Alaska system with its concentration of intellectual resources and its long history of responsive public service is largely excluded from the restoration process. In addition, the National Park Service with its mandate for responsible stewardship of magnificent natural resources, including many miles of oiled and damaged shoreline in the Kenai Fjords and Katmai National Parks, is also largely excluded from the restoration process. The absence of each of these organizations from the conference table during the planning and decision-making processes seems likely to impact the scope of the restoration. I think that the public interest would be better served if these other voices shared more in discussion and decision-making.

2. Perhaps because of the requirement that all funding decisions be unanimously approved by the Trustee Council, the trustees have appeared to be slow to support proposals that truly initiate restoration actions. I would separate the restoration funding into 5 different activities: administrative costs; monitoring activities; active restoration interventions; critical habitat protection and acquisition; and

establishment of a permanent fund to enable restoration, monitoring, etc. to proceed beyond the decade time frame of receipt of settlement funds. It would be appropriate for the Trustee Council to release an accounting of expenditures to date in the restoration process, separating costs into these 5 categories. I also would like to see the Trustee Council make a policy decision on the issue of how the apportionment of funding among these alternative uses should be made. By moving so cautiously on decisions for restoration, monitoring studies seem to be favored at the expense of active restoration, habitat acquisition and protection, and permanent fund establishment.

3. Several uses of the restoration monies deserve more immediate action, given the level of damages that continue to accumulate without adequate recovery. I list some of these options here:

   (a) The continuing inability of injured common murre colonies to reestablish the proper timing syncrony of breeding demands immediate restoration intervention.

   (b) Several murre colony breeding areas in the spill area are in private hands. Purchase of some of the best of these should be initiated to provide long-term protection of this damaged resource.

   (c) The removal of finer sediments from intertidal beaches during the application of pressurized washes is likely to inhibit recovery of clam and other invertebrate populations for some relatively long period of time. Natural transport and deposition of finer sediments onto intertidal beaches should be investigated to assess the time frame of natural recovery in anticipation of a possible restoration project that artificially returns those finer sediments to damaged intertidal beaches. The importance of clams to subsistence uses, recreational harvest, and wildlife (especially sea otters, bears, and several sea ducks) renders this restoration need of high priority.

   (d) Perhaps the most compelling immediate need for active restoration has received attention from the trustees. There is a 1993 restoration project designed to explore alternative means of cleaning oiled mussel beds, the present reservoirs of ongoing and continued contamination of invertebrate prey resources in

the intertidal habitat. This is a critically important problem.

(e) Before the settlement monies show up as spent, I consider important the consideration of a proposal, originally articulated by former Alaska State Senator Arliss Sturgulewski, for establishment of a permanent fund for educational, monitoring, and research activities in the spill region after the decade of payout of settlement monies. This issue has not received sufficient attention, in my judgment.

(f) Several specific proposals for habitat acquisition and protection deserve consideration for funding in the relatively near term. The Nature Conservancy has assisted the Restoration Team by helping to catalogue and rank alternative acquisitions: this effort should be used to make those important decisions, especially for resources or areas at risk. Particularly appealing to me appear such options as repurchase of the coastal portions of the Kenai Fjords National Park, which recently through a court decision passed into private hands, and protection of riparian habitat on Afognak Island.

(g) Finally, the peer reviewers have on several occasions pointed out the value of conducting a pelagic ecosystem study based upon the trophic ecology of forage fish, particularly the capelin, sand lance, and herring. These three species form the prey base for virtually all the marine mammals, seabirds, and larger fishes of the coastal Gulf of Alaska in the spill region. They represent vital links between important resources in the ecosystem. For example, marine mammals cannot be managed independent of fisheries management because each is interconnected through common reliance on the shared forage fish prey base. Thus, the management of resources and services of the entire ecosystem could be improved dramatically through improved understanding of the mechanistic interdependencies of valued resources. No one agency is positioned to be able to conduct such a study. Yet, the oil spill brings all relevant agencies to the same table and prepares the way for possible collaboration on such a visionary project with long-lasting positive implications for

management. This issue has not received its due attention from the trustees, perhaps because the institution most likely to organize such a collaborative effort, the University of Alaska, is not an active participant in the restoration process.

IV. HOW DO THE TRUSTEES PLAN TO SPEND THE SETTLEMENT MONEY?

This question is doubtless best addressed directly by the trustees who are themselves testifying.

EXAMPLES OF
EXXON VALDEZ OIL SPILL RESIDUE

From

PRINCE WILLIAM SOUND

To The

ALASKA PENINSULA

Observed In

SUMMER 1992

Submission in conjunction with the testimony of Charles H. Peterson before the House Committee on Merchant Marine and Fisheries

March 24, 1993

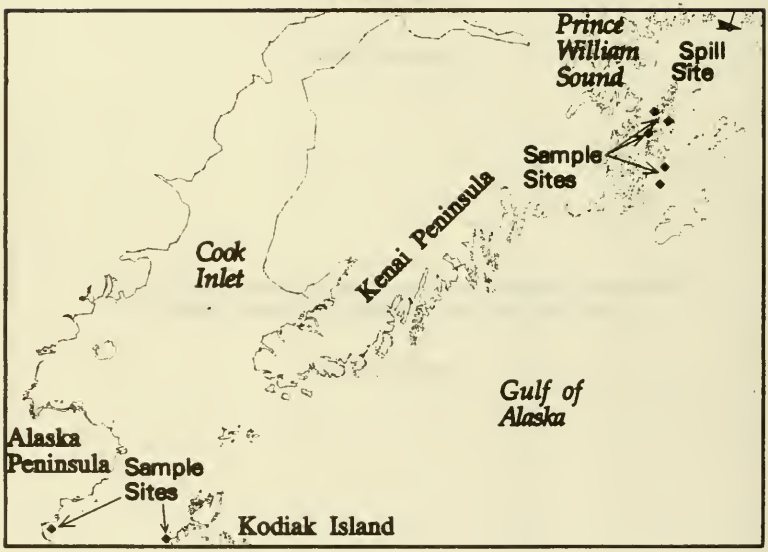
EXAMPLES OF OIL SPILL RESIDUE

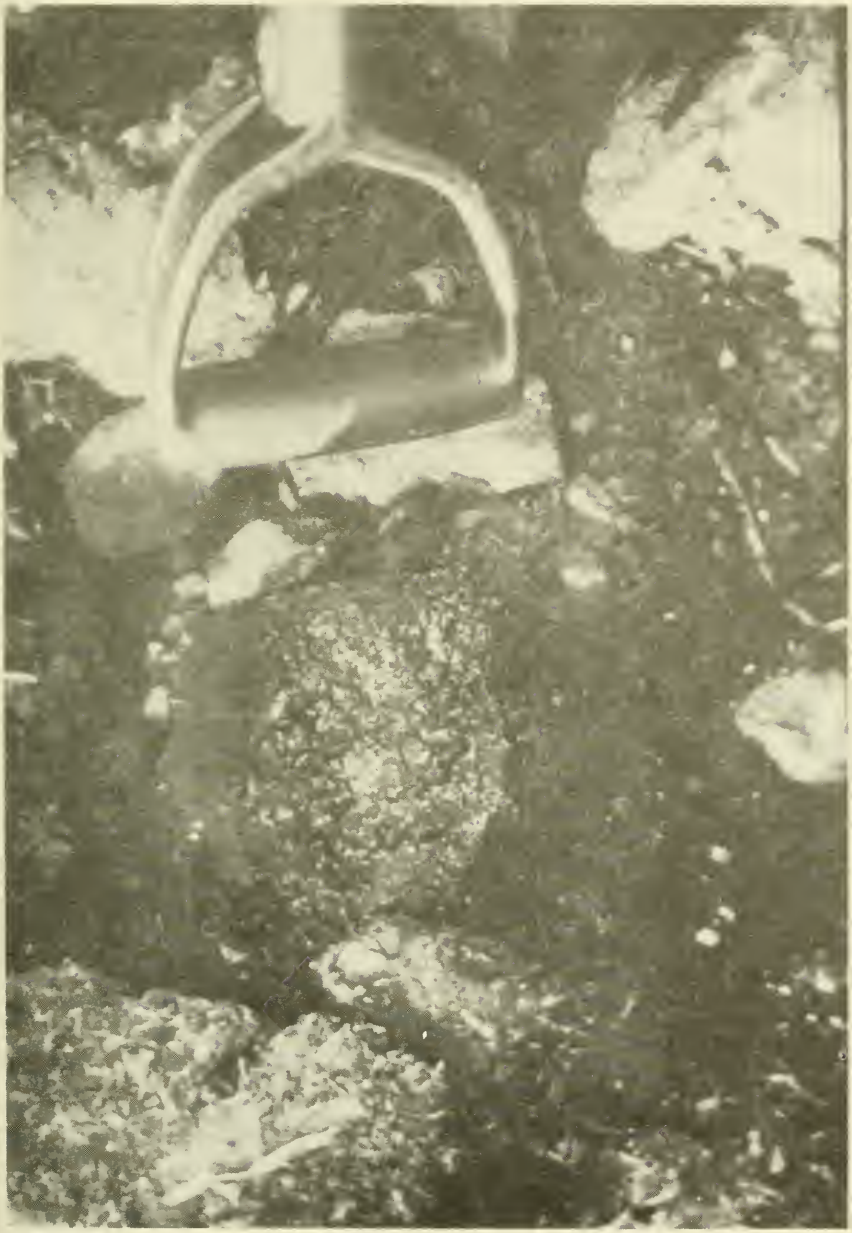
From
PRINCE WILLIAM SOUND

To The
ALASKA PENINSULA

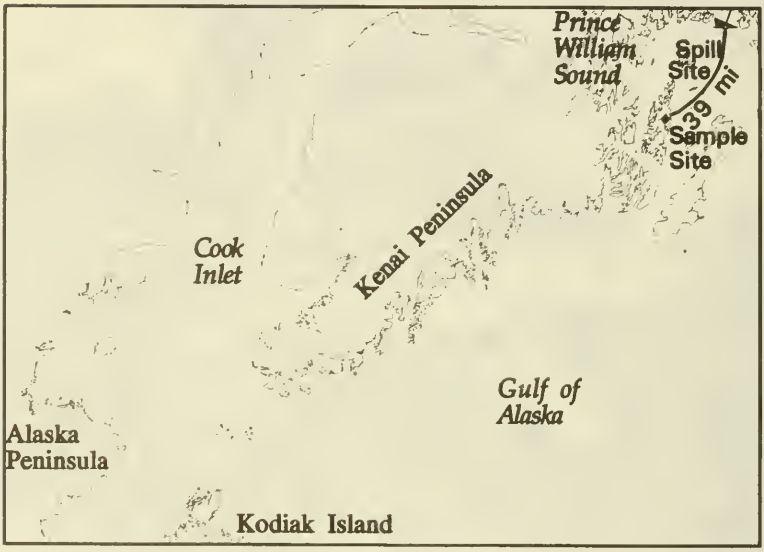
Observed In
Summer 1992

LOCATION MAP



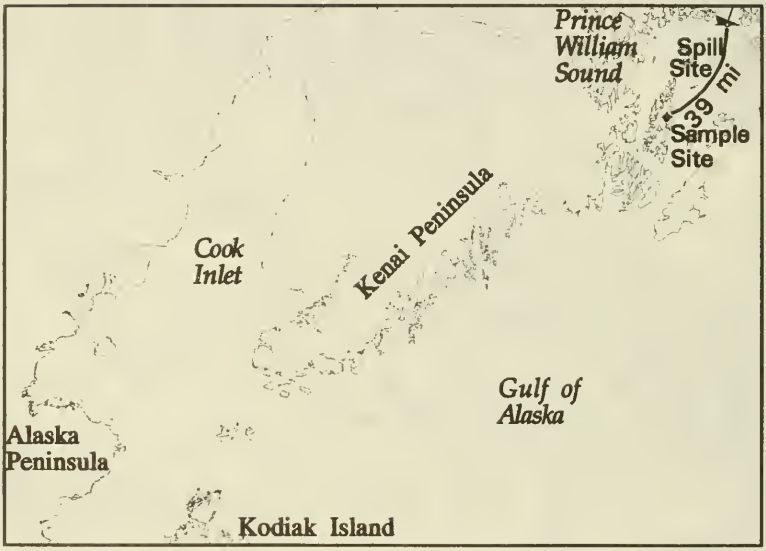


SOUTH ARM, BAY OF ISLES - **Fluid black oil residues on overturned rock. Note (on left side of picture) spruce needles are stuck to tarry residue on top of rocks.**

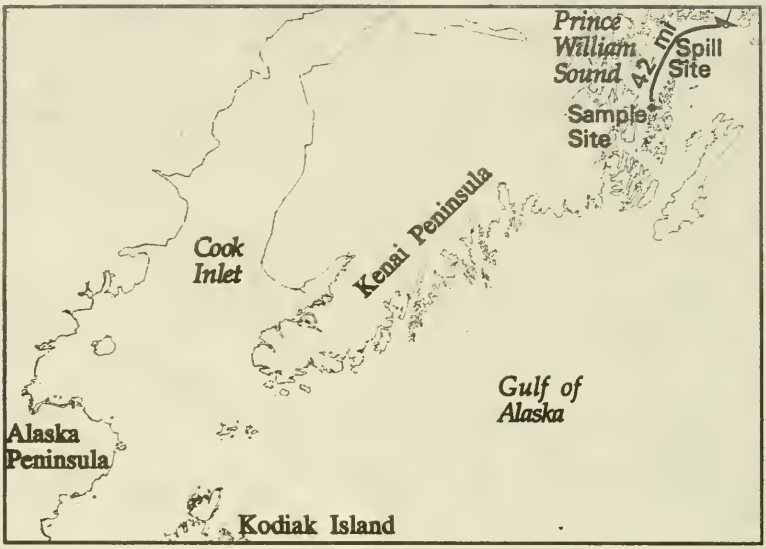


LOCATION MAP

SOUTH ARM, BAY OF ISLES - **Sheen released from overturned rocks after tide has come in (same location as previous photograph).**



LOCATION MAP



LOCATION MAP

NORTHWEST KNIGHT ISLAND - Beach appears to be clean on the surface, but oil residues exist below the surface. Note oily material on tip of shovel and on spatula.

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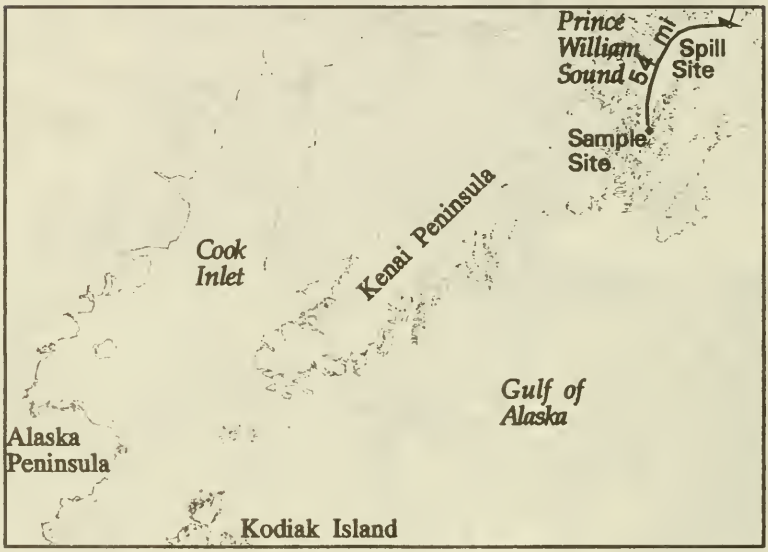
SQUIRREL ISLAND - **Trench exposing thin asphalt-like coating on surface and sand saturated with oily residues to a depth of about 17 cm (6½ inches).**



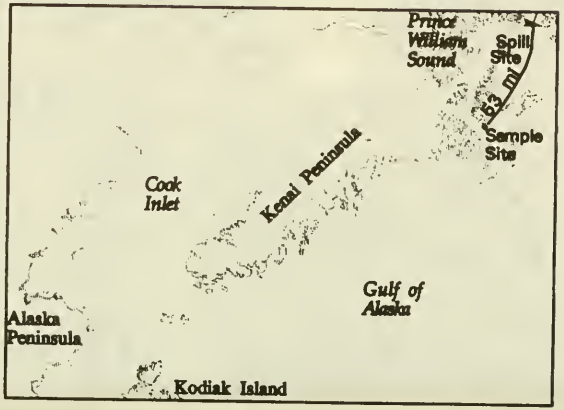
LOCATION MAP

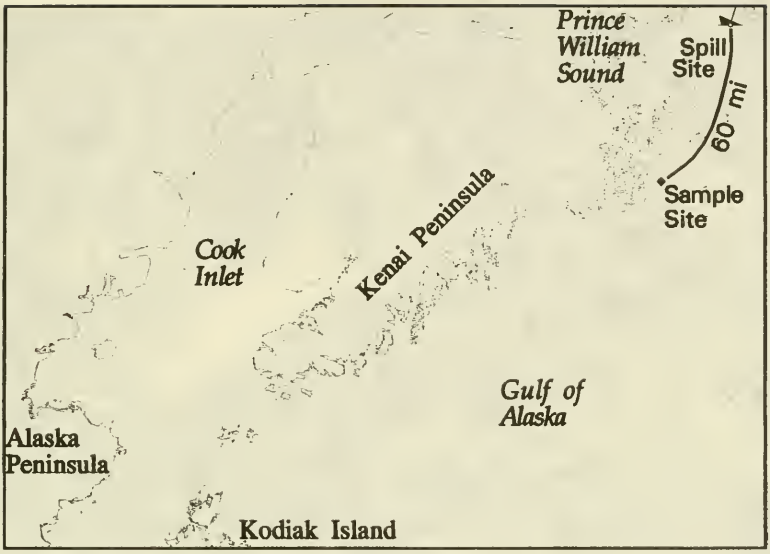
POINT HELEN

(*above*) Liquid oil residue on glove. Oil saturated sediments exposed in pit.

(*left*) Rock from pit (in the above photograph) emits sheen when placed in water.

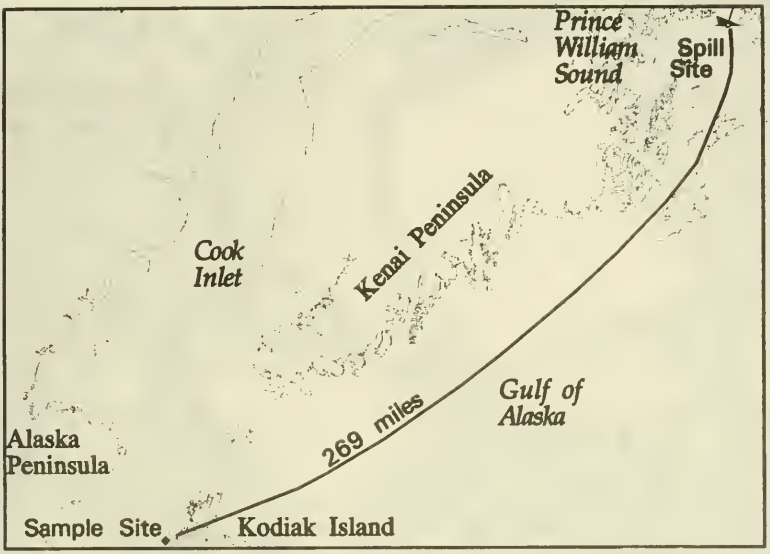
LOCATION MAP





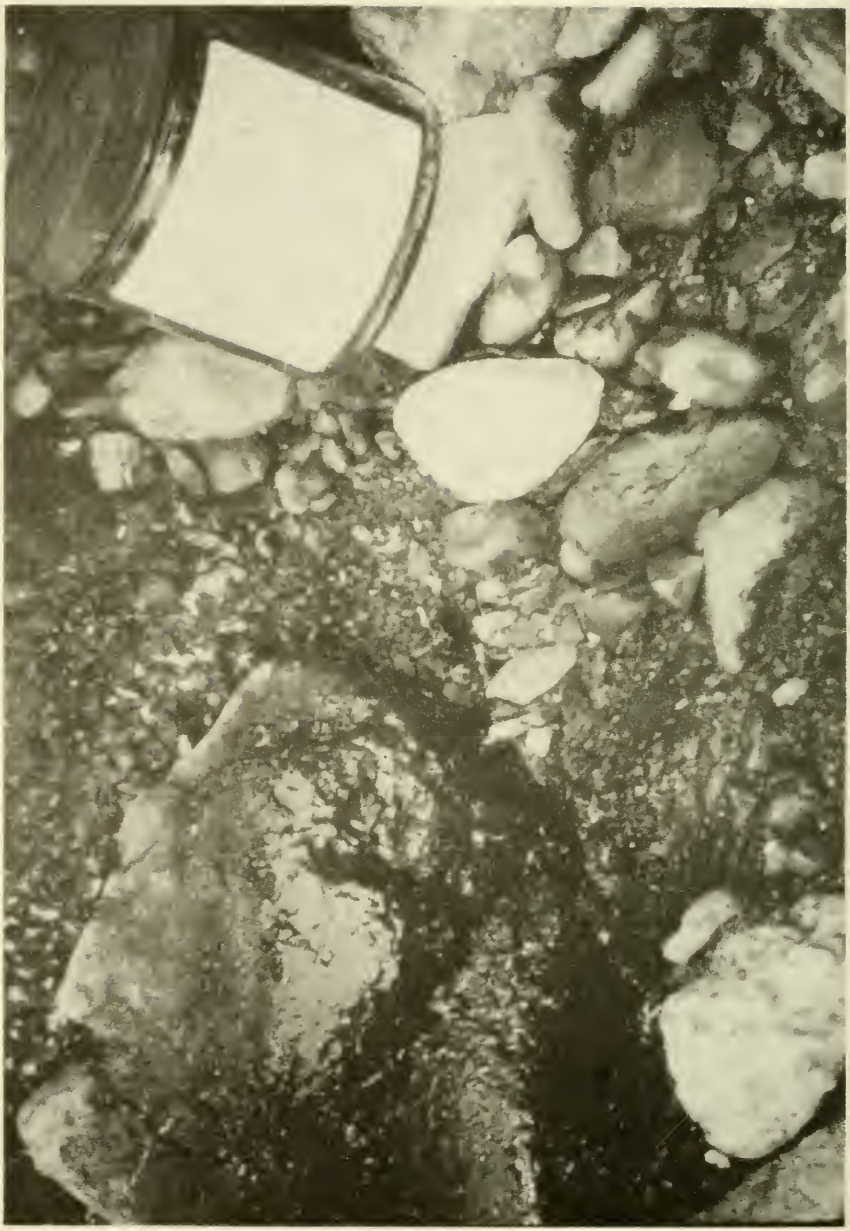
LOCATION MAP

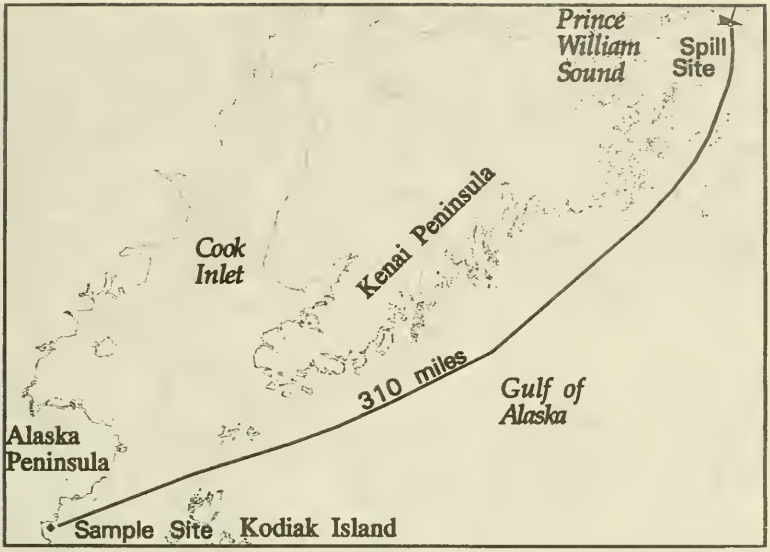
LATOUCHE ISLAND - Oil and water saturated sediments beneath mussels. Pit exposes the thin layer of oil that rises with ground water during incoming tides. Shiny specks in pool are drops of oil at or near the water's aurface.



