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OVERSIGHT OF THE FISCAL YEAR 2008 BUDGET FOR THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HEARING

BEFORE THE

SUBCOMMITTEE ON OCEANS, ATMOSPHERE, FISHERIES, AND COAST GUARD

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

JUNE 28, 2007

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CONTENTS

	Page
Hearing held on June 28, 2007	1
Statement of Senator Cantwell	1
Statement of Senator Nelson	19
Statement of Senator Snowe	3

WITNESSES

Lautenbacher, Jr., Vice Admiral Conrad C., (U.S. Navy, Ret.), Under Secretary for Oceans and Atmosphere and Administrator, National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce	5
Prepared statement	7

APPENDIX

Inouye, Hon. Daniel K., U.S. Senator from Hawaii, prepared statement	29
Response to written questions submitted to Vice Admiral Conrad C. Lautenbacher, Jr. by:	
Hon. Maria Cantwell	29
Hon. John F. Kerry	44
Hon. Bill Nelson	45

OVERSIGHT OF THE FISCAL YEAR 2008 BUDGET FOR THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

THURSDAY, JUNE 28, 2007

U.S. SENATE,
SUBCOMMITTEE ON OCEANS, ATMOSPHERE, FISHERIES, AND COAST GUARD,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 10:09 a.m. in room SR–253, Russell Senate Office Building, Hon. Maria Cantwell, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

Senator CANTWELL. Good morning. The oversight hearing of the Fiscal Year 2008 budget for NOAA, Oceans, Atmosphere, Fisheries, and Coast Guard Subcommittee will come to order.

We're going to hear from Vice Admiral Lautenbacher, but, before that, we'll make opening statements, for any members that would like to make opening statements.

I'd like to thank all of you for being here this morning to have this hearing on the National Oceanic and Atmospheric Administration's Fiscal Year 2008 budget.

I want to thank Admiral Lautenbacher for being here today, and for your detail to attention on these important budget priorities.

NOAA has been in the spotlight over the last several years as the Nation has paid increased attention to our oceans and to our atmosphere, and events such as the tragic Boxing Day tsunami of 2004 and the hurricanes of Katrina and Rita have shown that better understanding of our oceans and atmosphere saves lives.

NOAA scientists have played a key role in understanding climate change and measuring ocean acidification, two key environmental challenges we face in our country and around the globe.

We have also had two national commissions on ocean policy. They have made recommendations for transforming the way we manage, study, govern, and make policy on our oceans and marine resources. More than half of all Americans live in coastal communities, and an increasingly dense coastal population requires better understanding of how people, the oceans, and the atmosphere interact.

Tsunamis, sea-level rise, more intense hurricanes, and rising demand for seafood all require a strong Federal investment in research and new approaches to ocean governance.

Quite frankly, Admiral, in the light of the challenges I see, particularly as it relates to good information and the use of technology as an investment for NOAA to play that vital role in protecting all of us, I am concerned to see a flat budget request from NOAA for the third year in a row. The NOAA FY 08 budget request of $3.8 billion is 2 percent below 2007. The National Ocean—that is, the enacted level, I should say—the National Ocean Services took an especially large cut, 21 percent down, from the $468 million of—compared to where it was in 2006. In contrast to the Administration's request, the Joint Ocean Commission Initiative recommended a funding level of $4.5 billion. We need to recognize that—the challenges in improving, understanding, and management of our oceans and atmosphere, and the investments that it will take to reflect that.

Admiral as you know, there has been a lot of attention of late to our rapidly aging system of weather, hurricane, climate, and ocean monitoring satellites. We rely on this technology for accurate weather predictions, which is especially important as we enter hurricane season. But these satellites are reaching, or have surpassed, their expected service lives. While I understand that NOAA has made replacing these satellites a priority, I am concerned that it does not have the funds or a plan to—in place—to resolve this situation.

Despite the growing threats caused by climate change, I see that funding for climate change research took a 9 percent cut this year, and I'm particularly troubled to see that the Abrupt Climate Change Research Program again zeroed out in this year's budget request. I am pleased to work with Senators Snowe and Collins on an amendment that we had in this year's energy bill that would direct increased funds to NOAA to research the pressing issue of abrupt climate change. I hope this amendment will ensure that, in the future, the Administration will stop the blocking of this vital resource.

This year, again, the President's request for the Pacific Coastal Salmon Recovery Fund was disappointing, and—at a low $67 million. Between its establishment, in 2000, and 2005, average appropriations to this fund were $87 million. This fund goes to states and tribes who are on the front line of salmon recovery.

And, Admiral, as we had a chance to discuss yesterday in my office, I think some of the proactive work done by a collaboration of interests in Washington State—tribes, fisheries, agricultural interests, water resource management concerns—have all shown, in the shared recovery plan, more effective results than, I would say, as another hearing that I chaired recently as a—the Subcommittee of the Energy Committee, on Energy Water Resources—on a San Joaquin settlement, after many, many years of court battles, and continued court battles, and continued court battles, a proposed settlement. So, having the resources to do salmon recovery, and the willingness of all of the interested parties, although they have conflicts, to work together in advance, I think, are yielding great re-

sults. So, I hope that we will fund the Salmon Recovery Plan at its full need.

I'm also disappointed to see the funding for NOAA's education program take a 50 percent cut. And, finally, I'd like to observe the Marine Mammal Initiative that—the Nonpoint Pollution Grants and the Marine Debris Removal Program were also zeroed out from this year's budget. So, I look forward to hearing your comments on that, and working with my colleagues to restore that.

I understand that you are operating in tight fiscal times, and I appreciate your attention to the juggling of those issues, but I know that—working with the full Committee and working with Senator Snowe, that we still have lots of work to do. And, while I won't go into detail, there are many other issues, as it relates to the Northwest, that I just, if I have a chance, will continue to bring up—the Puget Sound, Southern Resident orca population, and our recovery plan, NOAA's Pacific Marine Environmental Labs and the research that they are doing on both acidification and tsunami detection, and making sure that the detection program works, and works effectively. It is not a matter of whether we are going to have another tsunami in the Northwest—we will have one—the question is, how well prepared will we be? And obviously we want to continue to work with a variety of programs through our university system to make sure that we are ready for that.

So, with that, I will turn it over to my colleague, the Ranking Member, Senator Snowe, for her opening comments.

STATEMENT OF HON. OLYMPIA J. SNOWE, U.S. SENATOR FROM MAINE

Senator SNOWE. Thank you, Madam Chair. And thank you, as well, for convening this hearing today to have the opportunity to review the budget request of NOAA.

It's been nearly 3 years since the U.S. Commission on Ocean Policy released its final report, and since the President's response, with his Ocean Action Plan. And some of those recommendations have been implemented, most notably the reauthorization, finally, of the Magnuson-Stevens Act, but we have much left to accomplish, and our success hinges on securing adequate funding for existing and future ocean initiatives.

I want to welcome you, Admiral Lautenbacher, to the hearing here today, and to discuss some of the key programmatic and budget issues that are confronting your agency. Your insight and leadership must drive our Nation to improve the management and conservation of our ocean and coastal resources, and we rely on you to ensure that these vital programs receive adequate fiscal support.

Like the Chair, I, too, am very much concerned about the level of budget requests for your agency. And we had an opportunity to discuss that yesterday. But clearly it is a reduction. While—I know that it's a proposal—the $3.9 billion request represents an increase of 3.4 percent over the President's budget in 2007, it still represents a 2.5 percent decrease from the amount that Congress actually appropriated for Fiscal Year 2007. If Congress were to enact the Administration's budget, we would see a net effect of 30 percent decline in funding for ocean monitoring programs, such as the Nation's Ocean and Coastal Observing Systems, a 47 percent re-

duction in cooperative fishery research programs, so essential to our industries at a time in which I know the groundfish industry is struggling in the State of Maine and throughout New England. Operation of lean streamlined ocean management programs, I know, is an admirable goal; but these reductions are more than just trimming the excess fat, they cut to the bone of some of these vital programs. So, clearly, we're going to have to examine these issues.

The establishment of an Integrated Ocean Observing System was among the Ocean Commission's top recommendations, and number six on the Joint Ocean Commission's initiative top-ten list of priorities for Congress. I sponsored bills, that were supported by the Chair, that have passed in each of the past two Congresses, to authorize such a system, and, just yesterday, our legislation was passed by the full Committee.

Data from Ocean Observing Systems alerts mariners to hazardous conditions and contributes to weather and climate forecasting that leads to vast cost savings. A study, in fact, by the scientists at Woods Hole Oceanographic Institute estimated that the Gulf of Maine Ocean Observing System returned $6 to the regional economy for every dollar that was invested. The Ocean Commission recommended initial funding for the Ocean Observing System of $138 million in its first year, escalating to a half a billion dollars, and yet, your 2008 budget request, $2.5 million for an office within NOAA, and $11.5 million for the regional associations, is barely a tenth of the Ocean Commission's recommendation, and more than 33 percent less than the enacted funding level for Fiscal Year 2007. So obviously, these are issues that we're going to have to examine as we proceed.

And finally, as you're aware, fishery management is another integral issue to my state, certainly to the Chairman's state and to this country. In recent years, we've seen a precipitous decline in the catch and landing of species—whether it's cod, flounder, or bluefin tuna—that have traditionally formed the lifeblood of our commercial fisheries. If we are to recover these stocks and to bring them back from the brink, we will require significant investments in fishery research to ensure we're using the best available data and science, and producing stock estimates that allow us to achieve the maximum sustainable yield, while preventing overfishing from occurring. Cooperative fishery research has proven extremely successful in Maine, bringing scientists and commercial fishermen together, not only to collect better data, but also to develop relationships, allowing scientists to benefit from fishermen's knowledge, and fishermen to see that the research is being carried out effectively. Cuts to these programs on the level that this budget proposes, will certainly have a far-reaching impact on the development of effective regulations, not to mention the ability of fishermen to comply in devastating their own livelihoods.

So, these are issues, Admiral, that hopefully we can examine and explore in greater detail here this morning in questioning. I do want to thank you for the $10 million request to fund an unprecedented dam removal program in the State of Maine, in the Penobscot River, that will restore nearly 1,000 miles of habitat for the Atlantic salmon. This is a historic project, and I know it's going to

produce tremendous dividends to the species and to the State of Maine. I think it's a great model for what we can do across this country to restore different habitats and species. So, I want to thank you for your leadership in that regard.

I hope that we have the opportunity to discuss all of these issues and more, and thank you for your responsiveness and attentiveness to many of the issues that I and the Chair have raised. And I'm looking forward to working with you.

Thank you.

Senator CANTWELL. Admiral Lautenbacher, thank you very much for being here. We'll allow you to make your statement.

STATEMENT OF VICE ADMIRAL CONRAD C. LAUTENBACHER, JR., (U.S. NAVY, RET.), UNDER SECRETARY FOR OCEANS AND ATMOSPHERE AND ADMINISTRATOR, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), U.S. DEPARTMENT OF COMMERCE

Admiral LAUTENBACHER. Thank you very much, Madam Chair, Senator Snowe, distinguished members of the staff. I appreciate very much this opportunity to come before the Committee to discuss our Fiscal Year 2008 budget request. I particularly appreciate your leadership and your continued support for our programs. I know that we work together with the same goal in mind, to improve our products and services and do the best for the American people.