LOCATION MAP

FOUL BAY - Thin asphalt-like layer conceals relatively fresh brown mousse beneath the surface.





LOCATION MAP

HALLO BAY - Gravel between boulders is saturated with black oily residue (note: overturned rock, lower left). Water is pooled here because the oily residue makes the gravel less absorbent. Note sheen on water.


15CM

STATEMENT OF
MICHAEL BARTON
REGIONAL FORESTER, ALASKA REGION, FOREST SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

Before the
Committee on Merchant Marines and Fisheries
United States House of Representatives

Concerning Prince William Sound Four Years After the Exxon Valdez Oil Spill

March 24, 1993

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Thank you for the opportunity to discuss the status of restoration of the areas affected by the Exxon Valdez Oil Spill 4 years ago. I am Regional Forester for the Alaska Region of the Forest Service, and I represent the Secretary of Agriculture as a member of the Trustee Council that is managing damage assessment and restoration of the spill.

The Department of Agriculture is responsible for the management of the public lands around Prince William Sound. All of Prince William Sound is within the boundaries of the Chugach National Forest. Eighty percent of the land surrounding the Sound and of the islands in the Sound are public lands managed by the Department of Agriculture, Forest Service. Along with impacting the Gulf of Alaksa and lower Cook inlet, the spill deposited oil on approximately 360 miles of shoreline within the Sound--300 miles of shoreline are within the National Forest. These shorelines are important habitat for a variety of birds,

terrestrial mammals, marine mammals and fish, and are key areas for a number of recreation activities. Also there are many Alaska Heritage sites along these shores. Since natural resources located in the Chugach National Forest were exposed to oil from the Exxon Valdez Oil Spill (EVOS), the Secretary of Agriculture is designated a Trustee for natural resources under Section 107(f)(2)(A) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); Section 311(f)(5) of the Federal Water Pollution Control Act, and Executive Order 12580. The other Trustees are the Secretaries of Commerce and the Interior and representatives of the State of Alaska. The three Federal Trustee Agencies will be presenting their first unified budget for the Exxon Valdez cleanup and restoration activities in the President's FY 1994 Budget.

The Story of the Spill

I have been closely involved with this incident since the first day of the spill. Steve Pennoyer represents the National Oceanic and Atmospheric Administration (NOAA) on the Trustee Council and has also been involved since the beginning. None of us understood the magnitude of the event in the early days or the impacts it would have on us and thousands of others in Alaska, in the lower forty-eight, and, in some cases, throughout the world. I vividly remember the telephone call that I received very early on that first day saying that an oil tanker had run aground in Prince William Sound. Based on a description of the location, my first concern was that it appeared that a significant portion of

the shoreline of the Chugach National Forest would be impacted by oil leaking from the vessel with the potential for injury to natural resources.

My second concern was that the spill be contained and cleanup actions initiated as soon as possible. The Coast Guard and Alaska's Department of Environmental Conservation, supported by a large number of other Federal and State agencies and a host of other organizations and individuals, led the efforts in this initial phase of the oil spill cleanup. Within 3 or 4 days of the spill, the concept of the Trustee Council was initiated. Each of us was involved in determining our response and natural resource damage assessment responsibilities. There were no precedents or guidelines to determine what needed to be done. We struggled with a number of critical questions early on, including: 1) the funding for the emergency; 2) assembling and focusing the necessary expertise to get the job done; 3) maintaining quality control on the numerous studies that would needed to be done to determine the impact of the spill; 4) organizing to provide material needed to pursue litigation concerning the recovery of damages; and 5) ensuring that we dealt with only public losses, as we were charged to do, rather than private losses.

All of these questions and many more were the subject of intense discussion in the early days of the spill. These questions were answered in time as the Trustee Council and supporting staff were organized to coordinate and oversee the work of the trustee

agencies. Principal investigators were identified to lead the various damage assessment studies and a peer review process was established. Others were assigned the task of obtaining the necessary funding to pay for the work. Money was reprogrammed or borrowed from other accounts with Office of Management and Budget (OMB) and Congressional approvals. Many of these accounts are now being repaid through reimbursements to the Federal Government as provided for in the settlement agreement with Exxon.

As we are now winding down the damage assessment phase and moving into the restoration phase, all of us can think of things that we would probably have done differently. I expect to someone not involved in the process, that at times it looked chaotic. For those of us intimately involved with the process, there were many times when it felt like it was. But overall, processes and procedures were put into place by the Trustee Council to coordinate and manage the assessment and the restoration.

There was much debate on some issues, but they were generally worked out to everyone's satisfaction. There were few serious conflicts. I believe this is evidence of the commitment of the Trustees, because then, as now, the Trustee Council operates by unanimous consent.

What We Learned

In my opinion, there are four lessons we can take from the damage assessment phase of the oil spill work to help us in future events:

1. The importance of establishing field level organizations with authority to make decisions necessary to coordinate and oversee the work.

2. The significance of a special funding source available through some type of a joint account or through individual agency accounts for the damage assessment work if the responsible party cannot or will not pay.

3. The importance of using our experiences--successes and failures--of the Exxon Valdez oil spill damage assessment work to develop a model for future oil spills.

Post Settlement with Exxon

In the fall of 1991, the United States and the State of Alaska settled criminal and civil claims against Exxon Corporation and Exxon Shipping Company for natural resource damages resulting from the Exxon Valdez oil spill. The preliminary results from damage assessment studies undertaken by the Federal and State agencies provided the basis for the settlement. The civil settlement is based upon a $900 million damage recovery which is

to be paid over a 10-year period, in addition to criminal fines and restitution payments totaling $125 million, for a total recovery of $1.025 billion. The $900 million civil settlement funds are jointly controlled by the Federal and State Governments for restoration purposes. Under the criminal plea agreement, the Federal and State Governments each received $50 million as restitution for injuries caused by the spill which must be used solely for restoration projects within Alaska relating to the oil spill. These restitution funds are separately managed by each government and are not subject to the joint decisionmaking process that the civil recovery funds are.

By a Memorandum of Agreement (MOA) and Consent Decree, the United States and the State of Alaska placed responsibility for restoration of the oil-affected areas with three Federal and three State agencies as Trustees. Under the MOA, the Secretaries of the Departments of Agriculture and the Interior, and the Administrator of the National Oceanic and Atmospheric Administration were designated as Federal Trustees. The Commissioners of the State Departments of Environmental Conservation, and Fish and Game, and the Attorney General of the State of Alaska were designated as the State of Alaska Trustees.

The MOA requires that all decisions relating to injury assessment, and restoration including the planning, evaluation, and allocation of the jointly managed civil settlement funds, be made by the unanimous consent of the Trustees. The agreement also requires that the Trustees establish an organizational

structure to carry out their responsibilities and establish procedures to provide for meaningful public participation in the injury assessment and restoration process. Establishment of a public advisory group was a specific requirement of this MOA.

The three Federal Trustees delegated or assigned their Trustee responsibilities to agency representatives located in Alaska. The Federal Trustee representatives and the State of Alaska Trustees are operating under a decisionmaking organizational structure in the form of a Trustee Council, along with the supporting organizational structure, operating procedures, and a financial management plan. A key point regarding the organization is that the State Trustees also serve as the States' members of the Trustee Council. (A copy of the charts of the organization are attached to this testimony.)

A charter for establishment of the public advisory group has been approved. It is in compliance with the Federal Advisory Committee Act, with the Department of the Interior providing process guidance as the designated Federal agency. The group has 17 members that represent a balance of interests related to oil spill restoration, and two ex-officio, nonvoting members representing the Alaska House of Representatives and Senate. The group reports to the Trustee Council through a chairperson selected by the group. The current chairperson is Mr. Brad Phillips who represents commercial tourism.

The key to managing restoration of the injured resources and services is the management of the settlement funds. The Trustee Council has established financial operating procedures to ensure public trust and accountability while maximizing the Trustees' ability to utilize settlement funds for approved restoration activities. A Financial Committee that reports directly to the Trustee Council has been established to oversee financial accountability of the expenditure of the funds. Federal members of the Committee coordinated closely with OMB in development of the procedures. These procedures are now in place for requesting restoration funds from the Court Registry in which the settlement funds have been placed.

The Status of the Resources

The goal of the damage assessment work is restoration. The spill occurred just before the most biologically active season of the year in Southcentral Alaska. During the 4-month period after the oil spill, seaward migration of salmon fry, major migrations of birds, and the primary reproductive period for most species of bird, mammals, fish and marine invertebrates took place. The spill also directly impacted the archaeological resources, subsistence use, recreation, and wilderness qualities, aesthetics and other services. Each of these resources or services was impacted differently.

We are just now completing the damage assessment work. However, at this time we do not have a total picture of whether all the

resources in the oil spill affected area have recovered. A comprehensive summary of the injury studies was included in the Restoration Framework document that was released for public information and comment in April 1992. In February, the Trustee Council sponsored an Oil Spill Symposium in Anchorage. The abstracts from the symposium have been published and are available for the public. The Council is also preparing a public information brochure on the status of the Restoration planning effort and this document will contain the most recent summary of injury information based on all the damage assessments studies done to date. While it remains for us to fully determine whether there will be significant, long-term effects on the resources of the spill-affected area, we can assure you that it is still beautiful. There are still thousands of sea birds, sea otters, and other wildlife that make their home there for at least part of the year. On the other hand, there are still a few locations where oil contamination remains and continues to be a problem.

Where We Are Now--The Restoration Plan

We are currently monitoring restoration and beginning a limited amount of time-critical restoration work. The Trustee Council has assigned a fulltime team to prepare the Restoration Plan for the spill. Preliminary planning was started shortly after the spill occurred. The planning process became formal about a year ago when the Restoration Framework document was distributed to the public for their review. This document established the

scoping for the restoration planning effort and formally solicited comments from the public. Using the public comments on the Framework document and the natural resource damage assessment study results, a draft Restoration Plan and draft Environmental Impact Statement (EIS) are being prepared. Since this is a very complex process, an informational brochure which summarizes injury, alternative restoration actions and associated costs will be sent out to the public for comment by late March. The Draft Restoration Plan and draft supporting programmatic EIS are scheduled for public release and comment in late June or early July.

Based on public comments that we have received so far, habitat protection or acquisition is expected to be a significant element in any restoration plan that is finally developed. In fact, there is significant public comment has been received by the Trustee Council urging it to protect some lands that are subject to timber harvest in the near future. Even though we have not completed a final Restoration Plan, the Council has collected information on "imminently threatened" lands, lands with scheduled timber harvesting and other developments within the spill-affected area. Interim criteria for evaluating the benefits to recovery of resources were adopted by the Trustee Council and the "imminently threatened" parcels have been ranked using these criteria. Protection of some tracts indicated a high degree of benefit, while others indicated little or none.

For example, the Trustee Council has approved a resolution to expend $7.5 million for the purchase of inholdings in Kachemak Bay State Park. This parcel rank highest among the "imminently threatened" parcels. In addition, the Council determined that negotiations with owners should proceed on the next four highest ranked "imminently threatened" parcels. So at this time, the Council has approved purchase of approximately 7,500 acres and has negotiations under way on another 21,000 acres. All of the lands currently being considered for imminent threat protection are lands owned by Alaska Native Corporations which have only recently been conveyed to them under the Alaska Native Claims Settlement Act (43 USC 1600-1629(e)). It is of concern to some of the public that the Governments may purchase lands that Congress only recently conveyed and that a large percentage of lands in the State of Alaska are already under Federal or State ownership.

The Trustee Council is currently contacting all the land owners in the spill-affected area to determine whether the owners want to participate in a habitat protection program that will be part of the final Restoration Plan.

Barring any complications, we are scheduled to complete the Restoration Plan process in December 1993. We have been reluctant to proceed with restoration projects, other than time-critical projects, until the Restoration Plan is final. Consequently, the restoration of reduced services and the enhancement of some injured resources that maybe important to

some public interests may not have been emphasized in the restoration effort thus far. To prevent any further delay than is absolutely necessary, the Council is currently developing a 1994 Workplan that will be broadened to include restoration options for these resources and services, but will still be consistent with the Restoration Plan as it is being developed. This means that the 1994 Workplan may include some projects that can only be conditionally approved pending completion of the final Restoration Plan. We hope this approach can be agreed to by all the Trustee Council members otherwise significant restoration for some resources and services may be delayed until the 1995 field season--almost 6 years after the spill.

The settlement agreement provided for Exxon to make payments to the Governments on an annual basis through the year 2001. Part of the annual payments go directly to the State of Alaska and to the Federal Government as reimbursement for past expenditures related to damage assessment work. There is a cap of $75 million and $67 million respectively, for reimbursement to the State of Alaska and Federal Agencies. The agreement also provides for Exxon to deduct up to $50 million for cleanup expenses incurred after the settlement. This amount was deducted in the 1992 payment received from Exxon. The remaining funds go into an account established in the Court Registry of the Federal District Court in Alaska. Funds are requested from the Court Registry only for restoration work unanimously approved by the Trustee Council. The Trustees have only made two withdrawals from the Court Registry at this time. A June 1992 request of $12,879,700

and a January 1993 request of $6,567,254. These funds must be used for the purpose of restoring, replacing, enhancing, rehabilitating or acquiring the equivalent of natural resources injured as a result of the Exxon Valdez oil spill. These funds have been expended remaining damage assessment work, restoration monitoring, time critical restoration projects, restoration planning, and overall management of this effort.

The Federal Restitution Program

The Federal Government and the State of Alaska each received $50 million in criminal restitution for the purpose of restoring the natural resources injured by the Exxon Valdez Oil Spill. The three Federal Trustees and their Trustee Council representatives have developed a proposal for expenditure of the Federal portion of the restitution funds to achieve the restoration objectives.

Proposals for uses of the restitution funds are currently being reviewed and are will be released for public review and comment in the near future. We hope that some of the projects can be initiated in this field season.

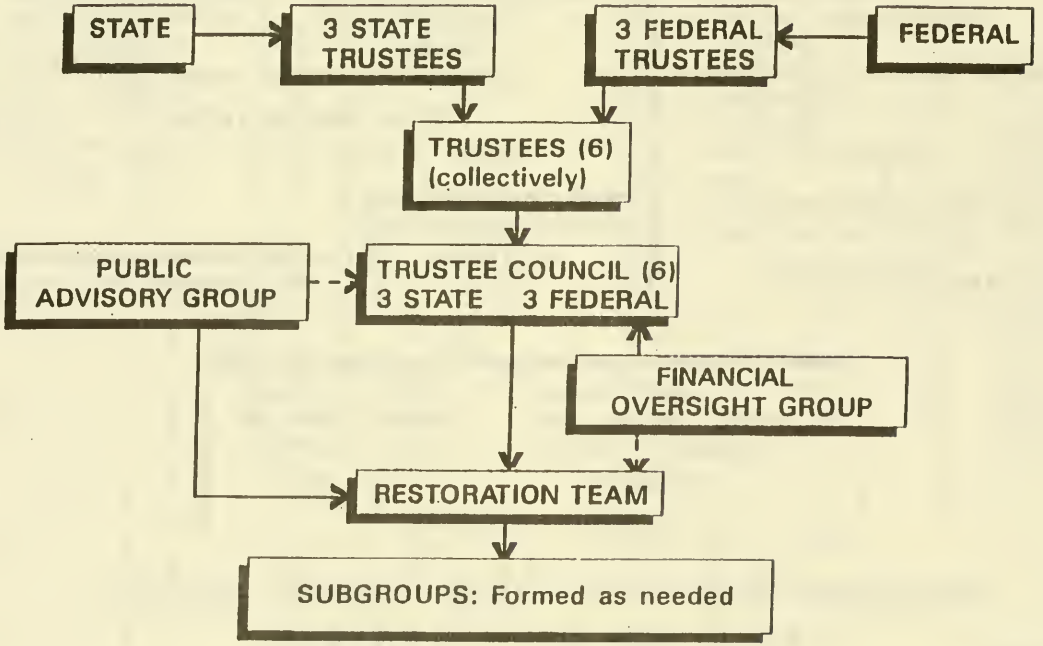
The Department of Agriculture is responsible for the long-term management of much of the Federal public lands and resources located in Prince William Sound. Consequently, our ultimate goal is to continue to work with the other Trustees to ensure that the Sound and other spill-affected areas are restored to the fullest extent practicable.

Mr. Chairman, this concludes my statement and I would be happy to respond to any questions.

EXXON VALDEZ OIL SPILL

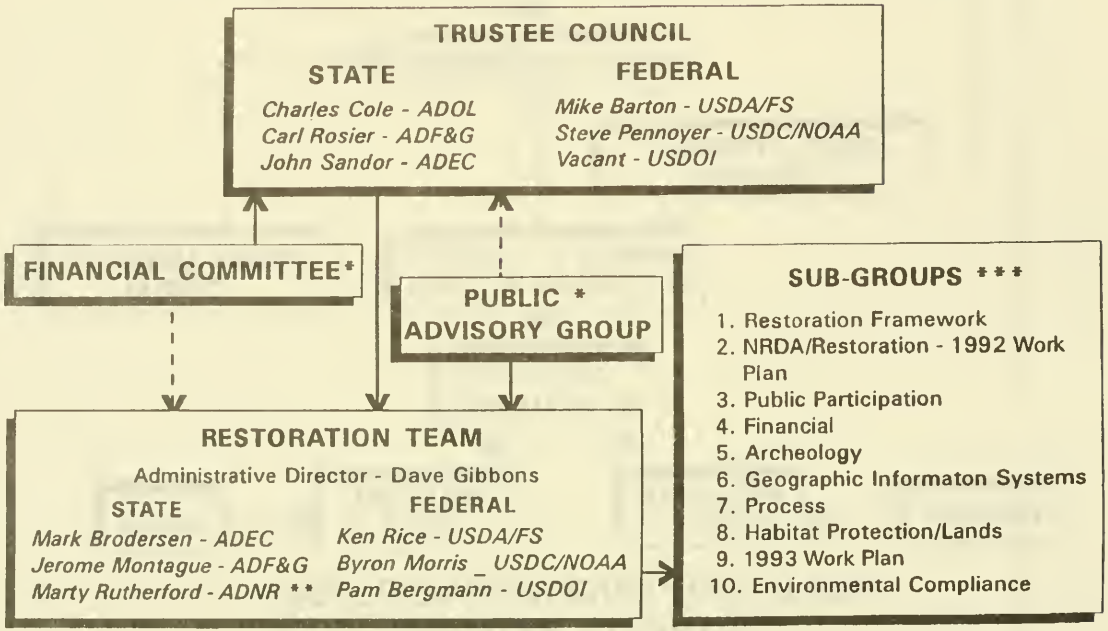
03-16-92

TRUSTEE COUNCIL
RESTORATION ORGANIZATION



EXXON VALDEZ OIL SPILL

TRUSTEE COUNCIL RESTORATION ORGANIZATION



* *Specific members have not been indentified yet.*

** *Designee for the Department of Law.*

*** *Sub-Groups are established and disbanded as needed. Tasks and personnel listing are enclosed.*

TESTIMONY OF
Dr. JONATHAN P. DEASON, DIRECTOR
OFFICE OF ENVIRONMENTAL AFFAIRS
U.S. DEPARTMENT OF THE INTERIOR

BEFORE THE
COMMITTEE ON MERCHANT MARINE AND FISHERIES
U.S HOUSE OF REPRESENTATIVES

MARCH 24, 1993

Mr. Chairman and members of the Committee, on behalf of the Department of the Interior, I would like to thank you for this opportunity to participate in your examination of the impacts of the Exxon Valdez Oil Spill on Prince William Sound and surrounding areas within the Gulf of Alaska and the lower Cook Inlet. I am Jonathan Deason, Director of Environmental at the Department of the Interior.

In accordance with the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Clean Water Act (CWA), the Departments of Agriculture, Commerce and Interior serve as trustees for the natural resources in Alaska that were injured as a result of the Exxon Valdez Oil Spill (EVOS). Representatives of the State of Alaska also serve as trustees for natural resources within the State.

The restoration of the injured Alaskan resources and the services supported by those resources is a high priority for the Department of the Interior. We along with the other Federal trustees individually and collectively, are actively participating in the restoration planning effort to assure the citizens of Alaska and the rest of the United States that natural resources injured by

EVOS will be restored in an affective and complete manner. On behalf of Secretary Babbitt, I would like to assure you of his personal commitment to this goal.

The Exxon Valdez oil spill affected several programs of the Department of the Interior. The Bureau of Indian Affairs has been working with the Alaskan Native community to provide assistance to those who suffered losses associated with the spill. The U.S. Fish and Wildlife Service has been extensively involved in recovery efforts. The spill reached the Kodiak National Wildlife Refuge, the Alaska Peninsula\Becherof National Wildlife Refuge, and the Alaska Maritime National Wildlife Refuge. Approximately 1,300 miles of shoreline managed by the U.S. Fish and Wildlife Service were in the impact zone. The Service also has responsibilities for the protection of sea otters, under the Marine Mammal Protection Act, which were heavily affected in Prince William Sound and for the protection of migratory birds, under the Migratory Bird Treaty Act, which also suffered great losses as a result of the spill.

The spill also affected a number of areas designated as units of the National Park System by the Congress because of their national significance. Kenai Fiords National Park, Katmai National Park and Preserve, and Aniakchak National Monument and Preserve were significantly affected, while Lake Clark National Park and Preserve suffered lesser impacts. Approximately 1,100 miles of shoreline managed by the National Park Service were in the impact zone.

Interior concurs with the testimony provided to you by Mr. Pennoyer today on behalf of the three Federal trustee departments. Rather than duplicating that testimony, I would like to raise for your consideration several additional thoughts which we hope will be useful in your examination of the impacts of the spill and the resulting settlement, as well as our ability to respond in the event of future spills that become natural resource disasters.

Enhanced Authorities to Respond to Future Spills

The role of the trustees in coordinating the restoration of natural resources is, in many ways, analogous to that of the Secretary of Transportation and the Coast Guard in coordinating the response and cleanup activities following a spill. Prior to the Exxon Valdez spill, we lacked much of the experience, legal authorities, and funding to respond immediately to an environmental disaster of this scale. The Congress and the Executive, however, have since addressed many of these concerns or deficiencies. Certainly, foremost among these actions was the enactment of the Oil Pollution Act of 1990, for which this Committee played a very direct role.

Additional key authorities provided by Congress have included the establishment of the Damage Assessment and Restoration Fund within NOAA, as well as the Oil Spill Emergency Fund and the Natural Resource Damage Assessment and Restoration Fund within Interior.

These are revolving funds in which recoveries from the responsible parties may be deposited and used for restoration of the injured resources. While Congress appropriated initial seed money to these funds to commence damage assessment work, these funds are authorized to receive reimbursement from the responsible parties for past and future damage assessment costs.

Under the terms of the EVOS settlement agreements, for instance, Interior has been reimbursed some $10.4 million which has been returned to the Oil Spill Emergency Fund to conduct damage assessment and restoration activities with respect to EVOS, as well as to have funds available immediately for response, cleanup, damage assessment and restoration activities in the event of a future spill.

Looking to the future, we plan to negotiate with responsible parties in future oil spills to provide advanced funding for our damage assessment work, as Exxon did to a small degree. In the event of a future spill, these revolving funds will permit the Trustees to immediately commence time critical data collection necessary to assure that polluters eventually pay for all costs related to restoration of resources that have been injured by their actions.

The Settlement as a Model for Joint Decision Making

While there has been much attention focused on the billion dollar plus total criminal and civil recovery from Exxon--the largest environmental settlement ever--the settlement is also significant in other respects. Although the Clean Water Act provides for both the United States and the State of Alaska to serve as trustees for the natural resources and to recover assessment and restoration costs from responsible parties, the Act does not provide direction on whether how or such responsibilities are to be shared, how to resolve potentially conflicting claims and legal theories, or how to determine the manner in which recoveries should be spent to restore the injured resources.

In August 1991, the U.S. and the State entered into a Memorandum of Agreement (MOA) and Consent Decree which was approved by the U.S. District Court for the District of Alaska. This MOA provided the legal framework for a cooperative litigation effort, and for joint sharing and control of any eventual civil recoveries from Exxon. Although this joint decision making process has been cumbersome at times, we believe that it provides a workable model for future environmental settlements in our Federal system, balancing the interests of the United States with those of the states.

We believe that, in the absence of this MOA, there was a significant risk of protracted disagreements between the two

governments. Cooperation is essential to avoid disputes over jurisdiction to the specific resources injured by the spill. While title to land might be relatively easy to determine, apportioning the recovery on that basis is not likely to work very well because fish and other wildlife do not pay attention to boundaries and ownership as they migrate throughout the Prince William Sound and Gulf of Alaska areas. The willingness of the governments to work together was, we are sure, an important factor in reaching the EVOS settlement. We remain convinced that the joint recovery, joint decision making process undertaken in response to the EVOS offers the best means for assuring the public that natural resource damage recoveries will be spent wisely and effectively in both this instance and in future restoration programs for other spills.

Restoration Planning

It is Interior's view that the key to an effective natural resource restoration program is the adoption of a comprehensive restoration plan. Such a plan should involve direct public participation in its formulation, to establish criteria and priorities to guide the Trustees in the expenditure of settlement funds. Such an approach is consistent with the policies underlying CERCLA and the Natural Resource Damage Assessment Regulations promulgated by the Department of the Interior on behalf of the Federal government in implementing CERCLA and CWA. As NOAA's testimony today indicated, use of these regulations is not mandated under the law, but the

guidelines and policies contained therein generally have been followed by the Federal and State Trustees. The foundation for any restoration plan must be scientific studies detailing the extent of the injuries and use of the best available scientific judgments on how to restore those injured resources.

At the same time, Interior is fully aware of criticisms directed against the current planning process; that it has moved too slowly, that too much--or too little--is being spent for scientific studies and monitoring of the injured resources, or that agencies are using settlement money to fund ongoing programs for which appropriated funds should be available. While we understand the frustrations and differing views of the many players involved in this complex process and, indeed, sometimes agree with such criticisms, we believe that the overall process is sound and that reasonable progress is being made toward our common objective: restoration of all resources and services damaged by the spill.

Since the present Trustee Council was constituted in December 1991,

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the public comment process has consistently and overwhelming stressed the point that habitat protection in Alaska is a critical element of any restoration program. On behalf of Secretary Babbitt, I would like to assure the Committee and the public that this message has been received. The Federal trustees have directed their staffs to expedite habitat protection actions with the available $50 million in Federal restitution funds. Recommendations in response to these directions will be released to the public for comment and NEPA analyses before final decisions are rendered by the Federal trustees and will include the commitment of a substantial portion of these funds in 1993 and 1994 to habitat protection--land acquisition, conservation easements or other means to protect the resources and to assure that fish, wildlife and conservation values are restored in the spill area.

The Trustee Council has already moved to provide an initial $20 million for protection of imminently threatened habitat in the spill area in 1993. The first action in this process was the approval of $7.5 million to be used by the State of Alaska, along with a similar amount derived from the Federal and State settlement of claims against the Alyeska Pipeline Service Company and the other Trans Alaska Pipeline owners, and an anticipated appropriation from the State legislature, to purchase inholdings within Kachemak Bay State Park. The Council has also directed its staff to contact and begin negotiations for the prompt acquisition of four other land parcels of high ecological value habitat in the

spill area that are subject to logging or other development activities which would preclude their later use in the restoration program.

These are important early steps of what we fully expect to be a joint Federal-State program to protect key habitat in the Sound area. The draft Restoration Plan now in preparation for public review by early this summer contains options for the restoration program which call for the commitment of substantial additional financial resources for habitat protection.

In summary while Interior remains committed to completion of a comprehensive restoration plan that will achieve the objectives of restoration of the injured resource, it is our intention that this be completed in a timely fashion and that restoration implementation will take place at an increasingly active pace. We neither expect nor believe that the goal of the wise expenditure of settlement recoveries will result in unnecessary delays in restoring the injured natural resources and services that rely on those resources.

I would be pleased to respond to any questions that the Committee might have at this time.

United States Senate

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510-6175

December 21, 1992

The Honorable William K. Reilly
Administrator
Environmental Protection Agency
Washington, D.C. 20460

Dear Mr. Reilly:

We are writing to express our concern about the draft proposed regulations for onshore facility spill response plans that are being prepared by the Environmental Protection Agency to implement Section 4202 of the Oil Pollution Act. Although these regulations will be issued in proposed form and will be subject to public review and comment, they have the practical effect of interim final regulations because facility owners and operators must comply with them by February 18, 1993. Because these proposed regulations issued at this late date have the practical force of a final rule, we are concerned about their economic and competitive impact on the independent petroleum sector.

The National Planning and Response System established under the Oil Pollution Act requires facility owners and operators to submit plans that if implemented, are capable, to the maximum extent practicable, of promptly and properly removing oil and minimizing environmental damage from a "worst case" oil spill without the active participation of the federal government. The Conference Report states that the intent of the Act is "to create a system in which private parties supply the bulk of any equipment and personnel needed for oil spill response in a given area." However, at the same time, the Congress was well aware that there would be large variation in the ability of facilities to meet these needs through planning and contracting with private oil spill response firms, based upon the "practical and technical limits of the spill response capabilities of individuals owners and operators." The Congress chose to use the term "to the maximum extent practicable," rather than the term "to the maximum extent possible," because it recognized that some facilities would be placed at a serious competitive disadvantage by use of the latter term. Accordingly, the Oil Pollution Act requires that each facility owner or operator provide only those spill response resources that are both technologically and practicably feasible and economically reasonable.

Under the National Planning and Response System, the final responsibility for removing "worst case" oil spills lies fully and unequivocally with the federal government. In establishing this mandate, the Congress further recognized that the practicable limits of facilities to provide oil spill response planning and resources would vary greatly.

The draft proposed rule appears to fail to recognize adequately the considerations of practicability that the Congress intended with respect to facility response plans. The rule adopts the approach developed in a Coast Guard regulatory negotiation for vessel response plans as a means of determining the amount of resources required for onshore facilities. Practicability considerations for vessels may well be different than those for facilities, which are far more variable than vessels. The Congress understood that facilities differ greatly, and that economic practicability must be considered in applying the response plan requirements to individual facility owners and operators.

It is important that the EPA establish a reasonable, yet effective requirement for equipment and personnel without imposing costs uniformly on facility owners or operators, which would seriously impair the competitive viability of the independent sector of the petroleum industry. The Oil Pollution Act requires that these concerns be taken into account in developing facility response plan regulations.

We look forward to hearing from you on this important issue.

Sincerely,

John H. Chafee

George J. Mitchell

EXXON COMPANY, U.S.A.
POST OFFICE BOX 2180 • HOUSTON, TEXAS 77252-2180

H. J. LONGWELL
PRESIDENT

March 12, 1993

The Honorable Gerry E. Studds
U. S. House of Representatives
237 Cannon House Office Building
Washington, D.C. 20515-2110

Dear Mr. Chairman:

Thank you for your invitation to participate in the important March 24 hearing of the Committee on Merchant Marine and Fisheries on the condition of Prince William Sound, Alaska.

In reviewing the questions in your letter of March 3 that the Committee intends to address, it would appear the one most appropriate for us to respond to is how have the Sound and its resources recovered. Exxon has consistently maintained that Prince William Sound and the Gulf of Alaska have essentially recovered from the spill. That position has been based on observational evidence and the results of studies by third party experts retained by Exxon which are nearing completion.

As I believe you are aware, these experts will present a comprehensive set of studies aimed at providing technically sound answers to questions about environmental recovery in the spill area at the American Society for Testing and Materials (ASTM) Symposium on April 26-29. These experts are still completing their papers and beginning work on their presentations. Unfortunately, this effort will not be completed in time for your hearing on March 24; nor, equally important, would there have been an opportunity for a thorough airing and review by scientific peers.

Exxon concurs with your objective of bringing the most relevant scientific studies into the public policy process. We therefore hope the hearing record would remain open until the ASTM Symposium has been held so we may have the opportunity to provide a written statement concerning these studies for the Committee record.

Thank you for your consideration.

Regards,

Harry Longwell

EXXON COMPANY, U.S.A.
POST OFFICE BOX 2180 • HOUSTON, TEXAS 77252-2180

H. J. LONGWELL
PRESIDENT

May 6, 1993

The Honorable Gerry E. Studds
U.S. House of Representatives
237 Cannon House Office Building
Washington, D.C. 20515-2110

Dear Mr. Chairman:

In my letter of March 12, 1993, Exxon requested the opportunity to submit a written statement for the record of your March 24 committee hearing on "*Exxon Valdez*: Four Years After."

A comprehensive set of new scientific studies that document the recovery of natural resources in Prince William Sound and the Gulf of Alaska was presented April 26 through April 29 at a symposium sponsored by the American Society for Testing and Materials (ASTM).

These studies were conducted by highly credentialed scientists from leading universities, consulting companies, independent research institutes, and Exxon and are backed by extensive field and laboratory data. They strongly contradict widely publicized claims of continuing exposure of the Prince William Sound environment to spilled oil and long-term damage. These claims have gained a degree of public acceptance simply through repetition; they have not been substantiated in the scientific community. Even at the ASTM symposium, some parties continued to contend environmental injuries will be long lasting, but no new or substantive data support such claims.

As documented by the new studies, there are isolated patches of remnant oil in a few locations. Surveys by government, landowners, and Exxon representatives in the spring of 1992 observed oil residue on only two-tenths of one percent of Prince William Sound shorelines, down from sixteen percent in 1989. Claims that spill oil is still widespread convey an entirely incorrect perspective of conditions in Prince William Sound. While acknowledging that the short-term effects of the oil spill were often acute, these studies provide compelling evidence that resources in the spill-affected area are almost fully recovered.

The results of these new studies are consistent with oil spill research conducted over the past 30 years. In summarizing this body of knowledge in a 1990 Report for Congress, the Congressional Research Service noted, "Short-term impacts on

marine animal life are dramatic, but recovery of species populations in almost every case studied has been swift." (CRS #90-356-SPR, 7/24/90, p. 1)

Enclosed for inclusion in the record are:

- A synopsis of the papers grouped by topic area;
- A brief biography of each of the primary authors; and
- Copies of 25 technical papers presented at the ASTM symposium.

These papers are currently undergoing peer review, a process in which scientists in various fields of expertise scrutinize and validate the analyses and resulting conclusions. Unfortunately, almost none of the scientific studies conducted by government Trustees have been reported in scientific papers suitable for peer review. When they are available, the scientific community can then reach consensus on spill impacts based on all the data.

The spill unquestionably caused regrettable and highly visible impacts. Recognizing these effects, Exxon has been committed to cleaning it up, dealing fairly with those directly affected, and assessing the environmental impacts in a sound scientific manner. At this point, the cleanup has been completed to federal and state standards at a cost in excess of $2.1 billion, and we have paid more than $300 million in private claims (in addition to the $1 billion in settlement funds available to state and federal authorities). With respect to environmental conditions, we are confident that a rigorous scientific examination of the ASTM papers will validate the rapid recovery experienced by Prince William Sound.

We thank you for keeping the record open to receive our comments and materials. Please contact us if you have questions on this matter.

Regards,

Harry Longwell

Enclosures

SYNOPSIS EXXON-SPONSORED ASTM PAPERS

Shorelines

- Shoreline Surveys (2 papers): J. M. Neff, Arthur D. Little, Inc., S. W. Stoker, Beringian Resources
  - Assessment of shoreline conditions based on annual surveys conducted by federal and state agencies, land owners and Exxon
  - Shoreline oiling has essentially disappeared
    + Shoreline oiling declined from almost 500 miles in 1989 to about 6.4 miles in Prince William Sound (PWS) in 1992
      -- Prior to the 1992 cleanup, the remaining oil was intermittently distributed in small pockets
      -- About 6 miles of the 6.4 miles of remaining oiled shoreline were categorized as having light or very light oiling
      -- The 1992 cleanup activity removed any remaining deposits large enough to warrant action; on June 12, 1992, Federal and State authorities determined other remaining deposits would not benefit from additional cleanup and declared the cleanup complete
  - Shoreline biota virtually recovered in all locations in 1992

- Shoreline Ecology Program (4 papers): D. S. Page, Bowdoin College, E. S. Gilfillan, Bowdoin College, P. D. Boehm, Arthur D. Little, Inc.
  - In depth assessment of shoreline recovery using chemical, biological, and toxicological yardsticks
  - Combination of studies at randomly selected and "worst case" sites demonstrate a remarkably rapid recovery
    + Biological studies show 73% to 91% of oiled shoreline was indistinguishable from reference areas (i.e., recovered) by summer of 1990
    + Oil in sediments declined by order of magnitude each year
      -- Should be near background on worst sites by 1993 or 1994
      -- Subtidal sediments nontoxic; majority of toxicity and hydrocarbon residues in intertidal areas decreased substantially by 1990
  - Oiling and biological impacts were considerably lower in the Gulf of Alaska (GOA) in 1989; recovery proceeded faster

Hydrocarbon Identification in Biota and Sediments

- Fingerprinting Hydrocarbons in Biologic Resources: A. E. Bence and W. A. Burns, Exxon Production Research Company
  - Sophisticated chemical analysis are used to uniquely identify ("fingerprint") hydrocarbon sources in biological samples

- Fingerprinting techniques are used to differentiate spill residue from other sources of hydrocarbons
- Excluding shellfish, only a fraction of the biologic samples in the Trustee centralized chemistry database contain identifiable Exxon Valdez crude
  + Only 10% of the more than 2,200 samples from 1989 and 1990 contain recognizable fingerprints from spilled oil
  + Documented exposure was very infrequent by 1990 (11 out of more than 1,000 fish, mammal, crustacean, and bird samples)
- Misinterpretation of much of this database has led government scientists to erroneous conclusions regarding extent and duration of biological exposure to *Exxon Valdez* crude oil (EVC)

- Hydrocarbon Sources in Subtidal Sediments: D. S. Page, Bowdoin College, P. D. Boehm, Arthur D. Little, Inc.
  - Most of the seafloor in PWS contains no detectable hydrocarbons from the spill
  - The source of the natural petroleum background appears to be seeps along the coast in the Gulf of Alaska
  - In those areas where EVC was detected, spill hydrocarbons were generally a small increment to the natural petroleum background

<u>Fish</u>

- Salmon (2 papers): E. J. Brannon, University of Idaho and A. W. Maki, Exxon
  - Studies focused on all key life stages of pink salmon show no oil impacts in 1989, 1990, or 1991
  - Studies found no correlation between hydrocarbon concentrations and biologic performance

- Herring: W. H. Pearson, Battelle Laboratories NW
  - Studies conducted on herring spawn in 1989 and 1990 show no population level impact on herring
    + Egg development decreased slightly in one location (Cabin Bay) where bulk oil was observed on eggs in 1989
  - Effects of spill were overwhelmed by closure of fishery in 1989 which left about 1/5 of the population unharvested to return to spawn in later years

- Crustaceans/Bottomfish: D. A. Armstrong, University of Washington, R. F. Lee, Skidaway Institute of Oceanography, R. J. Huggett, Virginia Institute of Marine Science
  - Exposure to EVC was evident in some localized areas of the most heavily oiled bays
  - Studies show no evidence of significant adverse effects on either individual or population levels

Seabirds, Eagles

- Recovery of Seabirds: An Overview: J. A. Wiens, Colorado State University
  - Examines recovery of seabirds on the basis of population levels, habitat usage, and reproductive performances
  - Recovery of seabirds in PWS and GOA is well advanced by late 1991

- Seabird Studies (3 papers): J. A. Wiens, Colorado State University, R. H. Day, Alaska Biological Research, D. E. Erikson, Dames & Moore, P. D. Boersma, University of Washington
  - Overall, spill impacts on murre colonies and changes in habitat usage by a large number of species were short-term
  - Habitat utilization by 42 bird species in PWS and 32 species in GOA in 1989 through 1991 examined
    + By 1991, all but six species in PWS and six in GOA had recovered in terms of habitat use. Of these species, none had unique biological characteristics different from those species that were unaffected by or had recovered from the spill. Hence, recovery of these 12 species should not be impaired
  - Population surveys at the largest 32 of 36 murre colonies in the spill affected area show no significant decline from pre-spill counts
  - Detailed monitoring of the largest murre colony in the spill area show bird counts and reproduction at historical levels

- Bald Eagles in Prince William Sound: C. M. White, Brigham Young University and R. J. Ritchie, Alaska Biological Research
  - No demonstrable negative effects of the oil spill on eagle density or reproduction in PWS in 1990 and 1991

Otters

- Otters: D. L. Garshelis, Minnesota Department of Natural Resources (did several baseline survey on otters in 1980's) and C. B. Johnson, Alaska Biological Research
  - By 1991, otters were present at historical levels in the spill zone and reproducing at levels consistent with historical data
  - There is no evidence that the spill reduced food supplies in either 1990 or 1991

Toxicity of Oil and Long-Term Effects

- Chemical and Toxicological Evaluation of Water Quality: J. M. Neff, Arthur D. Little, Inc. and W. A. Stubblefield, ENSR Consulting and Engineering
  - Traces of hydrocarbon in the water column even in the two months following the spill were well below concentrations capable of producing harmful effects to marine organisms

- Toxic Properties of Naturally Weathered Exxon Valdez Crude: W. A. Stubblefield, ENSR Consulting and Engineering
  - Mallard ducks and ferrets (official EPA test animals) fed weathered EVC at concentrations exceeding maximum likely field exposure did not have lower survival, growth, or reproduction

- Potential for Long-Term Toxicological Effects on Wildlife: R. Hartung, University of Michigan
  - Long-term sublethal effects of oil on wildlife appear very unlikely based on toxicological literature and empirical data on the spill

Fate of Oil

- Fate of Oil: C. B. Koons and H. O. Jahns, Exxon
  - There is no rational or scientific basis for concerns that large amounts of "missing" oil must still be hidden somewhere
  - Results confirm nature's ability to degrade and dissipate spilled oil
  - This paper utilizes results of numerous studies to demonstrate absence of oil from water, shorelines, and sediments

  Note: The presentation is included in addition to the original paper printed in the Marine Technology Society Journal

- Clay/Oil Flocculation and Its Effect on Natural Cleansing: J. R. Bragg, Exxon Production Research Company
  - Natural interactions of fine mineral particles (mostly glacial flour) with oil and seawater enhanced the rate of natural cleaning from PWS shorelines

- Sheen Surveillance: D. G. Taft, Exxon Production Research Company
  - Spill-related sheens diminished in size and volume from fall 1989 to insignificant levels by summer 1990

Cultural Resources

- Archaeology: J. C. Haggarty, Shoreline Archaeological Services
  - The number of known cultural sites more than doubled and much new information was gained through the extensive archaeological surveys conducted in association with cleanup activities
  - Oiling and cleanup did not cause substantive damage to archaeological resources

In addition to its May 6, 1993 statement, EXXON Company, U.S.A. submitted copies of 25 scientific studies that EXXON presented at a symposium sponsored by the American Society for Testing and Materials, April 26-29, in Atlanta, Georgia. These studies are on file in the offices of the Committee on Merchant Marine and Fisheries, Room 531, House Annex 2, Washington, D.C. 20515.

P.O. Box 705
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(907) 424-5800 FAX: (907) 424-5820

March 18, 1993

The Honorable Gerry E. Studds
House of Representatives
United States Congress
Washington, D.C.

RE: Prince William Sound Oil Spill Recovery Institute

Dear Congressman Studds:

I appreciate this opportunity to update you and other members of the House Merchant Marine and Fisheries Committee on research issues related to the Exxon Valdez oil spill (EVOS).