Before I go into my short oral remarks, I would like to request that my written statement be included, in its entirety, in the record.

Senator CANTWELL. It will be. Thank you.

Admiral LAUTENBACHER. Thank you.

Before I give you some details on the budget request, I'd like to highlight some of our accomplishments, which I think are very important and represent the kind of work that we've done together to try to improve the NOAA performance with the public.

First of all, last year the President designated the Northwestern Hawaiian Islands as a Marine National Monument. It's now known as the Papahānaumokuākea. It encompasses 140,000 square miles. It is the largest protected marine area in the world, larger than the Greater Barrier Marine Reef, has 4,500 square miles of relatively undisturbed coral reef habitat, home to more than 7,000 species. For the first time in history, NOAA will play a leading role in managing a national monument. It's an exciting and important opportunity for NOAA.

NOAA also designated essential fish habitat area covering 150,000 square miles off the coasts of Washington, Oregon, and California. The regulations under this plan prohibit fishing methods, such as bottom-trawling, that can cause long-term damage to the ocean floor, and are aimed at replenishing fish stocks.

NOAA has greatly increased the security of our Nation's people living along our coastlines, through a combination of new tsunami buoys and around-the-clock warning capability, thanks to support from Congress. NOAA now has 28 special buoys around the U.S. Coast and around the Pacific Coast. Plans call for this U.S. Tsunami Warning System to include 39 buoy stations by spring of

2008, with 32 in the Pacific and seven in the Atlantic. There are five in place in the Atlantic, by the way. NOAA has achieved full 24-by-7 operations of the two—Nation's two Tsunami Warning Centers located in Alaska and Hawaii. They provide warnings and alerts to the Nation and the Pacific Rim that are now serving the Indian Ocean for the amount of—for the number of sensors that we have there.

NOAA collaborated with Federal partners to place a NOAA weather radio in every public school in America—that's more than 97,000 radios—to add in protecting our children. The NOAA weather radios provide automatic alerts for severe weather, manmade disasters, such as chemical spills and terrorism threats, as well as AMBER Alerts for missing children.

My written testimony has more details, but, basically, the priority areas for our budget this year were, first of all, sustaining critical operations. We had to do that. That's number one. The other four items are—not in any particular order, but are very important: first of all, supporting the U.S. Ocean Action Plan, as indicated in your opening statements; improving weather warnings and forecasts; climate monitoring and research; and critical facilities investment.

The FY 08 request is $3.8 billion. It provides modest new investments in our priority areas, while maintaining critical services. To sustain those critical operations, over $54 million in net increases to—will support our workforce and pay for the cost of doing business—regular inflation costs—to keep our core businesses and core operations in full operation. I request the support on that as the top priority.

Continued implementation of the President's Ocean Action Plan, which is the response to the two committees that have been mentioned in the opening statement—is a priority for the Administration. The 2008 Budget Request for NOAA has $123 million in increases to support the plan over the President's budget increase for 2007. This includes $60 million to advance ocean science and research, $38 million to protect and restore marine and coastal areas, and $25 million to ensure sustainable use of ocean resources. Specifically, the budget request includes over $16 million for an Integrated Ocean Observing System, or IOOS, for development of regional systems—this is the first time that we have had a line item to support that system—as well as improved data management and communications. It also includes $8 million for enforcement and management activities in the newly designated Marine National Monument in Hawaii.

NOAA is actively supporting a number of efforts focused on restoring ecosystems in fisheries. The budget request, nearly $13 million, for our Community-Based Restoration Program, and through that program we will award funds to build upon our efforts with local partners, such as in the Puget Sound area, where we are working to restore this vital ecosystem and the fisheries and services that it supports.

The 2008 budget also requests $10 million for the Penobscot River Restoration Project in Maine, as mentioned in the opening statements. The project will restore a run of over 10,000 adult salmon, 1.5 million shad, and roughly 8 million river herring to the

Gulf of Maine and beyond. It's the single most important project that we have to support Atlantic salmon.

To improve weather warnings and forecasts, our budget increase—requests an increase of $5 million to support operations and maintenance of hurricane data buoys and research on hurricane intensity, that will save lives. Over $6 million more will go in—go toward hurricane modeling efforts and hiring employees to support the newly refurbished P–3 "hurricane hunter" aircraft, which increases our force from two to three.

To support climate monitoring and research, NOAA is moving forward with an increase of $3 million in funding to support the use of unmanned aircraft systems, or UAS. We will continue to evaluate the benefits of using UAS to conduct long-endurance flights for weather observations, atmospheric composition, and climate monitoring, and gathering critical data for input into hurricane models.

The 2008 budget supports critical facility investments, with a request of over $20 million for continued construction of the NOAA Pacific Regional Center on Ford Island. By bringing our programs together into this new and expanded facility, we expect to realize benefits in improved operations and mission performance. In March, two NOAA ships arrived at their new home port at Ford Island, with a third NOAA ship to follow later this year. Getting them into their new home port is a major milestone, and I thank Senator Inouye and other members of this Committee and the Senate who have supported these efforts.

In closing, let me just mention that there are some very important legislative priorities that go along with our budget for 2008. The Administration has sent Congress draft legislation on aquaculture, coral reefs, and hydrographic services, among others. We are also working on draft legislation for a NOAA Organic Act and reauthorizing the National Marine Sanctuaries Act, Marine Mammal Protection Act, and Sea Grant. We appreciate the introduction of the initial bills that I have mentioned, and the support from this—that this Committee has provided for these very important legislative initiatives. We wish to work together with you to ensure their passage.

Thank you, again, for this opportunity to present the 2008 budget request for NOAA, and I'm happy to stand by to answer any questions you may have.