Prevention and long-term impacts were the two items most talked about in the immediate months after the March 24, 1989 spill. In response, the Oil Pollution Act of 1990 (OPA90) provided for establishment of the Prince William Sound Oil Spill Recovery Institute (OSRI), to be located in Cordova and *"conduct research and carry out educational and demonstration projects designed to:*

1) *identify and develop the best techniques, material and equipment for dealing with oil spills in the arctic and subarctic marine environment; and*
2) *complement Federal and State damage assessment effects and understand the long-range effects of EVOS on the natural resources and the environment, the economy, and the lifestyle and well-being of the people who are dependent on them."*

Since passage of OPA90, OSRI's program has been hampered by a lack of funds and the two issues deemed most important immediately after the spill have been swept out of the picture. There is no long-term environmental monitoring program for the oil spill-impacted region. Without such a program, we won't have any better baseline data than in 1989. The few damage assessment studies which continue being funded through the Trustee Council are, as in the past, not being awarded on a nationally competitive basis, and suffer from a lack of peer-review by independent scientists.

Some emphasis has been placed on improving preventive measures to guard against oil spills, but we are still focusing too little on new preventive techniques and a specific Research and Development program for arctic and subarctic waters. While Title 7 of OPA90 establishes

a regional research program for the nation, Title 5 set up OSRI with specific direction to focus on subarctic and arctic waters. The Institute is specifically excluded from competing for the research grant monies available through the Title 7 regional programs. If the Institute is left unfunded, Alaska -- provider of 25% of this nation's oil -- will be left out in the cold.

The Prince William Sound Science Center organized the first conference, held in March 1990, on oil spill related and long-term research for Prince William Sound. Speakers and participants emphasized the need for better information on nearly all elements of the life history ecology and population dynamics of individuals species if any reliable estimate of the long term effects of oil spills is to be made. Since that time there has been an even larger outcry from the public and academic sectors to address multi-species assemblage and ecosystem level impacts. Frankly, our understanding of the science is still very poor and needs to be addressed.

The Oil Pollution Act of 1990 authorized $23 million for the Institute over a 10-year period. To date, $100,000 has been received and spent in Cordova toward establishing and carrying out OSRI's mission. A 19-member Advisory Board was appointed in August 1992 and met in Cordova in October. This diverse Board includes seven community and Native representatives from the oil spill impacted region, six federal and four state agency representatives and non-voting representatives from the University of Alaska and the Prince William Sound Science Center. Its composition was designed to offer residents of the oil impacted region direct access to the decision-making process as it related to the long-term research on the oil spill. At the Advisory Board's first meeting, last October, the Institute's purposes were reviewed and the need for its establishment was unanimously reconfirmed.

At this point, OSRI's dilemma is funding. There are two possible sources, the Oil Spill Liability Trust Fund and the EVOS settlement funds governed by the Trustee Council.

Congress exhibited a preference for OSRI's appropriation when it stated in Section 8102 of OPA90 that the Oil Spill Liability Trust Fund (Trust Fund) shall provide monies to OSRI from the balance of the TAPS Fund before that balance is used for other projects. Both OSRI and a Presidential Task Force (outlined in Section 8103) are given preference for the TAPS Fund balance. Since OPA90's passage, we have been waiting for prior claims against the TAPS Fund to be settled. We now expect the final balance in the TAPS Fund may be as high as $270 million. This is well in excess of the $23 million authorized for OSRI.

We recently inquired about receiving an appropriation from the Trust Fund, in advance of their receipt of the TAPS Fund balance. There are two problems with this: 1) the Trust Fund has not yet actually received the TAPS Fund balance, and, 2) any appropriation from the Trust Fund will be deducted from the requesting department's overall budget ceiling. This means that OSRI's program must compete with existing Federal programs. This was clearly not the intent of Congress when it established OSRI in response to this nation's worst oil spill and dedicated funding for its appropriation from the TAPS Fund, an Alaska-generated fund.

A year after passage of OPA90, the Exxon Valdez settlement occurred and the Trustee Council was established to develop and carry out a restoration plan. Some, but not all, of the Council's purposes overlap those of OSRI. In September 1992, a House Conference Committee noted that *"no funding has been provided (in FY 93) for the Prince William Sound Oil Spill Recovery Institute . . . due to the fact that the government has received monies from the EVOS settlement agreement that are to be used under that agreement for some of the very purposes for which the Institute was established. The conferees intend that funds for the Institute should be provided from monies received from the settlement agreement."*

The six-member Trustee Council has not received that news with open arms. We are working to establish a Memorandum of Understanding between the Oil Spill Recovery Institute and the Trustee Council. They are currently overwhelmed with restoration project requests and implementing a planning process in concurrence with the settlement guidelines. One option we may pursue is requesting interim monies for OSRI through the EVOS settlement until the TAPS Fund claims are settled and a final balance is known.

In 1989, we all were in agreement that lessons must be learned from EVOS. Without a long-term monitoring program and a R & D program focused on oil spill response and prevention in cold waters, I don't believe we will have followed through on that committment.

Thank you for taking the time to review OPA90 and the EVOS settlement process. Your committee's review is not only appropriate but overdue. I would appreciate your advice on steps I might take to accomplish the program set out by Congress for the Oil Spill Recovery Institute.

Sincerely,

G.L. Thomas, Ph.D.
Acting Director, Prince William Sound Oil Spill Recovery Institute
President, Prince William Sound Science Center

Enclosures: News release re. Oil Spill Recovery Institute
Support resolutions from RCAC and others
Briefing paper: Oil Spill Recovery Institute

OSRI
Prince William Sound
Oil Spill Recovery Institute

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New Release: October 23, 1992
For more information, contact: Dr. Gary Thomas, Acting Director

A newly established organization, the Prince William Sound Oil Spill Recovery Institute, provides an unique forum for representatives from villages and cities in the region impacted by the Exxon Valdez oil spill. The public and Alaska Native community have seven voting representatives as compared to four state and six federal agency representatives on the Institute's Advisory Board. There are also two non-voting members from the Prince William Sound Science Center and the Institute of Marine Science, University of Alaska Fairbanks.

The Institute was authorized by the Oil Pollution Act of 1990. The 19-member Advisory Board held its first meeting October 8-9 in Cordova.

"I was very pleased with the work accomplished at our first meeting," said Dr. John Calder, Chairperson of the Advisory Board. "The Board members are excited about building the Institute's programs in a complementary fashion with other organizations involved in research on the Exxon Valdez oil spill's impacts or on technical issues for dealing with oil spills in arctic and sub-arctic waters."

The Board passed a resolution endorsing the creation of one data base on natural resources for oil spill impact in the arctic, sub-arctic and the region affected by the Exxon Valdez oil spill. The Institute intends to pursue a leading role in "coordinating, developing and maintaining a single public access data base."

Calder, of the National Oceanic and Atmospheric Administration, was appointed Chairperson of the Advisory Board by the Secretary of Commerce. As stipulated by the Oil Pollution Act of 1990, the Institute is administered by the Secretary of Commerce through the Prince William Sound Science Center, a non-profit research organization based in Cordova.

The seven community and Native representatives serving on the Board were appointed by the Secretary of Commerce in August 1992 after receiving nominations from Governor Walter Hickel and the Alaska Federation of Natives. Governing bodies of the communities and villages impacted by the Exxon Valdez oil spill were given an opportunity last spring to submit Board nominations to the Governor.

Officers elected at the October meeting were: Vice Chairperson, Mead Treadwell (Deputy Commissioner, Alaska Dept. of Environmental Conservation); Treasurer, Gail Evanoff (Vice President for Operations, The Chenega Corporation); and Secretary, Capt. Donald E. Bodron, (Chief, Marine Safety Division, USCG, Juneau). Dr. G.L. (Gary) Thomas serves as Acting Director for the Institute.

Other voting members of the Board are: Suzanne Hancock, Kodiak Island Borough; John Klepper, City of Valdez; Roger Trani, City of Cordova; Helmer Olson, President, Valdez Native Association; Gary Kompkoff, Village of Tatitlek; Paul Jackson, Environmental Health Specialist, Chugachmiut; Bruce Van Zee, Chugach National Forest Supervisor, Anchorage; Paul Gates, Regional Environmental Officer, Dept. of Interior, Anchorage; Commander Rob Frazier, Dept. of Navy, Seattle; Alfred Lindsey, Director, Office of Environmental Engineering and Technology Development, Environmental Protection Agency, Washington, D.C.

Dr. John Goering, Associate Director of the Institute of Marine Science, University of Alaska Fairbanks, serves as a non-voting member. Dr. Thomas also represents the Prince William Sound Science Center on the Board as a non-voting member.

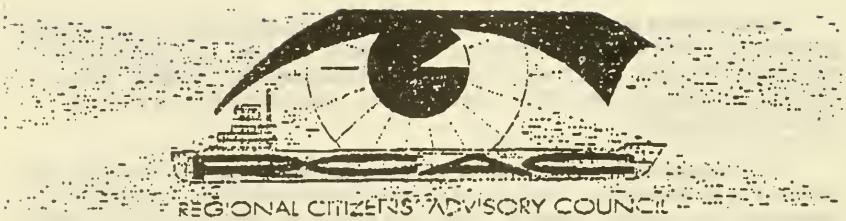
At the October meeting, Goering was appointed to chair the Institute's Scientific and Technical Committee. The Board endorsed a five-member committee who will review proposals and make recommendations as requested by the Board.

The Advisory Board reviewed and approved bylaws and approved a resolution authorizing the Acting Director to request $400,000 from NOAA in Fiscal Year '93. These funds were carried over from a 1992 Congressional appropriation and will be spent over the next two years to develop a sustainable, long-term education, research and development program for the Institute.

The Institute is in the process of developing a long-term strategic plan for operations and fund raising. "Fundamental to the Institute's plans is to become a source of funding for competitive research and education grants from universities, agencies, private corporations, and individuals," said Dr. Thomas. He will work to develop cooperative agreements between other funding organizations and the Oil Spill Recovery Institute to make this endeavor efficient.

The Prince William Sound Oil Spill Recovery Institute was authorized by the Oil Pollution Act of 1990. As stated in Section 5001 of that act, "The Institute shall conduct research and carry out educational and demonstration projects designed to: (1) identify and develop the best available techniques, equipment and materials for dealing with oil spills in the arctic and subarctic marine environment; and (2) complement Federal and State damage assessment efforts and determine, document, assess and understand the long-range effects of the Exxon Valdez oil spill on the natural resources of Prince William Sound and its adjacent waters. . . and the environment, the economy, and the lifestyle and well-being of the people who are dependent on them, except that the Institute shall not conduct studies or make recommendations on any matter which is not directly related to the Exxon Valdez oil spill or the effects thereof."

(continued)



Resolution 91-6

OIL SPILL RECOVERY INSTITUTE

WHEREAS, Section 5001 of the the Oil Pollution Act of 1990 established the Prince William Sound Oil Spill Recovery Institute; and

WHEREAS, The Congress of the United States approved the Oil Pollution Act of 1990 unanimously; and

WHEREAS, The purpose of the Prince William Sound Oil Spill Recovery Institute is to conduct research and educational and demonstration projects designed to:

a) identify and develop the best available techniques, equipment, and materials for dealing with oil spills in the arctic and subarctic marine environment; and

b) complement Federal and State damage assessment efforts and determine, document, assess, and understand the long-range effects of the *Exxon Valdez* oil spill on the natural resources of Prince William Sound and its adjacent waters, and the environment, the economy, and the lifestyle and well-being of the people who are dependent on them; and

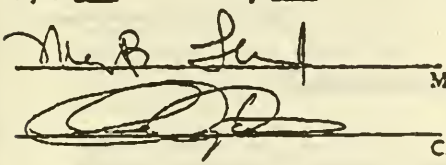
WHEREAS, It is imperative to the mission of the Regional Citizens' Advisory Council to understand the technology for oil spill response and prevention and to understand the long term effects of oil spills on the natural resources and communities in the region impacted by the *Exxon Valdez* oil spill;

THEREFORE, BE IT RESOLVED That the Regional Citizens' Advisory Council endorses the full appropriation for the Oil Spill Recovery Institute of $22 million over a period of ten years as authorized in the Oil Pollution Act of 1990; and

BE IT FURTHER RESOLVED That the Regional Citizens' Advisory Council strongly recommends active and enthusiastic support for the appropriation by the Alaska Congressional Delegation, the Governor of the State of Alaska, the Federal Senate and House Appropriations Committees, the National Oceanic and Atmospheric Administration, the Secretary of Commerce and the Comprehensive Environmental Response Compensation and Liability Act Trustee Council.

Certification

This resolution was duly adopted by the RCAC at an RCAC meeting held March 22, 1991 by the following vote:
Ayes 10 Nays 0 Abstain 0



Marilyn Leland, Secretary

Chris Gates, President

P.O. Box 705
Cordova, AK 99574
(907) 424-5800 FAX: (907) 424-5820

Position Paper: *Prince William Sound Oil Spill Recovery Institute*

Abstract

The Prince William Sound Oil Spill Recovery Institute (OSRI) was established by Congress in the Oil Pollution Act of 1990 (OPA90). The Institute's 19-member Advisory Board is unique in its composition of eight members from the local public and Native communities, representatives from four state and six federal agencies, and one from the University of Alaska. The Institute is to develop oil spill technology research and development (R & D), and a long-term monitoring program on a nationally competitive basis. Today, the Institute's dilemma is funding which could come from two possible sources, the Oil Spill Liability Trust Fund or the Exxon Valdez settlement funds governed by the Trustee Council.

The Oil Pollution Act of 1990 authorized the Institute to receive $23 million over a 10-year period. To date, $600,000 has been appropriated for the Institute, but only $100,000 has actually been received. Congress exhibited a preference for the Institute's full appropriation by stating that OSRI shall be funded from the balance of monies left in the TAPS fund before that balance is turned over to the Oil Spill Liability Trust Fund and spent on other projects. However, an appropriation from the Trust Fund must be requested by the Department of Commerce and has to compete with already existing government programs, a step NOAA is reluctant to take.

On the other hand, a House Conference Committee noted in September 1992 that *"no funding has been provided (in FY 93) for the Prince William Sound Oil Spill Recovery Institute . . . due to the fact that the government has received monies from the Exxon Valdez settlement agreement that are to be used under that agreement for some of the very purposes for which the Institute was established. The conferees intend that funds for the Institute should be provided from monies received from the settlement agreement."*

Meanwhile, the two issues deemed most important immediately after the spill have been swept out of the picture. First, there is no long-term environmental monitoring program for the oil spill-impacted region. Second, we are focusing too little on new preventive techniques and a specific Research and Development program for arctic and subarctic waters. While Title 7 of OPA90 establishes a regional research program for the nation, Title 5 set up the Prince William Sound Oil Spill Recovery Institute with specific direction to focus on subarctic and arctic waters. The Institute is specifically excluded from competing for the research grant monies available through the Title 7 regional programs. If the Institute is left unfunded, Alaska -- provider of 25% of this nation's oil -- will be left out in the cold.

Idea and formation

Prevention and long-term impacts were the two items most talked about in the immediate months after the March 24, 1989 Exxon Valdez oil spill (EVOS). Within a month of that spill, Alaska's Senator Ted Stevens began discussing the need for an institute whose primary mission would be to research preventive techniques for oil spills in arctic and subarctic waters and to

assess the long-term impacts of EVOS on people and the resources of the region affected by the spill.

In response to this concern, the Oil Pollution Act of 1990 (OPA90) was passed in the fall of 1990. Title 7 of OPA90 establishes regional research programs throughout the United States to conduct oil pollution research and development. Title 5 establishes an Alaska-based research institute.

Alaska's program was described in a 1990 constituent newsletter from Senator Stevens:

"The primary Alaska provision sought by Senator Stevens (in OPA90) calls for the creation of the Prince William Sound Oil Spill Recovery Institute at Cordova. The Institute would research ways to prevent future spills and assess the long-term oil spill impacts on the people and the natural resources of Alaska.

The Institute would lease a laboratory and other facilities to attract researchers from the nation and the world. Funding for the Institute would be $5 million in the first year and $2 million thereafter, from money set aside when the existing Trans-Alaska Pipeline Fund is rolled into a new national fund created by the oil spill legislation."

Title 7 of OPA90 excluded the Prince William Sound Oil Spill Recovery Institute (OSRI) from the competitive research funding process since its appropriation was provided for under Title 5.

Provisions of the Oil Pollution Act of 1990

Section 5001 of OPA90 established OSRI and directs this institute to be based at the Prince William Sound Science and Technology Institute (dba Prince William Sound Science Center) in Cordova, Alaska.

The Oil Spill Recovery Institute's mission is to conduct research on prevention and response techniques for arctic and subarctic oil spills and to *"complement Federal and State damage assessment efforts. . . "* on the long-range effects of EVOS.

Highlights of Section 5001 authorizing OSRI are:

- Formation of a 19-member Advisory Board with *diverse and regional representation*: from 6 Federal agencies, 4 State agencies, 4 community and 3 Native representatives, one University of Alaska and one Science Center representative. This Advisory Board is chaired by the Secretary of Commerce's representative and determines *"policies for the conduct and support, through contracts and grants awarded on a nationality competitive basis of research, projects, and studies to be supported by the Institute."* This Board's composition is unique in having government, public and Native representation.

- The Institute is *"administered by the Secretary of Commerce through the Prince William Sound Science and Technology Institute (now called the PWS Science Center) and is located in Cordova, Alaska,"* the spill affected area.

- The Institute *"shall publish and make the information available to any person upon request the results of all research, educational, and demonstration projects conducted by the Institute."* The public has open access to the information collected.

Advisory Board established

The 19-member Advisory Board for OSRI was appointed in August 1992 and met in October 1992. During their two-day meeting in Cordova, the Board reconfirmed the need for the Institute. Title 5 of OPA90 was reviewed and there was agreement that the purposes outlined in the legislation for OSRI are still not being

accomplished. The Advisory Board adopted bylaws to conduct business, elected officers and approved the composition of the Board's Scientific and Technical Committee. Preliminary approval was given to a draft strategic plan.

Funding

The Oil Pollution Act of 1990 *authorized $23 million* in funding for OSRI over 10 years. Section 8102 (2)(C)(D) authorizes OSRI to receive its appropriation from the balance of the TAPS Fund (Fund) after payment of Fund claims and before this balance is made available to the President or the state Governors for other programs under Section 1012. In 1990, we were told that claims against the Fund would be settled by now but today we are told it may take until 1994 to complete that process.

To date, $600,000 has actually been appropriated by Congress to keep OSRI programs alive as it awaits the availability of funds from the TAPS Fund balance. However, only $100,000 of that has actually been released by NOAA for development of OSRI.

The first appropriation, in FY 91, of $100,000 went to NOAA-HAZMAT in Seattle without any work being done on OSRI.

The second appropriation, in FY 92, of $500,000 was directed to NOAA's Oceanic and Atmospheric Research office in Silver Spring, Maryland. A cooperative agreement was signed in March 1992 between NOAA and the Science Center to proceed with formation of OSRI. NOAA released $100,000 of the FY 92 appropriation to the Science Center to complete the initial steps necessary for the Institute's establishment. The Science Center used these funds to initiate and carry out a program establishing the Institute's Advisory Board, Scientific and Technical Committee and strategic plans.

A $400,000 balance remains from the FY 92 appropriation, which the OSRI Advisory Board recommended be spent equally in FY 93 and FY 94. The Science Center is requesting these monies on behalf of OSRI to fund a limited research and development, and educational outreach program focused on a natural resource database for the oil spill impacted region.

EVOS settlement

In October 1991, a year after OPA90 was approved and almost a year before the OSRI Advisory Board was formed, Alaska and the federal government signed the EVOS Settlement. The settlement established a six-member Trustee Council to administer the civil settlement totalling $900,000,000. This Council's mandate, according to the settlement agreement, is to undertake restoration of the injured resources and services as a result of the oil spill.

There is some overlap in the missions of the Trustee Council and OSRI, but there are also significant differences in both the missions and administrative structures. The Oil Pollution Act of 1990 directs OSRI to "*complement Federal and State damage assessment efforts and understand the long-range effects of EVOS on the natural resources and the environment, the economy, and the lifestyle and well-being of the people who are dependent on them.*" Toward that end, the OSRI has submitted a draft Memorandum of Understanding to the Trustee Council.

Two significant research areas currently not included under the Trustee Council's restoration plan is R & D related to oil spill technologies and long-term monitoring. Both of these areas are included in the OSRI mission.

While OSRI's Advisory Board includes community and Native representatives, as well as both state and federal agencies, the Trustee Council is composed exclusively of government agency representatives. The Oil Spill Recovery Institute is also directed to award grants for research projects on a nationally competitive basis. In contrast, the Trustee Council has no such limitations and has conducted the majority of its research studies through government agency staff and by sole source contracts.

So, what's the problem?

There are three problems:

1) freeing the balance of the TAPS Fund;
2) getting these funds appropriated outside of the budget ceiling; and,
3) defining the areas of overlap between OSRI and the Trustee Council's programs.

Current estimates project a substantial balance in the TAPS Fund when claims are settled (as much as $270 million). The Oil Pollution Act of 1990 directs that this balance be added to the Oil Spill Liability Trust Fund (Trust Fund), but only after allocating funds to Section 5001 (OSRI) and 8103 (for a Presidential Task Force). The National Pollution Funds Center now has a balance of $1 billion in the Trust Fund. According to Section 8102 (2)(D), this is a source of funding for OSRI and the Presidential Task Force. Since the projected balance in the TAPS Fund far exceeds the requirements of OSRI and the Presidential Task Force over the next 10 years, we believe the full appropriation for OSRI should be allocated. Furthermore, since the TAPS Fund is a fund generated by and for Alaska resources, this appropriation should not count against NOAA's budget ceiling.

Unless action is taken to change current policies, any appropriation for OSRI must go through the Commerce Department's budget and will be deducted from their budget ceiling This puts the OSRI in direct competition with other NOAA and Commerce Department programs even though this Alaska-based program was designed to be supported with Alaska-generated funds. This was clearly not the intent of Congress when it passed OPA90.

Without an assurance that this appropriation request will not count against their Gramm-Rudman budget ceiling, NOAA will be reluctant to make a request for funds.

In September 1992, a Congressional committee report stated in September 1992 that:

". . . no funding (in FY93) has been provided for the Prince William Sound Oil Spill Recovery Institute established by Section 5001 of the Oil Pollution Act of 1990 due to the fact that the government has received monies from the Exxon Valdez settlement agreement that are to be used under that agreement for some of the very purposes for which the Institute was established. The conferees intend that funds for the Institute should be provided from monies received from the settlement agreement."

Unfortunately, the Trustee Council has discontinued funding for long-term monitoring of damaged resources. The Council's priorities now are directed to enhancement, restoration and habitat protection or acquisition.