[The prepared statement of Admiral Lautenbacher follows:]

PREPARED STATEMENT OF VICE ADMIRAL CONRAD C. LAUTENBACHER, JR. (U.S. NAVY, RET.), UNDER SECRETARY FOR OCEANS AND ATMOSPHERE, AND ADMINISTRATOR, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), U.S. DEPARTMENT OF COMMERCE

Mr. Chairman and Members of the Committee, before I begin my testimony I would like to thank you for your leadership and the generous support you have shown the National Oceanic and Atmospheric Administration (NOAA). Your continued support for our programs is appreciated as we work to improve our products and services for the American people. Thank you for the opportunity to testify on the President's Fiscal Year (FY) 2008 Budget Request for NOAA.

The FY 2008 President's Budget supports NOAA's priority to advance mission-critical services. The FY 2008 request is $3.815 billion, which represents a $131 million or 3.4 percent increase over the FY 2007 request. This request includes the level of resources necessary to carry out NOAA's mission, which is to understand

and predict changes in the Earth's environment, and conserve and manage coastal and marine resources to meet our Nation's economic, social and environmental needs. At NOAA we work to protect the lives and livelihoods of Americans, and provide products and services that benefit the economy, environment, and public safety of the Nation. Before I discuss the details of our FY 2008 budget request, I would like to briefly highlight some of NOAA's notable successes from the past Fiscal Year (2006).

FY 2006 Accomplishments

President Designates Largest Fully-Protected Marine Area on Earth

Recognizing the continuing need for resource protection, President Bush designated the Northwestern Hawaiian Islands as a marine national monument on June 15, 2006. Encompassing nearly 140,000 square miles, the monument covers an area larger than all of our national parks put together, including 4,500 square miles of relatively undisturbed coral reef habitat that is home to more than 7,000 species. The creation of the largest fully-protected marine area in the world is an exciting achievement and recognizes the value of marine resources to our Nation.

Successful Launch of NOAA Satellite GOES–13 and New Satellite Operations Facility Ensure Continuity of Improved Data Collection

On May 24, 2006, officials from NOAA and the National Aeronautics and Space Administration (NASA) confirmed that a new geostationary operational environmental satellite, designed to track hurricanes and other severe weather impacting the nation, successfully reached orbit. Upon reaching final orbit, the satellite was renamed GOES–13. This is the first in a new series of satellites featuring a more stable platform enabling improved instrument performance. NOAA instruments were also launched on the European MetOp-A polar-orbiting satellite in October 2006. Combined with NOAA and Department of Defense (DOD) operational satellites, MetOp-A will help provide global data for improving forecasts of severe weather, disaster mitigation, and monitoring of the environment. This launch ushered in a new era of U.S.-European cooperation in environmental observing.

In 2006, NOAA satellite operations and data processing groups began moving into the new NOAA Satellite Operations Facility (NSOF). The NSOF will house the NOAA satellite command and control functions and data and distribution activities that are central to NOAA's mission. The NSOF will also house the U.S. Mission Control Center for the Search and Rescue Satellite-Aided Tracking (SARSAT) program and the National Ice Center (NIC), a joint NOAA/DOD mission to track ice floes and issue warnings to the Nation's maritime force. The NSOF officially opened on June 11, 2007.

Enhancements to NOAA's Fleet of Ships and Aircraft

Significant progress is being made in modernizing NOAA's fleet. NOAA took delivery of the Fisheries Survey Vessel (FSV) HENRY B. BIGELOW, the second of 4 new FSV, on July 25, 2006. The BIGELOW has high-tech capabilities that make it one of the world's most advanced fisheries research ships. These ships will be able to perform hydro-acoustic fish surveys and conduct bottom and mid-water trawls while running physical and biological oceanographic sampling during a single deployment—a combined capability unavailable in the private sector that will enable research and assessment to be carried out with greater accuracy and cost efficiency. NOAA also took delivery from the Navy of a "retired" P–3 aircraft in response to the hurricane supplemental bill attached to the FY 2006 Defense appropriations legislation. Rehabilitation of the P–3 is expected to be completed by the start of the 2008 hurricane season.

Magnuson-Stevens Fishery Conservation and Management Act Reauthorized

Congress reauthorized the Magnuson-Stevens Fishery Conservation and Management Act (MSA) in December, 2006, and it was signed into law by President Bush on January 12, 2007. The MSA is the guiding legislation that authorizes fishery management activities in Federal waters. Enactment of this bill was one of the top priorities of the U.S. Ocean Action Plan. The reauthorized MSA strengthens NOAA's ability to end overfishing, rebuild fish stocks, and work collaboratively on conservation.

U.S. Tsunami Warning System Improved

NOAA designed easy to deploy Deep-ocean Assessment and Reporting of Tsunamis (DART)–II technology, which provides two-way communication between the buoys and NOAA facilities. This technology allows engineers to troubleshoot these systems from the lab and repair the systems remotely when possible. This functionality can minimize system downtime and save money by not requiring a

ship be deployed to make minor repairs. The U.S. Tsunami Warning Program also created tsunami impact forecast models for nine major coastal communities, providing information for inundation maps. With the December 11, 2006 deployment of DART #23 in the Western Pacific Ocean, NOAA achieved initial operating capability (IOC) of the planned expanded U.S. Tsunami Warning Program. NOAA also achieved full 24/7 operations of the Nation's two Tsunami Warning Centers. Plans call for the U.S. Tsunami Warning Network to total 39 DART–II buoy stations by mid-summer 2008 (32 in the Pacific, 7 in the Atlantic).

NOAA also continued to monitor sea height through a network of buoys and tide gauges, collecting information critical to understanding the time of arrival and the height of tsunami waves. In 2006, NOAA completed the installation of eight new National Water Level Observation Network (NWLON) stations to fill gaps in the detection network, bringing the two-year total to 15. The 15 stations were installed in California, Oregon, Washington, Alaska, Puerto Rico, and the Virgin Islands. These and other new stations brought the NWLON to 200 stations by the end of calendar year 2006. In addition, NOAA continued to upgrade the entire NWLON to real-time status by replacing over 50 data collection platforms.

Red Tide Monitoring Protects Human Health and Coastal Economics in New England

In the wake of the 2005 New England red tide crisis that forced the closure of most shellfisheries in the region, NOAA provided additional emergency funding in 2006 to provide timely and critical information to state managers to build upon long-term research supported by the Ecology and Oceanography of Harmful Algal Bloom, and Monitoring and Event Response for Harmful Algal Bloom programs at the Woods Hole Oceanographic Institution, as well as other partner institutions. In the spring of 2006, NOAA-sponsored monitoring detected rapid escalations of the bloom, which subsequently closed shellfisheries in Massachusetts, New Hampshire and Maine. Additional NOAA efforts allowed New England managers to make more strategic sampling and shellfish bed closures/openings to protect human health and minimize the economic impacts of harmful algal blooms.

National Estuarine Research Reserve System Adds 27th Reserve

On May 6, 2006, Commerce and Congressional officials dedicated the newest site in the National Estuarine Research Reserve System in Port Aransas, TX, bringing the total to 27 reserves. This new reserve introduces a new biogeographic area type into the system, and adds 185,708 acres of public and private land and water. The reserves are Federal-state partnerships, where NOAA provides national program guidance and operational funding. These reserves serve as living laboratories for scientists and provide science-based educational programs for students and the public.

Wide Application Potential of Unmanned Aircraft Systems Demonstrated

In 2006, NOAA worked with Federal and private sector partners to successfully demonstrate Unmanned Aircraft Systems (UAS) technology. NOAA is interested in UAS as a tool to explore and gather data to help us reach new heights in our ability to understand and predict the world in which we live. Use of UAS could help NOAA achieve our mission goals and provide cost-effective means to: enforce regulations over NOAA's National Marine Sanctuaries, conduct long endurance flights for weather, conduct research over areas that pose significant risks to pilots, validate satellite measurements, provide counts of marine mammal populations, monitor atmospheric composition and climate, and hover above hurricanes and gather critical data for input into hurricane models. NOAA will continue to examine how UAS can assist in the collection of environmental data.

Protecting Habitat Essential to Fish

In 2006, over 500,000 square miles of U.S. Pacific Ocean habitats were protected from damage by fishing practices, particularly bottom-trawling. Combined, these areas are more than three times the size of all U.S. national parks. The historic protections, implemented by NOAA with the support and advice of the regional fishery management councils, fishing industry, and environmental groups, made the protection of essential fish habitat and deep coral and sponge assemblages a significant part of management efforts to conserve fisheries in the Pacific Ocean.

NOAA Continues Efforts to Assist with Gulf Coast Recovery Following 2005 Hurricanes Katrina and Rita

In addition to providing the forecasts and immediate response assistance in 2005, following Hurricanes Katrina and Rita, NOAA has continued to assist with Gulf Coast recovery efforts in FY 2006.

NOAA ships and aircraft provided critical response and recovery capabilities in the aftermath of Hurricanes Katrina and Rita. NOAA Ship THOMAS JEFFERSON completed obstruction surveys in the Gulf of Mexico so that busy ports and shipping lanes could be re-opened to traffic. NOAA's Citation aircraft flew post-storm damage assessment surveys along the coasts of the Gulf States. This imagery was downloaded on the NOAA website, enabling emergency managers, local officials and average citizens to inventory damage and prioritize recovery efforts.

NOAA mounted a multi-pronged effort to address fishery-related impacts in the Gulf of Mexico in FY 2006. In August, 2006, NOAA awarded $128 million to the Gulf States Marine Fisheries Commission to reseed and restore oyster beds and conduct fisheries monitoring in the Gulf. In addition, NOAA Ship NANCY FOSTER conducted a seafood contamination survey for NOAA Fisheries near the Mississippi Delta to spot potential safety issues. This research monitored the seafood coming in from the Gulf to ensure it was safe for public consumption (free of PCBs, pesticides, and fossil fuels).

Collaboration Enables a NOAA Weather Radio to be Placed in Every Public School in America

NOAA and the Departments of Homeland Security and Education worked to get 97,000 NOAA weather radios placed in every public school in America to aid in protecting our children from hazards, both natural and man-made. In many cases, local Weather Forecast Office staff provided expertise in programming the radios to select specific hazards and geographic areas for which the school wanted to be alerted. This multi-month effort required close collaboration between the Departments of Homeland Security, Education, and Commerce (NOAA). This effort enabled schools to connect to part of the Nation's Emergency Alert System and greatly increases environmental situational awareness and public safety.

World Ocean Database 2005

NOAA's National Oceanographic Data Center (NODC) released a major upgrade to its World Ocean Database product. World Ocean Database 2005 (WOD05) is the largest collection of quality-controlled ocean profile data available internationally without restriction. All data are available on-line for public use. Data are available for 29 ocean variables, including plankton data. The database includes an additional 900,000 temperature profiles not available in its predecessor. The database provides the ocean and climate science communities with research-quality ocean profile data sets that will be useful in describing physical, chemical and biological parameters in the ocean, over both time and space. This database is a crucial part of the Integrated Ocean Observing System and the Global Earth Observation System of Systems.

New Arctic Observatory Established for Long-Term Climate Measurements

NOAA's Earth System Research Laboratory in Boulder, Colorado, in conjunction with our Canadian counterparts, established a research site located on Ellesmere Island to make long-term climate measurements of Arctic clouds and aerosols. This observatory supports NOAA's activities for the 2007–2008 International Polar Year.