Suggested actions

1. Request that NOAA immediately ask for the full appropriation of funds for OSRI from the Oil Spill Liability Trust Fund based on the projected TAPS Fund balance which the Trust Fund will receive in 1994.

2. Request the Office of Management and Budget consider these funds *outside* of NOAA's budget ceiling because the Trust Fund will be reimbursed from the TAPS Fund, an Alaska dedicated fund, for an Alaska program.

3. Request that the Trustee Council release funds to OSRI for support of a long-term monitoring program.

Pacific Seabird Group

DEDICATED TO THE STUDY AND CONSERVATION OF PACIFIC SEABIRDS AND THEIR ENVIRONMENT

Craig S. Harrison
Vice Chair for Conservation
4001 North 9th Street #1801
Arlington, Virginia 22203

March 19, 1993

Honorable Gerry E. Studds, Chairman
Committee on Merchant Marine and Fisheries
Room 1334, Longworth House Office Building
Washington DC 20515-6230

Re: Oversight Hearing on Restoration of Prince William Sound

Dear Chairman Studds:

The Pacific Seabird Group (PSG) thanks the Chairman for this opportunity to provide our perspective on the restoration of Prince William Sound after the Exxon Valdez oil spill. PSG is an international organization that was founded in 1972 to promote knowledge, study and conservation of Pacific seabirds. PSG draws its members from the entire Pacific Basin, including Russia, Canada, Japan, Mexico, Australia and New Zealand. Among PSG's members are biologists who study seabirds, state and federal officials who manage seabird refuges, and individuals interested in marine conservation. During the past twenty years, PSG has hosted symposia on the biology and management of virtually every seabird species that the oil spill affected. PSG has commented extensively on the Trustees' restoration plans and one of our founders, James G. King, serves on the Trustees' Public Advisory Group.

I. Seabirds Were Severely Damaged by the Oil Spill

Seabirds are particularly vulnerable to oil spills and were perhaps the single resource most damaged by the Exxon Valdez spill. The Trustees estimate that the spill killed as many as 645,000 seabirds, including murres, loons, cormorants, pigeon guillemots, grebes, sea ducks, marbled murrelets, Kittlitz' murrelets, black oystercatchers, Bonaparte's gulls, arctic terns, black-legged kittiwakes and tufted puffins. PSG is particularly concerned about marbled murrelets because last September the U.S. Fish & Wildlife Service (FWS) listed the population of this species from Washington to California as threatened under the Endangered Species Act.

II. Restoration Activities, 1989-1992

PSG recognizes that establishing an infrastructure to plan and implement wisely a $1 billion restoration program is difficult and demanding. While PSG had some initial problems with opportunities to comment on the Trustees' work plans in a timely manner, we believe that the Trustees have resolved their organizational problems and intend to provide meaningful public involvement in the restoration process. We are especially encouraged that the Trustees have selected a Public Advisory Group and expect that the Trustees will give the opinions of the advisory group much weight.

Despite improvements in the Trustees' procedures, PSG is concerned about some restoration policies. The Trustees seem to be applying an agency pork barrel approach to funding decisions and spend too much money on overhead and projects that do not directly restore natural resources. The Trustees will spend $38 million on restoration during 1993 that will have little tangible benefit to seabirds. We discuss below PSG's recommended approach to the future restoration of seabirds. PSG also believes that federal and state agencies should use their existing authorities to protect species damaged by the spill. For example, logging on government and private lands (e.g., inholdings in Kachemak Bay State Park and Afognak Island) that are prime habitat for marbled murrelets and harlequin ducks should be curtailed. The National Marine Fisheries Service should enforce the Migratory Bird Treaty Act to protect marbled murrelets in Prince William Sound that drown in gillnets.

PSG believes that the Trustees should ensure that they use the very best available science in making restoration decisions. Restoration requires a multi-disciplinary approach that uses a wide variety of expertise. It is especially important that the Trustees obtain a broad range of peer reviews from biologists who have international reputations in seabird restoration ecology. Many of the most qualified scientists live in Canada or the United Kingdom and, to the best of our knowledge, are not consulted during the reviews of project proposals. PSG would like an opportunity to submit names of additional peer reviewers to the Trustees. We also suggest that the Trustees establish procedures to ensure that their peer reviewers reveal any conflicts of interest that might influence their assessment and/or sponsorship of various restoration projects. On occasion, we believe that the Trustees have proposed studies that cannot be justified scientifically.

In general, we believe that the damage assessment projects for seabirds have been worthwhile. PSG believes that understanding the magnitude of harm is important to decide the types and extent of restoration activities that may be necessary. PSG also believes that the studies on marbled murrelet and harlequin duck habitat requirements should prove to be very useful in assessing potential land acquisitions for these species. These studies also should assist federal and state forestry agencies in establishing the width of forested buffer strips that are necessary to protect the breeding sites of harlequin ducks.

III. Suggested Restoration Activities, 1993 and Beyond

PSG understands that the restoration team is working on a draft Restoration Plan that will soon be available for public review. PSG intends to be as involved with that process as possible. PSG supports using restoration funds for options that are technically feasible, have a high potential to improve the recovery of injured resources and pass muster under a benefit/cost test. PSG believes that restoration options should be evaluated from the perspective of whether they benefit more than a single resource. PSG's preferred options generally would benefit an entire community of seabirds (and often other organisms), not just a single species.

PSG is concerned that the Trustees have limited their consideration of the restoration of seabirds to the geographic area of the oil slick. While such a geographic criterion may be appropriate for inter-tidal organisms, it ignores the fact that seabirds are migratory. Oiled seabirds were seen in the Pribilof Islands during 1989 and seabirds from the Shumagin and Aleutian Islands probably were killed. Birds may be moving into the oil spill area from elsewhere in Alaska to replace dead birds. The Trustees have thus far refused to implement restoration projects for seabirds elsewhere in Alaska that were directly or indirectly depleted by the spill. Our recommended approach, which we hope will be contained in the Trustees' draft Restoration Plan, focuses on habitat acquisition and the restoration of the natural bio-diversity of seabird breeding islands.

A. Habitat Acquisition

Because protecting habitat benefits seabirds and all other wildlife species, PSG supports habitat acquisition as a means of restoring the actual or equivalent resources that the spill injured. Besides acquiring specific seabird colonies (Enclosure 1), PSG strongly supports the purchase of any old growth areas in Prince William Sound, the Kenai Peninsula and Afognak Island. These habitats are important to nesting marbled murrelets, bald eagles and harlequin ducks. Protecting these areas would benefit many other forms of wildlife such as salmon and black oystercatchers as well as enhance recreation opportunities. Land acquisition, however, can be extremely expensive and the Trustees should ensure that the lands purchased are valuable to wildlife and that the benefits are worth the cost. PSG suggests the Trustees consider the use of conservation easements as well as fee purchase. Restrictions on use and development may provide adequate protection at less cost, allowing more land to be protected.

B. Restoring Natural Bio-Diversity of Seabird Breeding Islands

PSG is disappointed that the Trustees have not begun to restore the natural bio-diversity of the seabird colonies in the Alaska Maritime National Wildlife Refuge and elsewhere by promoting a program to eliminate exotic rats, foxes and other creatures that

have caused the local extinction of seabird colonies.[1/] Foxes that farmers released on seabird islands and later abandoned depress the breeding population of seabirds on the Alaskan Maritime National Wildlife Refuge by several million each year. FWS should humanely end the suffering of the foxes that were deserted in this hostile environment and barely survive by depredating seabird colonies. The Canadian Wildlife Service is using funds from the Nestucca oil spill to restore seabird habitat in the Queen Charlotte Archipelago, British Columbia, by removing introduced rats and raccoons. This means of restoration is financially feasible and highly effective.

Predator removal has the highest yield of any action that the Trustees might take to restore the actual or equivalent populations of the twenty or so seabird species that the oil spill killed. It would help the entire seabird community to recover, including island-nesting sea ducks, dabbling ducks, oystercatchers, wintering waterfowl, puffins, murrelets, gulls and terns. For example, after farmers stocked Kaligagan Island with foxes in 1921, its seabird population plunged so low that the renowned Alaska naturalist Olaus Murie recommended that it continue as a fox farm. In the 1980s, after foxes had died out, Kaligagan supported 125,000 burrowing seabirds. There is simply no scientific question that introduced predators such as rats and foxes devastate seabird colonies or that removing such creatures can enable the restoration of the natural bio-diversity to the breeding islands.

IV. Conclusion

PSG remains cautiously optimistic that the restoration can be a success. We believe that the Trustees have developed procedures to ensure that the trust funds will be spent wisely. We encourage the Trustees to use the very best science in making their decisions. Finally, we strongly encourage the Trustees to include in the draft Restoration Plan our suggestions to acquire appropriate seabird habitat and to restore the natural bio-diversity of seabird breeding islands. Non-native predators on breeding islands kill as many seabirds each year as several Exxon Valdez oil spills. Thank you for this opportunity to lend our expertise and views on these important issues.

Sincerely,

Craig S. Harrison

Enclosure

1/ FWS had budgeted $50,000 in 1992 to remove introduced foxes from islands in the Alaska Maritime National Wildlife Refuge. We understand that the Director's office in Washington DC reprogrammed those funds elsewhere over the objections of the Alaska Regional Director and PSG.

PACIFIC SEABIRD GROUP
RECOMMENDED SEABIRD COLONIES TO ACQUIRE

Alaska Peninsula (South Side)
High
Setwik
Ugaiushak
Fox
Hydra
Central
2 Unnamed islands (Nakalilok Bay)
Unnamed Islands between Unavikshak and Kumlik
Spitz
Brothers
Cherni
Sanak

Fox Islands (Eastern Aleutians)
Tanginak (Akun)
Kaligagan (including 7 islets on north side)
Derbin (Tigalda)
Poa (Tigalda)
Tangik (Tidgalda)
Unnamed islet (Trident Bay)
Unnamed islet (Akun Strait)
Puffin
Ogangen (Unalaska)
Emerald (Unalaska)
Ship Rock (Umnak Pass)
Kigul (Unmak Pass)
Ogchul (Unmak)
Vesvidof (Unmak)
Adugak (Unmak)
Anaunliak (Unmak)

Kodiak Island Vicinity
Flat
Tugidak
Triplets
Catherdral
Ladder
Sheep
Cub
Amee
Nut
Puffin
John
Chinak Island and Rocks
Utesistol
Suitlak
Middle
Kekur

Bering Sea
King
Fairway Rock
Egg (Norton Sound)

Gulf of Alaska
Sand
Gull
Middleton

March 11, 1993

Dr. Riki Ott, President
Oil Reform Alliance
POB 1430
Cordova, AK 99574

Representative Gerry Studds, Chairman
House Committee on Merchant Marine and Fisheries
1334 Longworth HOB
Washington, D.C. 20515

ATTN: Joan Bondareff

Dear Chairman Studds;

We understand your committee is holding a hearing on Exxon Valdez oil spill aftermath on March 23 in Washington, D.C. We appreciate your concern for spill-impacted regions, fish and wildlife, and residents of Alaska.

While there are many concerns regarding long-term injury to fish, wildlife, and cleanup workers, and continuing economic and social upheaval, there are also very real concerns regarding inadequacy of future oil spill prevention. The latter should interest your committee in particular as this committee has both the jurisdiction and the obligation to see that marine transportation of oil is conducted responsibly.

The Oil Reform Alliance, a coalition of commercial fishing and environmental organizations that formed after the spill to reform oil industry practices, has recently written a document entitled "Status Report on Alaska's Oil Industry: A Blueprint for Improving Performance." This report discusses many of the concerns regarding aftermath of the Exxon Valdez oil spill and future spill prevention, such as structural integrity and tug escort of TAPS-trade tankers.

We respectfully request that the enclosed "Status Report" be entered into the formal hearing record along with the "Briefing Sheet on Air Pollution from the Alyeska Marine Terminal in Valdez, Alaska."

Again, we thank-you for your continuing concern for recovery of Alaska's regions impacted by the Exxon Valdez oil spill.

Respectfully,

Dr. Riki Ott, President

February 1993

STATUS REPORT ON ALASKA'S OIL INDUSTRY: A BLUEPRINT FOR IMPROVING PERFORMANCE

by Riki Ott, Ph.D.

on behalf of the Oil Reform Alliance (1)

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(1)This paper was funded in part by Alaska Conservation Foundation, Anchorage, AK.
The author's address is: P.O. Box 1430, Cordova, AK 99574.

TABLE OF CONTENTS

OVERVIEW

The Alaskan oil industry has provided about 20-25% of the U.S. domestic oil supply ever since Alaska North Slope crude first arrived by tankers at refineries on the west, east, and gulf coast states in 1977.

The U.S. relies on Alaska's oil, but Alaska relies on the U.S. government to protect its small population and vast remote wildernesses from the downside of oil production -- oil pollution. This relationship has proven to be one-sided: Alaska has delivered its oil, but the federal government has failed to deliver much more than its promise of oversight. Actions by past Administrations have left the State vulnerable to damages, not only from Exxon Valdez size spills, but more importantly from chronic exposure to cumulative input of potent pollutants daily over decades.

The Alaska oil industry has taken advantage of Alaska's physical remoteness and political dependence on oil (85% of state's revenue) to set standards of care that are lower than in the rest of the nation and in many other developed countries. Associated with the tremendous North Slope production is an equally tremendous industrial development which produces tremendous volumes of liquid, solid and gaseous waste. Much of the waste generated by the oil industry contains toxic and hazardous chemicals that are closely regulated in the Lower 48.

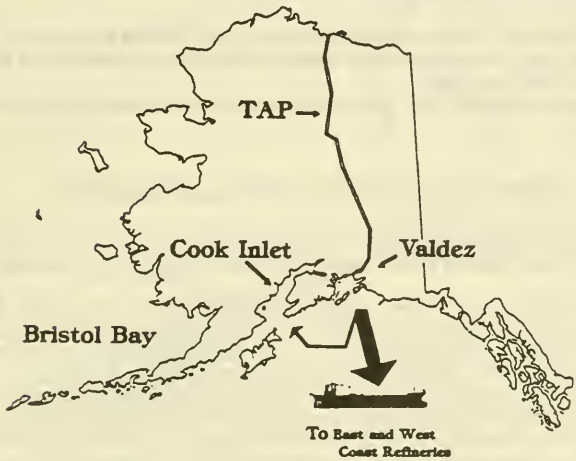
From the North Slope to the marine terminal to Cook Inlet and the high seas, monitoring and compliance of oil industry operations, including environmental effects and system-wide maintenance of tankers, terminal, pump stations, and pipelines, have been thwarted by inadequate government oversight and unreliable industrial self-monitoring.

To change this "business-as-usual" attitude of the powerful Alaska oil industry, the Clinton Administration and Congress must take an active interest in the industry's environmental monitoring and compliance, pipeline and tanker structural integrity, worker safety and health, and future oil and gas lease sales, both on and off shore. Federal agencies should be given clear mandates and adequate funding to aggressively conduct inspections, monitoring, and enforce compliance with relevant laws. Effective oversight requires a constant presence with competent, qualified staff, not the sporadic oversight of the past.

In Alaska, it is still "business-as-usual." This report is an appeal from concerned citizens, an appeal to the federal government that it deliver more than promises to help Alaskans achieve environmentally sound development in Alaska.

SUMMARY

PART 1: NORTH SLOPE OPERATIONS & TRANS-ALASKA PIPELINE SYSTEM



OIL INDUSTRY WASTE DISPOSAL PRACTICES

From the North Slope to the marine terminal to the high seas, environmental monitoring and compliance of oil industry operations have been thwarted by inadequate government oversight and unreliable industrial self-monitoring. Inadequate assessment of environmental impacts violates the Trans-Alaska Pipeline System (TAPS) right-of-way agreement.

- Improve regulatory oversight for environmental monitoring of TAPS operations, including North Slope, pump stations, and marine terminal, as mandated under TAPS right-of-way agreement.
- Review waste water treatment facility at marine terminal as required under the right-of-way agreement and upgrade if necessary.
- Amend Resource Conservation Recovery Act to include regulation of marine-generated hazardous wastes, and to remove exemption for drilling mud and process waters.
- Require increased oversight of TAPS trade tanker operations by U.S. Coast Guard, (including daily oversight of ballast water survey forms).

STRUCTURAL INTEGRITY & MONITORING OF TAPS PIPELINE

Government oversight of TAPS has not ensured that government requirements have been met. Industry oversight led to charges in 1976 and 1992 that Alyeska's quality-control inspectors are so intimidated that TAPS pipeline safety is compromised. Citizen oversight led to covert surveillance operation by Alyeska of its critics and firing of "whistleblowers."

- Conduct Presidential Task Force audit of TAPS as required by Oil Pollution Act of 1990.

* Investigate TAPS safety, corrosion, electrical and integrity charges.
* Take remedial action to ensure TAPS safety and integrity as mandated by TAPS right-of-way agreement.
* Strengthen federal whistleblower protection laws.

The TAPS DR&R Fund was set up solely to dismantle and remove the pipeline, and restore the environment. Instead, pipeline owners are pocketing hundreds of millions of dollars in hidden profits annually.
* Audit TAPS DR&R collections with goal that oil companies should set aside monies for DR&R.

INTEGRITY AND ESCORT OF TAPS-TRADE TANKERS

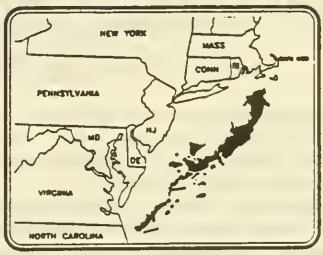
In 1988 the U.S. Coast Guard found that while TAPS trade tankers accounted for only 13% of the U.S. flag oceangoing ships, they accounted for 52% of the structural failures.
* Require Coast Guard, as per its own recommendations, increase inspection of TAPS trade tankers, especially problematic tankers, using qualified marine inspectors, and ensure that all TAPS trade tankers calling on Valdez have a completed cargo block survey, conducted by qualified mariners, prior to carrying cargo from Valdez.
* Require Coast Guard to issue regulations for oil tankers establishing minimum standards for plating thickness, and periodic gauging of the plating thickness of vessels over 30 years old as mandated by the Oil Pollution Act of 1990 Sec. 4109.
* Require Coast Guard to issue regulations for overfill and tank level or pressure monitoring devices as mandated by the Oil Pollution Act of 1990 Sec. 4110.

Alyeska is using primarily supply, not ship assist tugs, to escort tankers in Prince William Sound, however, Arco, Exxon and BP - the majority owners of Alyeska - use Voith-Schneider tractor tugs, considered by many to be the best towing vessels, in their operations in other areas of the world (Puget Sound WA, Sullom Voe UK).
* Clarify "towing vessels" in the Oil Pollution Act of 1990 Sec. 4116 to specify tractor tugs.

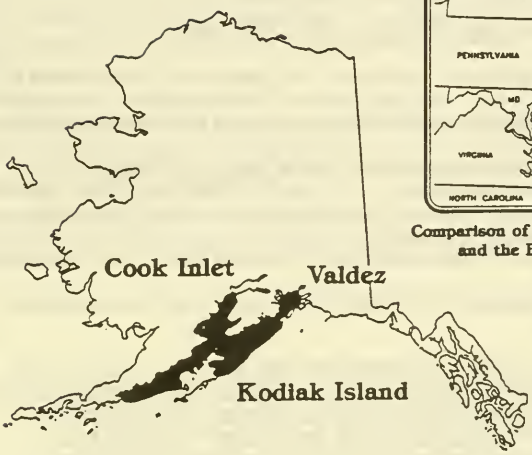
OUTER CONTINENTAL SHELF LEASING

Alaska contains 40% of the nation's OCS lands offered for oil leasing and exploration.
* In light of significant long-term damage from the Exxon Valdez oil spill, grant Alaska a moratorium on OCS drilling until 2001.
* Cancel oil leases in Bristol Bay, one of the world's richest marine ecosystems and fishing grounds.

PART 2: COOK INLET OIL INDUSTRY



Comparison of the Exxon Valdez Oil Spill and the East Coast of the U.S.



Cook Inlet's petrochemical industry has not shared the relative intense scrutiny of TAPS oil companies, despite the similarity in types and scale of problems. Compliance records from Cook Inlet reveal extensive industry non-compliance with environmental laws and regulations, and an absence of aggressive enforcement by state and federal environmental agencies.

- Give citizens the right to conduct inspections of facilities regulated under both state and federal law, as is available under surface mining laws.
- Mandate, authorize and fund EPA to pursue aggressive monitoring and enforcement actions, including timely compliance and thorough environmental monitoring programs, timely issuance of permits, and minimal issuance of special waivers and exemptions.
- Mandate, authorize and fund the Coast Guard to establish a nationwide program for preventing water pollution from petroleum pipelines, including contingency planning.
- Remove the exemption for oil and gas wastes (process waters and drilling muds) from Resource Conservation and Recovery Act hazardous waste regulation.
- Clearly define jurisdiction between EPA and the Coast Guard to avoid jurisdictional disputes.

There is no other place in the western world that routinely berths and unberths large tank vessels with no tug assistance The Coast Guard imposes no weather restrictions, nor does it utilize a vessel traffic control system despite extreme tides (exchange of 35'), strong currents, winter sea ice, and often poor weather.

- Require Coast Guard to include Cook Inlet as part of its studies on vessel traffic service systems and tanker navigation safety standards mandated by the Oil Pollution Act.

• Give Coast Guard mandate, authority and funding to direct vessel traffic in Cook Inlet, including imposition of weather restrictions and tractor tugs.
• Coast Guard should promptly designate Cook Inlet as an additional area under Oil Pollution Act of 1990 where tug escorts should be required.

PART 3: EXXON VALDEZ OIL SPILL AFTERMATH

Nearly $300 million of the $900 million settlement has been spent or committed by the Trustees Council, virtually none of it for acquisition of habitat supported by the public.
• Conduct GAO audit of settlement expenditures todate and reimburse any improper expenditures to settlement fund.
• Direct federal Trustees to divide the federal criminal restitution funds and the remaining civil funds into discrete amounts of money for habitat acquisition, key and on-going scientific studies, and improved management of impacted fishery resources, as supported overwhelmingly by the public.
• Evaluate all federal lands and waters within spill-impacted area for further protective management designation.
• If the Trustee process continues unchanged, then subject all science projects to independent peer review.

Thousands of workers have filed claims with Exxon that their health was severely compromised by exposure to oil mist and cleanup chemicals during beach cleanup.
• Conduct congressional oversight hearing on latent human health symptoms associated with exposure to Exxon Valdez spill, Shetland spill, and Gulf War.
• Establish panel of medical experts to review Exxon and Med-Tox Associates (contractor) exposure data, health and safety records, and laboratory procedure manuals with goal of updating criteria for oil mist exposure to protect future generations of people exposed to oil mist.
• Change NIOSH oil mist exposure standard reference material to crude oil.