NOAA Scientists Identify Carbon Dioxide Threats to Marine Life

A report co-authored by NOAA research scientists documents how carbon dioxide is dramatically altering ocean chemistry and threatening the health of marine organisms. The research also uncovered new evidence of ocean acidification in the North Pacific. The report resulted from a workshop sponsored by NOAA, the National Science Foundation, and the U.S. Geological Survey.

First Operational Satellite Products for Ocean Biology

In June, 2006, NOAA began to process and distribute ocean biology products for U.S. coastal waters, using satellite observations. This activity represents a successful transition of NASA research to NOAA operations. These products (*e.g.* chlorophyll concentration) represent the first satellite-derived biological products generated by NOAA for coastal and open ocean waters. These products are useful in detecting and monitoring harmful algal blooms, assessing regional water quality, and locating suitable habitat for fish and other important marine species. Development of these products prepares NOAA for generating and distributing ocean biology products in the global ocean after 2010.

FY 2008 Budget Request Highlights

Supporting the U.S. Ocean Action Plan

Coastal and marine waters help support over 28 million jobs, and the value of the ocean economy to the United States is over $115 billion. The commercial and rec-

reational fishing industries alone add over $48 billion to the national economy each year. The FY 2008 President's Budget requests $123 million in increases for NOAA to support the President's U.S. Ocean Action Plan. This oceans initiative includes $38 million to protect and restore marine and coastal areas, $25 million to ensure sustainable use of ocean resources, and $60 million to advance ocean science and research.

New investments in ocean science are aimed at monitoring and better understanding marine ecosystems. Increased funding of $16 million is included for the Integrated Ocean Observing System to enhance models and information products through development of regional systems and improved data management and communications. A total increase of $20 million is provided for NOAA research on four near-term priorities established through the national Ocean Research Priorities Plan. An additional $8 million will support exploring and defining areas of the continental shelf that are adjacent to, but currently outside of, U.S. jurisdiction. This work will enable a U.S. claim to these areas and the potential $1.2 trillion worth of resources they are estimated to contain.

The FY 2008 President's Budget builds on NOAA's strong record of investing in projects that embody the spirit of cooperative conservation. Projects to protect and restore valuable marine and coastal areas include funding of $8 million for enforcement and management activities in the recently designated Northwestern Hawaiian Islands Marine National Monument, and $10 million for a project to restore nearly 1,000 stream miles of habitat for endangered Atlantic salmon and other fish species. A total of $15 million is provided for the Coastal and Estuarine Land Conservation Program, to assist state and local partners in the purchase of high priority coastal or estuarine lands or conservation easements. Increased funding of $3 million is also included to support Klamath River salmon recovery projects. Finally, an increase of $5 million will support competitive grant programs focused on the Gulf of Mexico Alliance coastal resource priorities, as identified in the *Governors' Action Plan for Healthy and Resilient Coasts.*

Finally, the FY 2008 NOAA budget provides support to ensure sustainable access to seafood through development of offshore aquaculture and better management of fish harvests. The Administration will propose legislation to establish clear regulatory authority and permitting processes for offshore aquaculture. An increase of $3 million is included to establish the regulatory framework to encourage and facilitate development of environmentally sustainable commercial opportunities. In addition, $20 million in increases are provided to improve management of fish harvests, including $6.5 million in increases to implement the new and expanded requirements of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, $3 million for observer programs, and $6 million for market-based approaches to fisheries management. Market-based approaches—such as Limited Access Privilege Programs (LAPPs) that provide exclusive privileges to harvest a quantity of fish—move fisheries management away from cumbersome and inefficient regulatory practices and have been shown to lead to lengthened fishing seasons, improved product quality, and safer conditions for fishermen. The Administration has set a goal of doubling the number of LAPPs in use by the year 2010, and the increased funding of $6 million for LAPPs in this request supports that goal. Finally, an additional $2 million in funding is provided to meet the management challenges of assessing and mitigating the impacts of sound from human activities, such as national defense readiness and energy exploration and development, on marine mammals.

Sustaining Critical Operations

As always, I support NOAA's employees by requesting adequate funding for our people, infrastructure, and facilities. NOAA's core values are science, service, and stewardship, as well as people, ingenuity, integrity, excellence, and teamwork. Our ability to serve the Nation and accomplish the missions outlined below is determined by the quality of our people and the tools they employ. Our facilities, ships, aircraft, environmental satellites, data-processing systems, computing and communications systems, and our approach to management provide the foundation of support for all of our programs. Approximately $54.6 million in net increases will support our workforce inflation factors, including $44.9 million for salaries and benefits and $6.6 million for non-labor related adjustments such as fuel costs.

This year, we focus on the operations and maintenance of NOAA vessels and necessary enhancements to marine safety, facility repair, and modernization. A funding increase of $8.3 million will be used to support marine operations and equipment, including $5.6 million for new vessel operations and maintenance and $1.7 million to implement a more effective maritime staff rotation and safety enhancements. This funding will support the operations maintenance for the OKEANOS EX-

PLORER, NOAA's first dedicated Ocean Exploration vessel. Increased funding of $5.5 million will support operations and maintenance for NOAA's third P–3 aircraft. NOAA is also moving forward this year with increases in funding for unmanned vehicles, with $0.7 million in support of Autonomous Underwater Vehicles (AUV) and an increase of $3 million in funding to support the further use of Unmanned Aircraft Systems (UAS). With this increase, NOAA will evaluate the benefits and potential of using UAS to collect data crucial for climate models, weather research, fisheries enforcement, and coastal zone studies.