Damage claims of fishermen, Natives, and municipalities have not been compensated resulting in continuing financial hardships related to the Exxon Valdez spill.
• Amend the Trans-Alaska Pipeline Authorization Act to make it clear that partial payment by the TAPAA fund or failure to appeal the fund determination will not limit the right of persons to a jury trial to attempt a complete recovery of the claim, and that denial of claims through the TAPAA fund will not prevent compensation through other means.
• Create low interest loan program to victims of technological disasters, including municipalities.

Government and independent studies of Alaska's wildlife post oil spill have found extensive long-term damage in many species, and even on-going damage in some species in conflict with Exxon's results
• Incorporate non-industry damage assessment studies in evaluating risks of future oil and gas leasing on OCS and other environmentally sensitive areas.

Additional safeguards are needed nationwide as well as in both Prince William Sound and Cook Inlet to increase spill prevention Many of these safeguards should be addressed by the Coast Guard in studies on vessel traffic service systems and tanker navigation safety standards required in the Oil Pollution Act of 1990. These studies are past due and should include concrete specific recommendations that can be quickly implemented.

• Coast Guard should revise its interim final rule to require inter-hull spacing equivalent to the breadth of the vessel divided by 15 or 2 meters, whichever is greater (not less).
• Coast Guard should promptly issue regulations for single hull vessels to reduce oil spill risks including tug escorts, compliance with vessel traffic control systems, advanced navigation aids, wing tank cargo restrictions, and tank level monitoring devices.

Alaska passed a law in 1992 restricting Alyeska's response to TAPS spills to within 72 miles of the Valdez terminal: federal law requires owner companies to respond to any TAPS spill within Alaska, but does not require a Coast Guard approved-contingency plan.
• Congress should require TAPS right-of-way agreement holders (owner companies) to submit an oil spill response contingency plan to Coast Guard for approval.

INTRODUCTION

In the early 1970s, North Slope oil companies and the consortium Alyeska promised Congress "environmentally sound development", "state-of-the-art technologies", and the "safest operations in the world in Port Valdez" in trade for authorization to build the Trans-Alaska Pipeline System (TAPS) and to develop Prudhoe Bay. Yet the extent to which these same oil companies, and Alyeska, will go to cover up safety, environmental and operational indiscretions has been revealed repeatedly in congressional oversight hearings and investigations spanning the life of the pipeline.

Cook Inlet's petrochemical industry has not shared the relative intense scrutiny of TAPS oil companies, despite the similarity in types and scale of problems. Cook Inlet's petrochemical industry started in the 1950s and continues to expand with recent strikes and a $66 million lease sale in 1993, the third most lucrative in Alaska's history. Cook Inlet hosts extensive industrial development including several hundred producing and enhanced recovery wells, 10 offshore platforms, 60 known drilling mud pits, oil production and loading facilities, oil refineries, North America's largest natural gas exporting facility and oil processing facility, respectively, and the world's largest ammonia/urea plant.

Widespread disregard for environmentally safe disposal of toxic and hazardous wastes from the North Slope to Cook Inlet to the high seas has been the Achilles' heel of oil industry operations. Responsible disposal of oily waste is expensive in Alaska. The oil industry continues to opt for maximizing its profits at the public's expense.

The oil industry consistently argues that its operations are environmentally sound, however its concept does not include responsible disposal of wastes, safe transportation of product on land and at sea, adequate maintenance programs and other safeguards to minimize spills, and rapid compensation for damaged parties in the event of the inevitable spills. The legacy left in the aftermath of the Exxon Valdez oil spill is one of extensive and long-term damage to natural resources and cleanup worker health, widespread social and economic disruptions, and intense manipulation of science, media and government by industry.

In light of extensive damage from the Exxon Valdez oil spill, inadequate safeguards for spill prevention, inadequate government oversight of monitoring and compliance, and irresponsible waste disposal practices of industry, Alaska should be granted a moratorium on oil leasing for its outer continental shelf lands until 2001, similar to other environmentally sensitive coasts

ISSUE #1: OIL INDUSTRY WASTE DISPOSAL PRACTICES

BACKGROUND: From the North Slope to the marine terminal to the high seas, environmental monitoring and compliance of oil industry operations have been thwarted by inadequate government oversight and unreliable industrial self-monitoring. Inadequate assessment of environmental impacts violates the Trans-Alaska Pipeline System (TAPS) right-of-way agreement which requires a quality assurance program "for detection and prompt abatement of any actual or potential condition... which at any time may cause or threaten to cause...serious and irreparable harm or damage to the environment..." (1).

The oil companies are mandated by the right-of-way agreement to reimburse the Department of Interior for all costs incurred by the department, including hiring of contractors, subcontractors, independent consultants, and even other departments, for monitoring its operations on federal and state lands (1). Oversight must be independent of and uncompromised by industry.

Inadequate environmental monitoring has been well documented (below): it's time to do something about it.

North Slope: The environmental monitoring program on the North Slope is critical because oil industry operations generate literally tons of drilling waste, "produced water," liquid oil waste and oily sludges/solid wastes much of which is exempt by law from classification as "hazardous waste," even though the materials may meet the criteria for hazardous waste (2).

In 1987 the U.S. Fish & Wildlife Service reported numerous negative impacts of oil development on the North Slope environment with effective mitigation "limited by enforcement and compliance effort" (3).

In 1989 U.S. Environmental Protection Agency reported that although waste management practices on the North Slope have improved over the years, "violations of State and Federal environmental regulations and laws are occurring at an unacceptable rate" (4).

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(1)Stipulations. Agreement and Grant of Right-of-Way for Trans-Alaska Pipeline between the United States of America and Amerada Hess Corporation, ARCO Pipe Line Company, Exxon Pipeline Company, Mobile Alaska Pipeline Company, Phillips Petroleum Company, Sohio Pipe Line Company, and Union Alaska Pipeline Company. 1974 27 pg. plus appendices
Stipulation #9, pg. 5-6, Quality Assurance Program
Stipulation #12, pg. 6-7, Reimbursement of Department Expenses
Stipulation #23, pg. 14-15, Port Valdez Terminal Facility
(2)"Tracking Arctic Oil: The Environmental Price of Drilling the Arctic National Wildlife Refuge." April 1991. Natural Resources Defense Council, National Wildlife Federation, Trustees for Alaska. 36 pg.
(3)U.S. Fish & Wildlife Service. 1987. Comparison of actual and predicted impacts of the Trans-Alaska Pipeline System and Prudhoe Bay oilfields on the North Slope of Alaska. Draft report. 60 pg.
(4)U.S. Environmental Protection Agency. June 1989. Management of Wastes from Crude Oil and Natural Gas Exploration, Development, and Production on Alaska's North Slope. Second Draft. In: "Tracking Arctic Oil: The Environmental Price of Drilling the Arctic National Wildlife Refuge" Background Technical Report. April 1991. Natural Resources Defense Council, National Wildlife Federation, Trustees for Alaska. 89 pg.

In 1990 a General Accounting Office report found that "regulators did not know the long-term environmental impact of the Trans-Alaska Pipeline System and, therefore, could not ensure that the environmental requirements in the [TAPS] right-of-way agreements were being met" (5).

Also in 1990 a congressional oversight committee found that the North Slope oil industry had manipulated science and the regulatory process to achieve its end of "proving" there has been no effect of operations on the environment (6).

Tanker Terminal: Not surprisingly, similar manipulation by the oil industry has occurred with air and water quality monitoring at Alyeska's terminal in Valdez. Key studies funded by Alyeska have consistently underestimated the damage from and the risk of toxic exposure to the public and the environment, as is evident from the following two (most recent) examples, neither unique.

On air quality, Alyeska terminal operations emit nearly half of the nationwide volatile organic carbons (VOCs) from marine loading facilities (43,000 tons/year or the equivalent of the Exxon Valdez oil spill): it is the third largest source of benzene (carcinogen) in the country (450 tons/year)(7).

EPA regulations for tanker terminals, mandated by 1990 Clean Air Act amendments, are overdue. Alyeska applied for an exemption to draft regulations for 1990 Clean Air Act amendments based on its own findings of negligible health effects from its emissions (8). However, independent scientists reviewed Alyeska's study and found the cancer risk estimate was over two orders of magnitude greater than industry's estimate (20-110 vs. 0.9 in a million)(9)(10), and over the level necessary to qualify for an exemption to the Clean Air Act (1 in a million).

If Alyeska is granted an exemption, a precedent would be set for every other smaller VOC emitter in the country to apply for a similar exemption--making an important part of the Clean Act ineffective. Further, Alyeska would not be required to install pollution control (hard piping) equipment, estimated to cost $120-$200 million. It is ironic that elsewhere in the nation, companies that emit far less VOCs than Alyeska-and pocket far less profits-are forced to curb emissions.

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(5)General Accounting Office. 1991 Trans-Alaska Pipeline Regulators Have Not Insured That Government Requirements are Being Met Report to the Chairman, Subcommittee on Water, Power, and Offshore Energy Resources, Committee on Interior and Insular Affairs, U.S. House of Representatives. GAO/RCED-91-89 110 pg.

(6)Committee on Interior and Insular Affairs, Subcommittee on Water, Power & Offshore Energy Resources, U S. House of Representatives Oversight Hearing on Manipulation of Science and the Regulatory Process Affecting Oil & Gas Development in Alaska. Washington, D.C. May 3, 1990.

(7)Rosen, Yereth 12/4/92. Hazardous Air Emissions Go Unregulated in Alaska. EPA misses autumn deadline to set rules for oil-tanker terminals Christian Science Monitor. Pp. 1-2.

(8)There may be problems with bias in Alyeska's data. an air quality monitor at Alyeska failed a calibration check when EPA found it underestimated benzene by 31%.
See. Fararo, Kim. 5/28/92. Alyeska flunks pollution spot check. Anchorage Daily News. B:1.

(9)Cohen, Yoram, Gerald Anderson, Lyle Chinlon, Gary Pascoe, Charles Schmidt and Arthur Winer. 1992. Review of the Valdez Air Health Study Report Prepared by the Valdez Air Study Review Committee. Report Prepared for the Regional Citizens' Advisory Council. Aug. 25, 1992. 62 pg.

(10)Fararo, Kim. 8/27/92. Study absolving Alyeska flawed, air experts say. Anchorage Daily News.

On water quality, a 1988 review by state regulators of Alyeska's environmental monitoring and compliance verification studies on effluent from the ballast water treatment plant found 88% more incidences of noncompliance than reported by Alyeska which resulted in Port Valdez being listed as a toxic impaired waterway (11)(12)(13).

In 1989 EPA and the State reduced the effluent limit of aromatic hydrocarbons nearly 10-fold in Alyeska's federal discharge (NPDES) permit, primarily because of public outcry. Assuming this reduction would improve the waterway, regulators then waived further compliance verification studies in 1991, and delisted Port Valdez from the toxic impaired waterways list in 1992 in spite of studies showing oily sludges from the ballast water treatment plant were accumulating in bottom sediments of Port Valdez (14). (Oily sludges contain the primary toxic components of wastewater and are the primary component of Alyeska's effluent discharge.)

In 1993 Alaska regulators, upon prompting from Alyeska (15), proposed revisions to the state's water quality standards which would completely eliminate the need to monitor particulate hydrocarbons (oily sludges) in the water column.

Meanwhile on December 29, 1992, there was a several hundred fish herring kill near the Alyeska treatment plant. State regulators took no fish samples and no water samples, but concluded that the fish were excess kill from "predation"...

TAPS Trade Tankers: In 1991 Alaska legislative oversight hearings and investigations by state and federal agencies revealed a widespread practice of disposal of west coast oil tanker wastes (such as heavy engine and bilge sludges), including potentially hazardous wastes, through the tanker terminal as "ballast water" (16)(17)(18). Dumping of oily wastes at sea (along the entire west coast) in possible violation of international marine treatise was also found as part of these investigations and referred to the Coast Guard for further action. None has been taken.

In 1992 regulatory agencies modified, essentially, the federal discharge permit to better regulate tanker ballast water disposal practices. EPA also fined Alyeska, Exxon and BP $20,000 for allowing two tankers to dump illegal ballast water at the treatment

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(11)Balden Environmental Management, Inc 1988 State of Alaska ADEC Departmental Files Review and Analysis Report. 41 pg

(12)Benjamin, Mark. 1988. Responses of Mark Benjamin to questions posed by Mary Pinkel, Assistant Attorney General of the State of Alaska. 7 pg

(13)Lawn, Dan 1988. ADEC Review of Alyeska's Data Report, March 1986. Staff Report. Alaska Dept. of Environmental Conservation, Prince William Sound District Office 70 pg.

(14)Feder, H.M. and D G. Shaw April 1992 Final Report Environmental Studies in Port Valdez, Alaska: 1991. Institute of Marine Science, School of Fisheries and Ocean Sciences, Univ. Alaska, Fairbanks, AK. Submitted to Alyeska Pipeline Service Company, Anchorage AK 283 pg.

(15)Letter from Alyeska (O.E. Dickason) to Dept Environmental Conservation (Simon Mawson). Letter No. 91-4184 File No. 7.03.04 12 pg

(16)Lawn, Daniel. 1991. Analysis of TAPS trade tank vessel ballast discharge records and practices at the Valdez marine terminal. Alaska Dept. of Environmental Conservation, Southcentral Regional Office, Anchorage, AK. 45 pg. plus appendices

(17)U.S. EPA. 1992. Oil Tanker Waste Disposal Practices: A Review. EPA 910/9-91-046. 34 pg. plus attachments.

(18)Ott, Riki. 1991. Testimony of Riki Ott, Ph.D. on behalf of the Oil Reform Alliance before the House Special Committee on Oil & Gas. 3/25/91 revised 4/19/91. 20 pg. plus attachments.

plant (19). However, it is doubtful this fine will deter future practices because the cost to industry for disposal of this same waste could have been as high as $130,000 to $350,000 (20). As was evident from the 1991 investigations, past compliance orders (1985) under the Clean Water Act and other voluntary changes by industry have done virtually nothing to curb these practices.

REMEDIES: * Improve regulatory oversight for environmental monitoring of TAPS operations, including North Slope, pump stations, and marine terminal, as mandated under TAPS right-of-way agreement.

* Review waste water treatment facility at marine terminal as required under the right-of-way agreement and upgrade if necessary.

* Amend Resource Conservation Recovery Act to include regulation of marine-generated hazardous wastes, and to remove exemption for drilling mud and process waters.

* Require increased oversight of TAPS trade tanker operations by U.S. Coast Guard, (including daily oversight of ballast water survey forms).

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(19)Tarrant, Bert. 4/16/92. Improper waste dumping costs Alyeska $20,000. Anchorage Times. A:1.
(20)Letter to EPA (Harold Geren) from Oil Reform Alliance (Riki Ott). RE. Proposed $20,000 fine for Alyeska, BP and Exxon 9/11/91. 2 pg

ISSUE #2: TAPS PIPELINE INTEGRITY & MONITORING

BACKGROUND: Monitoring and compliance of TAPS operations have been thwarted by inadequate government oversight and unreliable industrial self-monitoring. Inadequate assessment of pipeline operation and maintenance violates the Trans-Alaska Pipeline System (TAPS) right-of-way agreement which requires a quality assurance program "for detection and prompt abatement of any actual or potential condition... which at any time may cause or threaten to cause...a hazard to the safety of workers or to public health or safety..." (1).

The oil companies are mandated by the right-of-way agreement to reimburse the Department of Interior for all costs incurred by the department, including hiring of contractors, subcontractors, independent consultants, and even other departments, for monitoring its operations on federal and state lands (1). Oversight must be independent and uncompromised by industry.

Inadequate monitoring for quality assurance has been well documented (below): it's time to do something about it.

The first congressional oversight hearing on pipeline integrity problems and intimidation of quality control inspectors was held in 1976 (2).

Since 1989, discovery of extensive corrosion in the pipeline, in internal piping at pump stations, and on storage tank bottoms at the terminal have forced corrective measures and further investigations.

In 1991 the GAO published its findings that the five principle regulatory agencies of TAPS have not ensured that government requirements have been met largely because the agencies rely heavily on Alyeska to police itself (3).

In early 1992, three congressional committees were again informed that the overall integrity of the pipeline was virtually unknown because of Alyeska's encouragement of harassment and intimidation of its quality control inspectors (4)(5). This was

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(1)Stipulations. Agreement and Grant of Right-of-Way for Trans-Alaska Pipeline between the United States of America and Amerada Hess Corporation, ARCO Pipe Line Company, Exxon Pipeline Company, Mobile Alaska Pipeline Company, Phillips Petroleum Company, Sohio Pipe Line Company, and Union Alaska Pipeline Company. 1974. 27 pg plus appendices
Stipulation #9, pg. 5-6, Quality Assurance Program
Stipulation #12, pg. 6-7, Reimbursement of Department Expenses
(2)Committee on Interstate and Foreign Commerce. Subcommittee on Energy and Power, U.S. House of Representatives. Hearing on Alyeska Oil Pipeline Oversight Problems concerning the general lack of quality control in the welding during construction of the Trans-Alaska pipeline. Washington, D.C. June 21, 1976. Serial No. 94-125
(3)GAO. 1991. Trans-Alaska Pipeline Regulators Have Not Insured That Government Requirements are Being Met. Report to the Chairman, Subcommittee on Water, Power, and Offshore Energy Resources, Committee on Interior and Insular Affairs. U S House of Representatives. GAO/RCED-91-89. 110 pg.
(4)Coughlin, William P. 3/18/92. Ex-inspector says firm faked safety tests of Alaska pipeline. Boston Globe. B:8.
(5)Sullivan, Allanna. 8/4/92. Slippery Slope Alaska Pipeline Gets 'Sham' Safety Checks, Former Worker Says. They Contend That Alyeska Resorts to Intimidation to Weaken Inspections. Consortium Defends Actions. Wall Street J. A:1.

announced in the midst of an already on-going congressional investigation into a covert surveillance operation authorized by Alyeska to stop the sources of its environmental leaks - whistleblowers and industry critics who were successfully bringing Alyeska's environmental violations to light (6).

In July 1992, whistleblowers and industry critics charged that the majority of buildings along the pipeline and at the terminal had major National Electrical Code (NEC) violations, including absence of circuit breakers, overcurrent protection, and grounding problems (7). One worker was injured from an electrical shock and another narrowly missed a similar shock from faulty grounding wire in contractor's equipment (8)(9).

In December 1992, Alyeska was forced to dispatch workers to remote sites along the TAPS pipeline to manually monitor four shut-off valves because a similar shut-off valve closed earlier due to an electrical malfunction (10)(11). The earlier valve shut-off overpressured parts of the pipeline which could, potentially, have ruptured the pipeline. Regulators are investigating.

REMEDIES: * Conduct Presidential Task Force audit of TAPS as required by Oil Pollution Act of 1990.

* Investigate 1992 TAPS safety, corrosion, electrical and integrity charges.

* Take remedial action to ensure TAPS safety and integrity as mandated by TAPS right-of-way agreement.

* Strengthen federal whistleblower protection laws.

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(6)Committee on Interior and Insular Affairs. U S House of Representatives. Oversight Hearings on Alyeska Pipeline Service Company Covert Operation Washington, D.C. November 4-6, 1991. Serial No. 102-113.

(7)The Hamel Project for Environmental Accountability 7/8/92 Letter to Congressman John Dingell, Chairman Committee on Energy and Commerce. U S House of Representatives. 2 pg.

(8)Price, Susan. 4/30/92. Worker injured at terminal Alyeska responds with new requirements. Valdez Vanguard A:1.

(9)Price, Susan. 7/30/92. Painter barely escapes electrical shock. Valdez Vanguard. A:1.

(10)Fararo, Kim. 12/18/92. Alyeska keeps 24-hour watch on valves it fears might fail. Anchorage Daily News. A:1.

(11)Hamel Project for Environmental Accountability. 12/15/92. Letter to Congressman George Miller, Chairman Committee on Interior and Insular Affairs, U.S. House of Representatives. 2 pg.

ISSUE #3: TAPS PIPELINE DR&R FUND

(Richard A. Fineberg, PO Box 278, Talkeetna, AK, 99676 prepared this section.)

BACKGROUND: The 1985 TAPS tariff settlement between the State of Alaska and the pipeline owners allows the owners to collect a fee for future dismantling, removal and restoration (DR&R) of the 800-mile pipeline corridor. Instead of requiring that the funds collected against this vague legal obligation be held in a identifiable reserve account or placed in escrow to ensure their availability for future use, the settlement allows the TAPS owners to co-mingle this money with internal accounts, re-invest it for profit and/or distribute it to shareholders. This "hidden" income from DR&R is one reason the return to investors in North Slope companies typically outpaces those of other oil companies (1).

DR&R was not supposed to be a profit-making item. Rather, the money collected under the TAPS settlement was supposed to equal the amount required to restore the pipeline corridor to its previous condition. Due to changes in factors such as inflation, tax rates and estimated corporate earnings over the 35-year estimated life of the pipeline, DR&R has turned into a cash cow of huge proportions for TAPS owners.

A recent analysis estimates that even if dismantling takes place between 2011 and 2015 A.D., as envisioned in the TAPS settlement, the allowed DR&R collections will enable the owners to meet their obligations and pocket an additional hidden or off-book after-tax profit estimated between $11.7 to $22.1 billion in 1992 dollars (2). This profit is over and above the acknowledged North Slope production and pipeline profits which are estimated to exceed $4.50 per barrel at a Lower 48 price of approximately $17.50 per barrel (3).

Investment firms have recognized that the North Slope, by virtue of its tremendous profitability, stands in marked contrast to other regions, in which the domestic oil industry is losing money (4). Under these circumstances, it would be remiss not to ask whether unrecognized profits from DR&R should be allowed to remain in company pockets, or whether a portion of those sums should be used to solve problems associated with the transportation of North Slope crude oil.

While the terms of the TAPS settlement are cast in concrete through 2008, the settlement methodology determines a maximum tariff or shipping charge. Nothing

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(1)According to a 1991 tally of major U.S. corporations in the Fortune 500, ARCO and Exxon averaged an 18.4% return on stockholders' equity over the ten-year period from January 1982 to December 1991. During this period, the average return for the oil industry was 9% and the average return on the S&P 500 was approximately 12% (Fortune 500, April 20, 1992)

(2)For history of the DR&R provision in the TAPS settlement and an analysis of its economic consequences, see Richard A. Fineberg, "Hidden Billions: The TAPS DR&R Provision", August 21, 1992, 57 pg. Prepared for Stan Stephens, PO Box 1297, Valdez, Alaska, 99686.