The backbone of the NOAA infrastructure is our integrated Earth observation effort. NOAA, NASA and the Office of Science and Technology Policy (OSTP) serve as the lead agencies for the Federal Government in developing our U.S. integrated Earth observing strategy. In addition, I serve as one of four intergovernmental co-chairs of the effort to develop the Global Earth Observation System of Systems. Building and maintaining state-of-the-art satellite programs is an important component of NOAA's integrated observation efforts. An increase of $25 million in the Polar Operational Environmental Satellite (POES) program continues support for development and acquisition of polar-orbiting weather satellites to improve weather forecasting and our understanding of the climate. This increase will allow NOAA to complete acquisition of this series of polar satellites and install and maintain instruments important to U.S. Government interests on the European MetOp partner satellite. Following the completion of the POES program, it will be replaced by the tri-agency National Polar-orbiting Operational Environmental Satellite System (NPOESS). This transition is expected in 2013. We will continue to partner with the Europeans on their MetOp satellite as NPOESS replaces our current POES satellites.

Improving Weather Warnings and Forecasts

Severe weather events cause $11 billion in damages and approximately 7,000 weather-related fatalities yearly in the United States. Nearly one-third of the economy is sensitive to weather and climate. Realizing this, NOAA seeks to provide decisionmakers with key observations, analyses, predictions, and warnings for a variety of weather and water conditions to help protect the health, lives, and property of the United States and enhance its economy. Increased funding of $2 million will accelerate research to improve hurricane intensity forecasts through targeted research for new models and observations. Another $3 million will support the operations and maintenance of 15 hurricane data buoys in the Caribbean, Gulf of Mexico, and the Atlantic Ocean. Finally, NOAA continues to strengthen the U.S. Tsunami Warning Program with an increase of $1.7 million to deploy additional deep ocean buoy (DART) stations. Strengthening the U.S. Tsunami Warning Program provides effective, community-based tsunami hazard mitigation actions including required inundation flood mapping, modeling, forecasting efforts and evacuation mapping, and community-based public education/awareness/preparedness for all U.S. communities at risk.

Climate Monitoring and Research

Society exists in a highly variable climate system, and major climatic events can impose serious consequences on society. The FY 2008 Budget Request contains investments in several programs aimed at increasing our predictive capability, enabling NOAA to provide our customers (farmers, utilities, land managers, weather risk industry, fisheries resource managers and decisionmakers) with assessments of current and future impacts of climate events such as droughts, floods, and trends in extreme climate events. NOAA is building a suite of information, products and services to enable society to understand, predict, and respond to changing climate conditions. These activities are part of the U.S. Climate Change Science Program and are being conducted in collaboration and coordination with our important interagency partners including NASA, NSF, and the Department of Energy. We will continue to expand and improve access to global oceanic and atmospheric data sets for improved climate prediction and development of climate change indicators. NOAA will support the critical National Integrated Drought Information System with increases of $4.4 million to develop an integrated drought early warning and forecast system to provide earlier and more accurate forecasts of drought conditions. This request also supports the Administration's efforts to create a U.S. Integrated Earth Observation System. With an increase of $0.9 million, we will support research on water vapor to refine climate models. In support of the Ocean Research Priorities Plan, NOAA will enhance our understanding of the link between ocean currents and rapid climate change with an increase of $5 million in support of research on this topic. Finally, an additional $1 million in funding will provide additional computational support for assessing abrupt climate change.

Critical Facilities Investments

The FY 2008 President's Budget Request also includes important increases for critical facilities, necessary to provide a safe and effective working environment for NOAA's employees. Of particular importance this year is the $3 million funding increase to begin design of a replacement facility at the La Jolla Southwest Fisheries Science Center. NOAA is also requesting $20.3 million for continued construction of the new Pacific Region Center on Ford Island in Honolulu, Hawaii. This increase in funding will allow NOAA to complete the exterior renovation of one of the Ford Island buildings, a crucial next step in the construction process.

NOAA's Legislative Initiatives

We appreciate the Committee's interest in reauthorizing the Hydrographic Services Improvement Act, and we thank Senators Inouye and Stevens for introducing S. 1584 on behalf of the Administration. We support enactment of S. 1584, the Hydrographic Services Improvement Act Amendments of 2007, and look forward to working with the Committee to reauthorize this important legislation.

The Hydrographic Services Improvement Act (HSIA) was first enacted in 1998 and amended in 2002. The Administration's proposed bill to reauthorize the HSIA was drafted to better ensure safe, efficient, and environmentally sound marine transportation, and to enhance and promote international trade and interstate commerce vital to the Nation's economic prosperity via the Marine Transportation System. The Administration's bill clarifies the importance of NOAA's hydrographic data and services not only to navigation but also to habitat conservation, coastal resource management, emergency response, and homeland security.

NOAA provides the Nation with nautical charts, as well as information on tides, sea surface water levels, and shoreline and geodetic positioning. NOAA's primary area of responsibility for charting is the U.S. Exclusive Economic Zone, an area including 3.4 million square nautical miles and 95,000 miles of national shoreline. NOAA's hydrographic and shoreline mapping programs deliver precise depths and positions of coastal features. The remote sensing technologies used reveal hazards to navigation such as rocks, wrecks and changes in man-made features. To aid 21st Century navigation, NOAA is now building a suite of Electronic Navigational Charts comparable to the paper nautical charts for U.S. waters. NOAA's tide and current measurements along with Physical Oceanographic Real Time Systems and coastal ocean forecasts inform mariners about changing weather and navigation conditions. NOAA's work on high accuracy positioning, using the Global Positioning System, delivers centimeter-level accuracy to navigate hazards and avoid overhead obstructions, such as bridges. Should an emergency occur, such as a hurricane or vessel collision, NOAA responds rapidly with surveys to find navigation hazards and reopen ports to maritime traffic, and with scientific support for hazardous material spill response and remediation.