(3)For North Slope profitability, see Richard A. Fineberg, "North Slope Profits and Production Prospects," November 12, 1992, 91 pg. Prepared for Alaska State Legislature. See also Edward M. Deakin, "Oil Industry Profitability in Alaska, 1969 through 1987," 22 pg. and the "Technical Discussion," 76 pg. plus appendices, March 15, 1989. Prepared for the Alaska Department of Revenue.

(4)First Boston Equity Research, 9/15/91, "Assessing the Domestic Operations of International Oil Companies: Explaining the Exodus of Capital."

prohibits the oil companies from earmarking these funds for their intended purpose. Moreover, nothing prevents the TAPS owners from offering all shippers a reduction in shipping rates in recognition of their DR&R windfall, thereby sharing DR&R gains and increasing the likelihood of continued North Slope development.

REMEDIES: * Request the Presidential Task Force (established by the Oil Pollution Act of 1990) to verify the reported DR&R over-collection and recommend steps to ensure that past collections, income from past collections, future collections and income are appropriately earmarked to complete the task for which these funds were collected, and that TAPS tariffs are consistent with the money earned through tariff collections, which include DR&R.

ISSUE #4: STRUCTURAL INTEGRITY OF TAPS TRADE TANKERS

BACKGROUND: In 1988 the U.S. Coast Guard found that while TAPS trade tankers accounted for only 13% of the U.S. flag oceangoing ships in service between 1984-1986, they accounted for 52% of the structural failures during this period (1). Structural failure rates were highest in all vessels 700-900 feet in length, especially TAPS trade tankers (few vessels are over 900 feet). The failure rate for vessels less than 21 years old was nearly 3 times than for older vessels. Age was important because vessels over 21 years old were generally shorter than newer ships, and the older ships do not participate in the harsh TAPS trade. Further, newer ships were constructed with reduced scantlings (ABS Rules were reduced 10% between 1969-1975) and increased use of high tensile steels, for which a further scantling reduction was allowed.

In a follow-up report in 1991, the Coast Guard determined that hull cracks were generally attributed to inadequate design of structural details, poor workmanship and quality control, use of high tensile steel, lack of maintenance on corrosion control systems, and the harsh environment in the Gulf of Alaska (2). ABS conducted a parallel study on TAPS trade tankers, and the Coast Guard report notes that "when implemented, these (ABS) efforts will improve the performance of new TAPS vessels" (pg.3). However, TAPS operators revealed there are no plans for replacement of this fleet with new construction because, "without the opening of new oil fields in Alaska, new construction programs were not economically feasible" (pg. 4). In fact, since the 1988 study, the number of vessels actively engaged in TAPS trade had fallen from 69 U.S. flag and 7 foreign flag vessels to 44 U.S. flag and 5 foreign flag tank vessels.

The Coast Guard recommended that all vessels in the TAPS trade should have more frequent structural inspections, a Critical Areas Inspection Plan (CAIPs), and immediate repairs for all structural failures in critical areas. The Office of Marine Safety, Security and Environmental Protection was reestablished to meet these recommendations and to attend all TAPS vessel drydockings, cargo block surveys and repair periods.

REMEDIES: * Require Coast Guard, as per its own recommendations, increase inspection of TAPS trade tankers, especially problematic tankers, using qualified marine inspectors, and ensure that all TAPS trade tankers calling on Valdez have a completed cargo block survey, conducted by qualified mariners, prior to carrying cargo from Valdez.

* Require Coast Guard to issue regulations for oil tankers establishing minimum standards for plating thickness, and periodic gauging of the plating thickness of vessels over 30 years old as mandated by the Oil Pollution Act of 1990 Sec. 4109.

* Require Coast Guard to issue regulations for overfill and tank level or pressure monitoring devices as mandated by the Oil Pollution Act of 1990 Sec. 4110.

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(1) Report to the Marine Inspection Program Casualty Review Council. Marine Structural Casualty Study. April 27, 1988. LCDR T.W Purtell, LCDR T C Mielke, & LCDR J. P. Brusseau. 33 pg.
(2) Trans-Alaska Pipeline Service (TAPS) Tanker Structural Failure Study Follow-Up Report. May 1991. Prepared by Office of Marine Safety, Security and Environmental Protection. USCG, Washington, D.C. 20593-0001. 20 pg. plus figures.

ISSUE #5: TUG ESCORT OF TAPS TRADE TANKERS

BACKGROUND: The Oil Pollution Act of 1990 Sec. 4116 requires "at least two towing vessels" to escort single hulled tankers over 5,000 gross tons in Prince William Sound among other areas. Alyeska has four Ship Escort Response Vessels (SERVs) which primarily function to "safeguard tankers in transit and provide rapid spill response ... The SERVs are accompanied by a [conventional] tug when escorting a tanker through Prince William Sound" (pg. 7) (1). The SERVs are primarily supply, not ship assist tugs, and have limited ability to tow, and even less ability to push a disabled tanker.

A study prepared for Arco which ranked tugs according to escort and emergency assist capability reported that tractor tugs were best, tugs with rotatable thrusters aft next, and conventional tugs with fixed pitch propellers worst (2). The latter is used in Prince William Sound.

Arco, Exxon and BP - the majority owners of Alyeska - use Voith-Schneider tractor tugs in their operations in other areas of the world, including Puget Sound and Alyeska's "sister terminal" at Sullom Voe in the Shetlands (UK) which uses four tugs as escort and one as back-up. Yet same companies are steadfastly resisting use of these same tractor tugs for their operations in Alaska.

Cycloidal propulsion tractor tugs are considered by many as the "ideal" ship assist tug (3). Tractor tugs are the industry standard in Norway, New Zealand and the Louisiana Off-shore Oil Port (4). They are being considered for use in San Francisco Bay: an analysis found that in major European and Asian ports with a dedicated fleet of tugs, the tugs were, in almost every instance, either Voith-Schneider or other tractor tugs (2).

Despite the differences among these regions (open ocean, deep water port, constrained or congested waterway), the fundamentals of tug escorting remain the same.

There have been at least 9 incidents involving disabled laden tankers in Prince William Sound since the Exxon Valdez oil spill (5). Of the two closest calls, the state credits the escort vessel with one "save" (Atigun Pass, Sept. 20, 1989 near Bligh Reef), and pure luck with the other (Kenai, Oct 20, 1992, came within 100 yards of Middle Rock before getting back on course-it's inconclusive whether the ship's rudder, as most people believe, or the conventional tug applying side-ways force saved the day. However, only tractor tugs are renown for their ability to apply uniform thrust in all directions, including sideways.)

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(1)Briefing Prince William Sound Tanker Spill Prevention & Response Plan. Update: April 1991. Alyeska Pipeline Service Company. 14 pg

(2)North Puget Sound Tanker Escort & Tug Assistance Study Prepared for Arco Marine, Inc., Long Beach, CA and Foss Maritime Co., Seattle, WA Final Report Prepared by: The Glosten Associates, Inc. File No. 9024, Sept. 1991.

(3)Report: Analysis of Tanker Escort Services for San Francisco Bay. Project 47-92. July 1992. Prepared for: Harbor Safety Committee of the San Francisco Bay Region, San Francisco, CA. Prepared by: Robert Allan Ltd. Naval Architects and Marine Engineers, Vancouver, BC. 48 pg. plus annexes.

(4)Emergency Response Vessel Study June 1990 Prepared by: William A. Jennings, LOOP Inc. and Capt. Edward T. Lynch, Texaco Marine Services Inc. with assistance from Robert J. Kramer, Naval Architect. 108 pg.

(5)Fararo, Kim. 11/22/92. Troubles with oil tankers since the Exxon Valdez spill. Anchorage Daily News.

Despite the major inadequacies of the present escort system in Prince William Sound, i.e. lack of tractor tugs, the Coast Guard in Valdez has proposed an alternative system that deals with escort staging rather than the present inadequacies.

REMEDIES: * Clarify "towing vessels" in the Oil Pollution Act of 1990 Sec. 4116 to specify tractor tugs; or require tractor tugs as part of government-approved oil spill response contingency plans.

* No consideration of the Coast Guard recommendation for an alternative escort staging system in Prince William Sound should be given until, at a minimum, the escort vessels and conventional tug are replaced with tractor tugs and a field study conducted to test the adequacy of the proposed system.

ISSUE #6: OUTER CONTINENTAL SHELF LEASE SALES

BACKGROUND: The entire west coast, north Atlantic and southern tip of Florida have been granted a moratorium on outer continental shelf (OCS) leasing until the year 2001, largely because of public concern for environmental sensitivity and safety. In addition, many other coastal states receive protection by annual moratoria.

As a result of these moratoria, Alaska now contains 40%--82 million acres--of the nation's OCS lands offered for oil and gas leasing and exploration. Surely Alaska's OCS ecosystem deserve, at a minimum, equal treatment with these other areas.

Alaska's OCS lands contain some of the world's most dynamic and unspoiled wildlife habitat.

The Arctic OCS (Beaufort, Chukchi and northeastern Bering Seas) includes breeding and feeding grounds, resting and grooming areas, and migratory routes for a wide range of marine mammals, birds and fish species. The Yup'ik and Inupiat Eskimo people derive their cultural identity and the majority of their sustenance from the harvest of certain marine mammals including bowhead whale, walrus, polar bear, and various species of seal. These areas are characterized by extreme seasonal conditions and formidable weather including prolonged ice cover and winter darkness, frigid temperatures, high winds and waves, and low visibility. The remoteness and scattered, low density populations present additional challenges to safe, well-monitored operations.

The Western OCS (Bristol Bay and southeastern Bering Sea) contains one of the most productive ecosystems and richest fishing grounds in the world. The National Marine Fisheries Service considers the North Aleutian Basin (Bristol Bay) area to be the single most important region of the U.S. OCS for the conservation of marine mammals and endangered species and the protection and management of fishery resources (one billion dollar annual harvest) Besides the intrinsic value of this abundant wildlife, these resources are also critical to the subsistence hunting economy and culture of the Yup'ik, Aleut and Inupiaq peoples.

The North Gulf Coast includes Yakutat, Copper River Delta, Prince William Sound, Cook Inlet and Kodiak. The 700,000 acre Copper River Delta hosts the greatest concentration of migratory shorebirds in the world (10 million during peak spring migrations). The Yakutat and Copper River Delta are isolated areas with virtually no road access. Cook Inlet is seismically active with five active volcanoes and hundreds of earthquakes recorded since 1889, some of Richter magnitude six or greater. Tidal fluctuations in Cook Inlet are the second largest in the world producing sea level changes exceeding 35 feet at the extreme with strong currents (up to 8 knots) and tidal bores (high breaking waves of water advancing rapidly up an estuary) of several feet. Sea ice forms during most winters on the extensive delta tide flats of the upper Inlet with pack ice extending south into the middle Inlet. Commercial fishing is the largest employer in the private sector in Alaska and many rural coastal communities in this region are economically dependent on fisheries resources.

Environmentally safe, well-monitored operations are now not possible in these areas. The National Academy of Science is reviewing the adequacy of scientific information

in the northern OCS only (Arctic and Navarin Basins). Until the level of scientific understanding of arctic and subarctic ecosystems dramatically improves, along with the technology for spill response and cleanup, waste disposal, and transportation, these areas must remain off limits to oil drilling.

REMEDIES: * In light of significant long-term damage from the Exxon Valdez oil spill, grant Alaska a moratorium on OCS leasing until 2001.

* Cancel oil leases in Bristol Bay, one of the world's richest marine ecosystems and fishing grounds.

ISSUE #7: COOK INLET MONITORING & COMPLIANCE

BACKGROUND: "The 1987 and 1988 Toxic Release Inventory ... recorded that the Kenai Peninsula has the highest level of toxic releases of any county or borough in Idaho, Washington, Oregon or Alaska. The Kenai Peninsula Borough's releases totalled over 20 million pounds of pollutants entering the air, water and land in 1988 ... In 1989, the Alaska Department of Environmental Conservation prepared an inventory of hazardous waste sites on the Kenai Peninsula which listed 68 suspected sites. An additional 90 suspected pollution sites, however, were reported by local residents" (1).

"Violations of pollution control laws are a frequent occurrence. Industry's methods of managing violations of environmental laws include petitions for waivers or changes in laws and regulations or delayed response to control pollution until state or federal agencies pursue enforcement actions... Laws with sole federal jurisdiction (had) the best compliance record (Clean Water Act), although the record is not without blemishes. Federal laws [which] the state is authorized to enforce have a poor compliance record (Clean Air Act), as do laws where jurisdiction is divided (RCRA). State laws without federal jurisdiction are almost without compliance or enforcement (solid waste, waste water treatment sludges, oil spills, and cleanups not order by Superfund)" (2).

EPA currently exempts drilling muds and process water from RCRA hazardous waste regulation, primarily because of oil and gas politics (3). Process waters and drilling muds contain many highly toxic organic and inorganic compounds, many of which are regulated under RCRA as hazardous waste under any category except the exempt oil and gas category. EPA estimated that the oil industry saves $6.7 billion annually in waste disposal costs nationwide as a result of this exemption (4).

The drilling rigs in Cook Inlet are all regulated under a single federal discharge (NPDES) permit which expired in 1992, but was extended pending EPA completion of the new permit. Under the old discharge permit, EPA does not regulate discharge of aromatic hydrocarbons known as BETX (benzene and derivatives). BETX contains known carcinogens that are heavily regulated by EPA at the Alyeska facility in Prince William Sound. Further, EPA does not require any environmental monitoring of

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(1)The Toxic Release Inventories did not include emissions from oil and gas platforms, North America's largest natural gas exporting facility (Phillips/Marathon USX) and oil processing facility (Trading Bay), respectively

Cite from: Reiter, Carl. 1990. Asleep at the Wheel: Environmental Regulation and Compliance of the Oil Industry on the Kenai Peninsula, Alaska. Prepared by entrophy, Anchorage, AK. Prepared for Alaska Center for the Environment, Anchorage, AK. Funded by Alaska Conservation Foundation. 52 pg.

(2)Ibid. Also Reiter, Carl. 1990. An environmental compliance audit of four oil and gas facilities in Kenai, Alaska. Proceedings of the First International Symposium on Oil and Gas Exploration and Production Waste Management Practices. U.S. EPA. 345-356

(3)EPA stated that "oil and gas wastes fall within a general category of wastes that RCRA regards as special because of their unusually high volume... and because of their relatively low level of environmental hazard... the issues raised by these wastes are complex requiring the balancing of environmental, logistical, and economic considerations." In Management of Wastes from the Exploration, Development and Production of Crude Oil, Natural Gas Geothermal Energy. U.S. EPA Solid Waste Dept. 12-87.

(4)Garoutte, Pat. 1991. Process Waters in Cook Inlet, Kenai, Alaska. Final Report. Prepared by Public Awareness Committee for the Environment, Kenai, AK. Funded by Alaska Conservation Foundation. 40 pg.

effluent plumes, as it does of Alyeska, because EPA assumes that strong tidal currents adequately flush pollutants.

Cook Inlet has miles of under ground/water pipes. In 1991 the GAO reported that while the Department of Transportation is responsible for preventing water pollution from petroleum pipelines, it has not established a program to do so because of lack of engineering expertise, dedicated funds, and will--Coast Guard officials considered this an inappropriate activity for its agency because it does not involve transportation by vessel (5).

While agencies fuss over jurisdictional problems, the risk of water pollution from uninspected pipelines continues to pose real problems for the public such as the Kenai Pipeline rupture in January 1992.

REMEDIES: * Give citizens the right to conduct inspections of facilities regulated under both state and federal law, as is available under surface mining laws.

* Mandate, authorize and fund EPA to pursue aggressive monitoring and enforcement actions, including timely compliance and thorough environmental monitoring programs, timely issuance of permits, and minimal issuance of special waivers and exemptions.

* Mandate, authorize and fund the Coast Guard to establish a nationwide program for preventing water pollution from petroleum pipelines, including contingency planning.

* Remove the exemption for oil and gas wastes (process waters and drilling muds) from Resource Conservation and Recovery Act hazardous waste regulation.

* Clearly define jurisdiction between EPA and the Coast Guard to avoid jurisdictional disputes.

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5)GAO. 1991. Pipeline Pollution Prevention GAO/RCED-91-60.

ISSUE #8: TUG ESCORTS IN COOK INLET

BACKGROUND: Cook Inlet is the only place "in the western world that routinely berths and unberths large tank vessels with no tug assistance," according to Jim Dickson, the pollution control officer at the Sullom Voe Port Control (UK) (1).

Cook Inlet is seismically active with five active volcanoes and hundreds of earthquakes recorded since 1889, some of Richter magnitude six or greater. (In 1990 Mt. ReDoubt erupted, temporarily closing the Drift River loading facility located at its base.) Tidal fluctuations in Cook Inlet are the second largest in the world producing sea level changes exceeding 35 feet at the extreme in six and one half hours with strong currents (up to 8 knots) and tidal bores (high breaking waves of water advancing rapidly up an estuary) of several feet. Sea ice forms during most winters on the extensive delta tide flats of the upper Inlet with pack ice extending south into the middle Inlet.

Despite these hazards, the Coast Guard does not impose any weather restrictions in Cook Inlet, nor does it utilize a vessel traffic control system. Further, the single existing conventional tug in Cook Inlet is not set up for towing or pushing.

The Coast Guard maintains that disabled ships can anchor in the shallow Inlet. However, the Coast Guard reported that the foreign-flag tanker Hemina required four-fifths of its anchor chain to hold itself in the Inlet's swift currents. In deeper water, it is unlikely vessels could anchor without risking loss of gear. Further, anchor gear could also malfunction or not work at all when a generator and/or engine fails. Three tankers recently had engine failures in Cook Inlet. This is a relatively common problem in the winter when vessels pick up slush in the cooling system and overheat, shutting down the engine(s). All vessels managed to restart and return to the Homer area without tug assistance, however no tug was available should assistance have been required.

The Southwest Alaska Pilots Association stated that, "(t)ugboats are generally used for the docking and undocking of oceangoing vessels. In Cook Inlet tugboats are not used due to the fact that (a) tugboats are not generally available in Alaska, (b) there is such strong tidal activity that a specialized tractor tug would be required, and (c) such a tug operation would not be economically feasible. Considering the increase in vessel size in Cook Inlet from 1975 to the present date using the same waterways that exhibit... [tidal extremes]... in conjunction with some of the worst weather conditions to be found in any pilotage region it must be recognized that the skill that is exercised in vessel movement, dockings and undockings without the use of tugs establishes Cook Inlet as one of the most dangerous and demanding pilotages in the world" (2).

Oil industry officials insist that tractor tugs are expensive and unnecessary in the Inlet. But in July 1987, the Glacier Bay hit a rock while anchoring and spilled between 33,000 to 65,000 gallons of oil. Trinidad Corporation's (owner) final bill in settlements with Cook Inlet fishermen totalled $51 million

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(1)Dickson, Captain J.T. "Report on Safety of Navigation and Oil Spill Contingency Plans." February 15, 1992.
(2)Southwest Alaska Pilots Association "Petition for Maximum Tariffs." Before the Alaska board of Marine Pilots. September 18, 1992.

REMEDIES: • Require Coast Guard to include Cook Inlet as part of its studies on vessel traffic service systems and tanker navigation safety standards mandated by the Oil Pollution Act.

• Mandate, authorize and fund the Coast Guard to direct vessel traffic in Cook Inlet, including imposition of weather restrictions and tractor tugs.

ISSUE #9: EXXON VALDEZ OIL SPILL SETTLEMENT FUNDS

BACKGROUND: In 1991 as a result of the Exxon Valdez oil spill, Exxon paid $125 million in criminal fines, of which $25 million consisted of federal fines and $100 million in criminal restitution split between the state and federal governments. (Technically, the criminal fine was $250 million, but $125 million was forgiven in consideration of Exxon's cleanup efforts.) Half of the $100 million criminal restitution monies was deposited in the general fund of both the federal and state governments, where the monies are subject to congressional and legislative appropriations: to date, these monies have not been appropriated.

In 1991 Exxon also settled state and federal civil claims for natural resource damages and cleanup costs by agreeing to pay $900 million dollars over a ten year period with a reopener clause for an additional $100 million for unforeseen natural resource damages remaining after ten years. A Trustee Council composed of six federal and state representatives was established and delegated responsibility of appropriating funds by unanimous consent for purposes of "restoring, replacing, enhancing, rehabilitating, or acquiring the equivalent of natural resources injured as a result of the oil spill...", as well as reimbursement of cleanup expenses to Exxon and governments (1).

Many Alaskans were not satisfied with the civil settlement terms, particularly the settlement amount (about $500-600 million in 1992 dollars), and waiving the rights of the federal and state governments to pursue similar criminal and civil penalties against Alyeska for damage to natural resources. In retrospect, these were both valid concerns. At the time of the settlement, state and federal officials had a completed economic study which found that Americans valued damages caused by the Exxon Valdez at $2.8 billion (2). Further, Alyeska, the company that was not prepared to initially respond to the spill, eventually settled with Alaska for $32 million--or less than one-tenth of one percent of total known pipeline profits.

With limited funds and seemingly unlimited damage, environmental and fishing organizations, Natives, and concerned public from the spill-impacted areas decided to prioritize expenditures for habitat acquisition (acquisition of equivalent resources), key and on-going scientific studies, and improved management of impacted fishery resources. Large scale timber harvest is scheduled and on-going on public and private lands within spill-impacted areas. Concerned public realized the opportunity to purchase "habitat", either land or timber rights, to prevent further damage to the ecosystem, thereby enhancing recovery of injured wildlife.

However, efforts to acquire habitat have failed to date, and the pot of available monies is rapidly disappearing. Nearly $300 million of the $900 million dollar civil settlement has been spent or committed by the Trustee Council, largely for reimbursement to Exxon and governments for cleanup expenses. The Trustees have also approved millions of dollars for scientific studies which were largely conducted by agencies represented by council members. These studies were not peer-reviewed, nor was

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(1)Exxon Valdez Oil Spill Trustees. April 1992. Exxon Valdez Oil Spill Restoration. Vol. 1. Restoration Framework. 52 pg. plus appendices.

(2)Phillips, Natalie. 1/10/93. In pubic eye, spill toll higher. State-backed survey puts tab at $2.8 billion. Anchorage Daily News. A:1.

there a competitive bid process. Suspecting excessive administrative costs (the restoration plan alone cost $5 million), environmental groups have pushed for a GAO audit of expenditures which is currently being conducted for the House Committee on Natural Resources.

Efforts to acquire habitat with the criminal fines have also failed. At the federal level, a provision to prioritize habitat acquisition with the $50 million criminal settlement was dropped from the 1992 energy bill package. Also in 1992 at the state level, the Governor vetoed a bill, passed unanimously by the Legislature and supported overwhelmingly by the public, to use the state's share of the criminal settlement for habitat acquisition, key and on-going scientific studies and improved management of impacted fishery resources.

REMEDIES: * Conduct GAO audit of settlement expenditures todate and reimburse any improper expenditures to settlement fund.

* Direct federal Trustees to divide the federal criminal restitution funds and the remaining civil funds into discrete amounts of money for habitat acquisition, endowments for key and on-going scientific studies, and improved management of impacted fishery resources, as supported overwhelmingly by the public.

* Evaluate all federal lands and waters within spill-impacted area for further protective management designation.

* If the Trustee process continues unchanged, then subject all science projects to independent peer review.

ISSUE #10: EXXON VALDEZ OIL SPILL WORKER HEALTH

BACKGROUND: The following is condensed from the only independent review todate of Exxon Valdez oil spill cleanup worker exposure records (1).

"Crude oil cleanup during the Exxon Valdez spill relied heavily on high pressure water and steam... which generated an oil mist... National Institute for Occupational Safety and Health (NIOSH) reported 1,811 worker's compensation claims in 1989 related to the Exxon Valdez oil spill. The leading non-physical injury reported was respiratory system damage. Inhalation of oil mist is well recognized as a cause of occupational respiratory damage...

Monitoring records document an average oil mist exposure 12 times in excess of permissible exposure limits (PEL)... The maximum overexposure of 400 times the PEL was found on a "hot wash beach." Average exposures for other chemicals were below NIOSH recommended PEL. However, maximum exposures were significantly greater than NIOSH limits...

Another issue of particular concern is the fact that PEL are developed on a chemical-by-chemical basis and Exxon did not take into account multiple simultaneous exposures with synergistic potential...

Three serious problems are evident with Exxon's laboratory procedures and data interpretation regarding oil mist monitoring records... (First, t)he standard reference material for oil mist PEL is "mineral oil"... Mineral oil is a highly purified product designed for non toxicity and freedom of irritation to humans and use in the preparation of pharmaceuticals... Oil spill cleanup workers were exposed to Prudhoe Bay crude oil... Crude oil is a carcinogen, neoplastigen and tumorigen when applied to the skin. Inhalation of vapor or particulates can cause aspiration pneumonia...

(Second, n)o corrections were applied to PEL for the elevated toxicity of crude oil compared to mineral oil... A material safety data sheet for crude oil recommends a PEL of 0.2 mg/m^3... 25 times lower than the 5.0 mg/m^3 PEL selected as relevant by Exxon. NIOSH recommends a PEL of 0.1 mg/m^3... 50 times lower than Exxon's.

(Third,) Exxon recognized more than ten years ago that the PEL for airborne toxicants were probably inappropriate without modification for unusual work shifts. A simple linear equation was proposed by Exxon as a first step toward health and safety concerns... However these considerations were not taken into account for the extremely long shifts of... cleanup workers. (Applying) Exxon's model to NIOSH oil mist PEL, the acceptable limit should be reduced by a factor of at least 2.1 (84 vs. 40 hour week)... (yielding) a PEL of 0.05 mg/m^3 (100 times lower than Exxon's PEL)."

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(1)Reller, Carl 1993. Occupational Exposures from Oil Mist During the Exxon Valdez Spill Cleanup. Pg. 313-315. In: Exxon Valdez Oil Spill Symposium Abstract Book. Sponsored by: Exxon Valdez Oil Spill Trustee Council, Univ. AK Sea Grant College Program, Amer. Fisheries Soc., AK Chapter. Feb. 2-5, 1993, Anchorage, AK. 356 pg.

Since 1989, thousands more worker's compensation claims have been filed. Exxon is settling these cases on an individual basis for as little and as quietly as possible. A cardiovascular surgeon "who specializes in treating victims of petroleum-related poisonings says he knows of one death and he expects a growing toll among those who cleaned up the Exxon Valdez oil spill" (2). According to this expert, "This is extremely serious. People need to wake up" (2).

REMEDIES: * Conduct congressional oversight hearing on latent human health symptoms associated with exposure to Exxon Valdez spill, Shetland spill, and Gulf War.

* Establish panel of medical experts to review Exxon and Med-Tox Associates (contractor) exposure data, health and safety records, and laboratory procedure manuals with goal of updating criteria for oil mist exposure to protect future generations of people exposed to oil mist.

* Change NIOSH oil mist exposure standard reference material to crude oil (not mineral oil).

(2)Coughlin, William. 5/10/92. Valdez cleanup linked to ailments. Doctor blames exposure to combination of oil, cleaning agents; 1 death cited. Boston Sunday Globe.

ISSUE #11: EXXON VALDEZ OIL SPILL WILDLIFE DAMAGE STUDIES

BACKGROUND: Government and independent studies of Alaska's wildlife before and after the oil spill have found extensive short- and long-term damage, and even on-going damage in many species, in conflict with Exxon's reported results of minimal short-term damage, virtually no long-term damage, and rapid ecosystem recovery (1)(2)(3). Some examples of major impacts and differences in studies are presented below--this is not an exhaustive comparison.

Independent studies on beach habitats (1)(2) found decreased numbers and densities of intertidal organisms of all types (including important prey species) except mussels. However, mussels continue to have high concentrations of oil, soaked up from unweathered oil still trapped in underlying sediment. Mussels are the "prime suspect" in spread of oil to other animals. Oil continues to be removed from beaches naturally, but is being transported subtidally, down to 330 feet in 1990, continuing exposure to subtidal animals. Numbers of shallow bottom animals (crabs, clams, amphipods) were reduced in 1989 and 1990, but showed limited recovery in 1991. In contrast Exxon reported a decrease in shoreline oil (with no mention where it was going), "intact" beach communities, and "biological recovery" on beaches with residual oil (3).

Independent studies on birds found (1)(2) found 36,000 dead, between 300,000 to 645,000 estimated killed in 1989, and more losses in later years from chronic effects and decreased reproduction. For example, common murres have completely failed to reproduce at several large colonies in 1989-1991 from a disruption of synchronized breeding behaviour as a result of oil spill mortalities. Also a minimum of 300,000 chicks have been lost for the same reason. Harlequin ducks in western (oiled) Prince William Sound had near total reproductive failure in 1990-1992, thought to result from their heavy diet of oiled mussels. In general, declines in 16 of 39 species of seabird are evident when compared with 1972-1973 data.

In contrast, Exxon reported that although "many" birds died, "there have been no confirmed mortalities attributable to oil since September 1989... Species diversity and density are similar for both oiled and unoiled areas" (3).

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(1)Alaska Dept. of Fish and Game January 1993 The Exxon Valdez Oil Spill. What Have We Learned? Special Issue. Alaska's Wildlife. Vol. 25, No 1 50 pg
Habitat: pg. 22-25, 29-32 Mussels pg 28-29
Birds: pg. 11-15, 24-25 Sea Otters pg 16-17, 24-25
Pink Salmon: pg. 24-25, 34-36 Herring pg 24-25, 37-39
(2)Exxon Valdez Oil Spill Symposium Abstract Book Feb 2-5, 1993. Sponsored by: Exxon Valdez Oil Spill Trustee Council, Univ. AK Sea Grant College Program, Amer Fisheries Soc., AK Chapter. Anchorage, AK. 356 pg.
Habitat. pg. 69-86 (Cleanup Treatment & Effects)
pg. 87-99 (Subtidal)
pg. 163-312 (Intertidal)
Mussels: pg. 182-191 Birds. pg. 135-161
Sea Otters: pg. 269-296 Pink Salmon. pg. 101-133
Herring: pg. 247-267
(3)Maki, Alan. 1991. The Exxon Valdez oil spill. Initial environmental impact assessment. Environ. Sci. Technol. Vol. 25, No. 1: 24-29.

Independent studies on sea otters (1)(2) found 1,013 dead with an estimated 3,500 to 5,000 killed in 1989 from oil. "Changes in age distribution of dying sea otters, continued declines in abundance..." [up to 2,200 otters are estimated to have died since the spill], "higher juvenile mortality..." [thought to be from heavy diet of oiled mussels], "and higher mortality and lower pupping rates suggest a prolonged, spill-related effect on western (oiled) Prince William Sound sea otters" (4). Sea otters treated and released in eastern (unoiled) Prince William Sound may have introduced a herpes-like virus into the recipient population which may be causing an unusually high adult mortality (40-50% vs. 5% pre-release). In general, boat surveys have shown no significant recovery of sea otters from the oil spill.

In contrast, Exxon found sea otters present in "apparently equal" numbers in oiled and unoiled areas, and concluded from its boat survey that "otter populations are approaching pre-spill densities" and, given "improved" environmental conditions, "the spill should have no further substantive impacts on (otters). Recovery is well underway" (3).

Independent studies of pink salmon (1)(2) found:

-higher (51-96%) mortality of pink eggs in oiled streams than in unoiled streams in 1989-1991;
-gross abnormalities in juvenile stages in oiled streams;
-increased mortality in 1991 (96% *2 years after the spill*) in upstream spawning areas *untouched by oil*, a finding which strongly suggests genetic damage;
-slower growth rates (up to 25% less) and lower survival to adults (43% less) in salmon from oiled streams; and
-20-25% lower harvest than expected in 1990. (1992 returns were 70% lower than expected in oil spill impacted areas--see issue #12).

In contrast, Exxon's studies found no differences in pink salmon hatching rates or survival between oiled and unoiled sites in 1989, and "strong runs" in 1990, concluding "there have been no indications of any significant pink salmon kills or effects on spawning activity related to oil exposure" (3).

Independent studies on Pacific herring (1)(2) found greater egg and larval mortality, higher incidence of lesions and parasites in adults, and more physical deformities in oiled areas in 1989 and 1990, but not in 1991. Further, the 1989 year class (spawned during the spill) was absent from the 1992 return. In contrast, Exxon's studies found that "herring spawning activity (was) neither impaired nor delayed (during 1989)... minimizing concerns over long-term impacts" (3)

REMEDIES: * Incorporate government and independent (non-industry) damage assessment studies in evaluating risks of future oil and gas leasing in all areas, especially outer continental shelf lease sales

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(4)Exxon Valdez Oil Spill Trustees. April 1992. Exxon Valdez Oil Spill Restoration. Vol. 1. Restoration Framework. 52 pg. plus appendices. Cite on pg. 21-22.

ISSUE #12: EXXON VALDEZ OIL SPILL DAMAGE CLAIMS

BACKGROUND: Damage claims of Natives, fishermen, and municipalities have not been compensated by Exxon resulting in continuing financial hardships related to the Exxon Valdez oil spill. Ironically, fishermen who sought compensation through the fund established under the Trans-Alaskan Pipeline Authorization Act expressly for compensation have found the fund could have been used against them to deny their claims! In addition, there are currently concerns that the failure to have appealed the fund determination could also be used as an argument to invalidate the claim.

Contrary to Exxon's initial promises of rapid compensation to make spill victims "whole," lives in many of the spill-impacted communities continue to unravel as a result of latent effects of the spill.

For example, government and independent studies (1)(2) found that subsistence harvests in 1990 declined up to 77% in villages in oiled areas, while diversity of foods harvested in one study area (Tatitlek) dropped by half despite evidence that subsistence foods were "safe" to eat (not contaminated). Skepticism of government data ("safe" food), common sense, and perhaps sympathy, (one Tatitlek Native said, "When you hear thousands of them [waterfowl] are dying everyday, it's tough to harvest them" (1)), may have all contributed to the observed changes in subsistence harvest patterns. By 1991 some recovery was found in Kodiak and lower Cook Inlet, but little in Prince William Sound villages. Natives have subsistence fished, hunted, and gathered in the area impacted by the spill for at least 7,000 years. As one Native said, "They [Exxon] have ruined a lifestyle."

The full impact of the spill on commercial fishermen is just beginning to be felt. For example, evidence strongly suggests that economic value of pink salmon harvests in southcentral Alaska (spill-impacted areas) in 1989, 1990, 1991, and 1992 was much less than expected had there not been an oil spill (2)(3). In 1989 estimates of loss to fishermen range from $6.4 to $41.8 million, in 1990 from $11.1 to $44.5 million (2). These numbers include estimated spill effects on both volume and price which were also evident in 1991 and 1992. The 1992 return of pink salmon, offspring of the 1989 fry which swam out to sea under the oil spill, came in less than one third of forecast in southcentral Alaska while record returns of pinks occurred in the rest of Alaska (3).

Sustained losses to southcentral fishermen have translated to continuing financial hardships in coastal communities largely dependent upon fisheries resources. For example, in Cordova, three of five canneries went bankrupt following the 1990 season,

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(1)Alaska Dept of Fish and Game. January 1993 The Exxon Valdez Oil Spill. What Have We Learned? Special Issue Alaska's Wildlife Vol. 25, No 1 50 pg
Subsistence pg. 4-6, 24-25 Sockeye pg 24-25 43-45
Herring pg 24-25, 37-39

(2)Exxon Valdez Oil Spill Symposium Abstract Book Feb 2-5, 1993 Sponsored by: Exxon Valdez Oil Spill Trustee Council, Univ. AK Sea Grant College Program Amer. Fisheries Soc., AK Chapter. Anchorage, AK. 356 pg.
Subsistence pg. 16-18, 199-213 Economic pg. 227-230
Social pg 223-226 Sockeye pg. 132-133
Herring pg 247-267

(3)Ott, Riki. 1992. Could It Be Oil? 1992 Alaska Pink Salmon Harvest Shows Possible Impact from 'Exxon Valdez' Oil Spill. Alaska Fishermen's Journal October '92.

only one of which has reopened. Prince William Sound Aquaculture Corporation, a major pillar of the fishing industry, has also lost millions of dollars since the spill because it derives its income solely on fish harvest, primarily on pinks. Independent studies found high levels of stress in Cordova in 1989, 1990, and 1991 were intrusive (spontaneous bad memories), and from high levels of family, work, personal and social disruption following the spill (2). The nationwide media campaign launched by Exxon assuring the public that Prince William Sound is recovering rapidly has certainly contributed to stress levels in southcentral Alaska.

The economic recovery of fishermen and fishing-based communities depends entirely upon ecosystem recovery and recovery of the fisheries resources. Unfortunately, the future of some fisheries in southcentral Alaska is highly uncertain due to latent effects of the oil spill. For example, the imminent collapse (90% decline) of the Kenai River sockeye salmon return and significant declines in Kodiak sockeye (20-50%) are predicted for 1994 and 1995, based on the poor juvenile survival from overescapement (too many fish upriver) in 1989 due to harvest closures during the oil spill (1)(2). The 1992 Pacific herring spawn migration in Prince William Sound was missing the 1989 year class (spawned during the spill), and there is evidence that the 1988 year class, (juveniles during the spill), may be reproductively impaired (1)(2). Anticipated effects of oil spill damage on future fish returns is currently unknown, but may be very real.

REMEDIES: * Amend the Trans-Alaska Pipeline Authorization Act to make it clear that partial payment by the TAPAA fund or failure to appeal the fund determination will not limit the right of persons to a jury trial to attempt a complete recovery of the claim, and that denial of claims through the TAPAA fund will not prevent compensation through other means.

* Create low interest loan program to victims of technological disasters, including municipalities.

ISSUE #13: IMPROVEMENT OF OIL SPILL PREVENTION

BACKGROUND: The one lesson forcefully learned by the Exxon Valdez oil spill, and again by the Braer spill in the Shetlands, is that prevention of spills is the best environmental protection. To increase spill prevention in the U.S., the Coast Guard was required under the Oil Pollution Act of 1990 to conduct studies of existing vessel traffic service systems (Sec. 4107) and tanker navigation safety standards (Sec. 4111) to determine adequacy of existing systems and regulations and to recommend improvements where necessary. The Coast Guard has not yet completed these studies, both of which are overdue.

More safeguards are needed in both Prince William Sound and Cook Inlet to increase spill prevention. The need for increased inspection of TAPS trade tankers, inadequacy of tug escort vessels in both Prince William Sound and Cook Inlet, and the urgent need for a vessel traffic control system in Cook Inlet have all been discussed elsewhere in this document(1) , but should all be addressed by the Coast Guard studies. In addition to local control of port traffic such as provided by a vessel traffic control system, a nation-wide tanker monitoring system such as the Global Positioning System could prevent an accident similar to the Braer in the Shetlands.

Additional spill prevention measures should be taken. The Oil Pollution Act of 1990 required double hull tankers be phased in through 2015. This lengthy phase-in period was the result of political compromise which will only compromise the public and the environment in the event of another spill with a single skin tanker during this interim period. The Coast Guard ruling on inter-hull spacing on larger tankers is also too little--the result of another political compromise. Further, Congress required the Coast Guard to develop interim standards for single-hulled vessels to minimize risk from spills during the double-hull phase-in period. The standards are past due.

REMEDIES: * Clinton Administration and Congress should follow up with the Oil Pollution Act requirements by requesting the Coast Guard complete these studies as rapidly as possible and implement their recommendations as quickly as possible.

* Accelerate the phase-in schedule for double-hull tankers.

* Coast Guard should revise its interim final rule to require inter-hull spacing equivalent to the breadth of the vessel divided by 15 or 2 meters, whichever is greater (not less).

* Coast Guard should promptly issue regulations for single hull vessels to reduce oil spill risks including tug escorts, compliance with vessel traffic control systems, advanced navigation aids, wing tank cargo restrictions, and tank level monitoring devices.

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(1)A better weather restriction policy in Prince William Sound: current Coast Guard policy is to close Port Valdez to tanker traffic when winds exceed 40 knots in Valdez Narrows. However, winds can be zero knots in Valdez Narrows and 60 knots in Valdez Arm or Prince William Sound. The two wind indicators are poorly placed and the Coast Guard often has to rely on escort vessels or tankers to report the weather. Many times the tankers are already in high winds before the Coast Guard is aware of the wind force.

ISSUE #15: FUTURE TAPS OIL SPILL RESPONSE

BACKGROUND: In 1989, there was confusion during the Exxon Valdez oil spill between the spiller, Exxon, and the oil industry consortium, Alyeska, over who was responsible for the spill response. This confusion may have contributed to the delay in the initial response. Federal law holds the spiller responsible for spill response, but the Trans-Alaska Pipeline Authorization Act (TAPAA) and Alaska State law (1989) required the holder of the TAPS Right-of-Way to respond to TAPS spills in the state of Alaska including its waters.

After the spill, the oil industry, the state of Alaska and Congress all tried to clarify whose duty it was to respond to TAPS spills. Congress amended Sec. 204(b) of TAPAA through Sec. 8101 of OPA90 by essentially reiterating that the holder of the right-of-way is required to control and clean up TAPS spills within the state of Alaska. Alyeska lobbied the State for passage of a bill that would have required nothing more than a private contractual obligation between Alyeska and shippers, while at the same time reducing the standard of negligence for professional spill response contractors from simple to gross. The bill that passed the State Legislature requires Alyeska to respond to TAPS spills within 72 miles of the Valdez terminal (essentially within Prince William Sound to just outside Hinchinbrook Entrance) for the first 72 hours only, which is substantially less than required by federal law, and the legislature also essentially removed Alyeska's liability during the response by passing the standard of gross negligence.

REMEDIES: • Require TAPS pipeline owners (holder of the TAPS right-of-way agreement) to submit a TAPS oil spill response plan for Prince William Sound and other waters of the State to the Secretary of Transportation for approval under section 4202 of the Oil Pollution Act of 1990, the provision that was dropped from the 1992 energy bill package.

2/20/93

BRIEFING SHEET

AIR POLLUTION FROM THE ALYESKA MARINE TERMINAL IN VALDEZ, ALASKA

• **The Alyeska Marine Terminal releases 240,000 pounds of volatile organic compounds into the air every day and is the largest source of VOC pollution in the United States.**

Yet the terminal's owner, the Alyeska Pipeline Service Company, is lobbying vigorously to avoid vapor controls required under the 1990 Clean Air Act amendments.

• **The terminal releases nearly one and a half tons of benzene into the air every day, making it the third largest benzene emitter in the nation.**

But the company insists that 89 percent of the benzene found in the air in Valdez does not come from the oil terminal. They say that snowmobiles, boats, cars and wood stoves are the source.

• **Benzene is a potent carcinogen, and benzene from the terminal exposes 3,500 Valdez residents and thousands of tourists to elevated cancer risks.**

Alyeska found that lifetime cancer risk in Valdez from benzene fumes is 210 in a million -- but the company says benzene from the terminal accounts for about one percent of that risk.

• **Alyeska Pipeline Service Company cites its own study to support its contention that elevated benzene levels in Valdez are not coming from the terminal.**

Yet the U. S. Environmental Protection Agency and a peer review committee of top scientists have challenged the validity of the company's study.

2/20/93

•VOC pollution from the terminal includes potent greenhouse gases like methane, as well as ozone destroyers.

One molecule of methane has approximately 25 times more impact on global warming than a molecule of carbon dioxide, but Alyeska has shrugged off this concern.

•The amount of hydrocarbons put into the air by the Alyeska Marine Terminal each year (44,000 tons) is much more than the amount spilled by the tanker Exxon Valdez (36,000 tons).

Tens of millions of dollars and countless hours of work have been spent to prevent another big oil spill in Prince William Sound. Not a penny has been spent to control the vapors that escape when tankers are loaded.

•In the 15 years oil has flowed down the pipeline, roughly 700,000 tons --1.4 billion pounds -- of benzene and other VOC pollution has been released from the Alyeska Marine Terminal.

But the company still refuses to control tanker loading emissions, even though it has been shown that controls are feasible and would be cost-effective.

• Alyeska insists that these emissions do not pose a health threat to workers, explaining that conditions at the terminal meet all applicable occupational health rules.

Yet British Petroleum, Alyeska's majority owner, reported in 1990 that workers at the terminal were routinely exposed to levels of benzene that exceeded the federal Permissible Exposure Limit by as much as 40 times.

It is time to control tanker loading pollution from the Alyeska Marine Terminal. For further information call Greg Winter at (206)671-5257 FAX (206)671-5308

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March 22, 1993

Congressman Gerry E. Studds
Chairman
Merchant Marine and Fisheries Committee
U.S. House of Representatives
Longworth 1334
Washington, D.C. 20515

Dear Mr. Chairman:

We represent thousands of commercial fishermen, seafood processors and others whose lives and businesses were affected by the 1989 EXXON VALDEZ oil spill. As one of the lead firms in the ensuing litigation, we are pleased to enclose for the hearing record copies of the expert reports dealing with the long-term impacts of the EXXON VALDEZ oil spill.

We understand that several of the witnesses will be referring to these documents during their testimony. For your convenience, we have included an index of the enclosed reports.

Sincerely,

Julie C. Becker

Julie C. Becker

Enclosures

These reports are on file at the Full Committee.

EXPERT REPORTS ON THE LONG-TERM IMPACTS OF THE EXXON VALDEZ OIL SPILL

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