The purpose of the Administration's bill is to reauthorize the HSIA for 5 years, and make changes to better ensure safe, efficient, and environmentally sound marine transportation and commerce. The marine transportation system is becoming increasingly congested, with the volume of international maritime commerce expected to double within the next 20 years. The programs and activities authorized by the HSIA also play an important role in the national response to natural and man-made disasters. For example, NOAA experts discovered the submerged wreckage of TWA Flight 800, took some of the first aerial images of Ground Zero after 9/11, and provided a substantial and vital response to hurricanes Katrina and Rita, including surveying affected waterways to facilitate the reopening of 13 major ports to commerce and relief efforts.

In addition to the Hydrographic Services Improvement Act Amendments of 2007, the Administration, through the Department of Commerce, has also transmitted two additional legislative proposals: the National Offshore Aquaculture Act of 2007 and the Coral Reef Ecosystem Conservation Amendments Act of 2007. Again we thank Senators Inouye and Stevens for introducing these bills on behalf of the Administration, as S. 1609 and S. 1583, respectively. Enactment of each of these bills is a priority for NOAA and the Department of Commerce. We appreciate the actions taken by Members of the Committee to begin work on these pieces legislation and look forward to working with you to enact these important pieces of legislation in the 110th Congress.

Conclusion

NOAA's FY 2008 Budget Request provides essential new investments in our priority areas while maintaining critical services, reflecting NOAA's vision, mission, and core values. The work NOAA accomplished in 2006 impacted every U.S. citizen. We will build on our successes from last year, and stand ready to meet the chal-

lenges that will surface in FY 2008 and beyond. NOAA is dedicated to enhancing economic security and national safety through research and accurate prediction of weather and climate-related events, and to providing environmental stewardship of our Nation's coastal and marine resources. That concludes my statement, Mr. Chairman. Thank you for the opportunity to present NOAA's FY 2008 Budget Request. I am happy to respond to any questions the Committee may have.

Senator CANTWELL. Thank you, Admiral Lautenbacher. And I know my colleagues—we have a busy morning here, with an upcoming vote—but I'm sure it's delaying some of my colleagues, but they will have the opportunity to submit questions for the record, and, if you could help us in answering those, we appreciate it very much.

I wanted to talk, first, about the National Weather Service CONOPS program, which is the Concept of Ocean—I mean, a Concept of Operation Initiative. Now, I understand there has been a lot of discussion and controversy around what was originally a proposal to consolidate some of the weather service resources, that led some to be concerned that that consolidation might lead to less staff and less ability to track impending severe weather situations. Can you elaborate on where we are with that, and what the budget reflects, and what your management of that particular program reflects, as far as a priority?

Admiral LAUTENBACHER. Yes, thank you, Madam Chair.

I—as soon as it—this was brought to my attention, I initiated a review of progress on that initiative, what the goals were, where it was, and where it stood. I reviewed it with independent folks, and looked at it, and we have since stopped all work on that program. I believe that some of the concepts, at the beginning of it, to try to improve our products and services, were well thought out, but some of the issues that came up, in terms of trying to deal with it, were not well thought out and constructed. So, it is—has been canceled. I've put out a very firm directive that that is not to be discussed in the terms that it was built in before. We are commissioning a study from the NRC to look at expanding technologies and new services, and having an unbiased outside scientific body look at that. We expect that report to be available next January.

Senator CANTWELL. One of the points of your budget request is actually a plus-up in this area—I think, about a 22 percent plus-up—but I think that—I don't know if that's a reflection of that technology, but one of the things that have been pointed out in this proposed consolidation, I think, of resources, was a staffing issue, particularly for over-the-night observations. And I think what's at stake here is that minutes, in a warning system, can save hundreds of lives. So, we're not—you're sure that there is no continued discussion of programs that would leave some of these severe weather observation programs with only one resource, someone to constantly do data entry, and leave less on the observation side.

Admiral LAUTENBACHER. I can assure you that, after years in the Navy, I do not believe in ever having one person on duty to do anything. So, there is no intention on my part to approve anything that will ever cut down on the ability to have viable backups and viable forecasting capability on station 24 hours a day, and that's what I have told the National Weather Service.

Senator CANTWELL. So, just to clarify, you believe in acquiring data, but also in having observation staff.

Admiral LAUTENBACHER. Absolutely. Remember, forecasting is an art, not a science. It—the forecasts that you get, from hurricanes to tornados, come from forecasters, not out of computers.

Senator CANTWELL. Thank you.

I want to ask about the satellite situation and investment in satellite capabilities, moving forward. I think we're at a little bit of a disagreement, from a budget perspective, of where we need to go to implementing that. You and I also had a conversation about just the amount of information and responsibility already with weather and NOAA and potentially other things that the agency could be doing as it relates to climate change. But one of these opportunities means making sure that we have the right technology. And the geosatellite system that you have now, we're concerned about making sure that we have, in the coming years, a more sophisticated technology than we have today. So, where are we in getting that budget request, to make sure that that upgrade in capabilities is there, not just for today's responsibility, but for what we think is a potential for NOAA to play an even greater role in severe weather change, climate change, and its impacts on the oceans?

Admiral LAUTENBACHER. Yes, thank you.

The satellite systems that we have, I want to assure the Committee and the American public that we have satellite systems in place today that are robust, complete, and have backups, and are ready to support all of the needs that we have for weather forecasting, from tornados to hurricanes to flooding.

We have—there are two main systems that we use. The one is the geostationary system. There are two satellites in orbit that are relatively new. There is an on-orbit backup in that—in position. There is also a secondary backup from a satellite that is still operating. So, we have very robust geostationary satellites on station today. That's the most important piece that we have. The lower-orbit satellite system, called POES, has on-ground backups, is operating today, and provides—that provides 90 percent of the information that goes into our models for hurricanes and for other weather forecasting. That system is robust and working.

We have requested from Congress, for the last few years, money to support the next generation of those two systems. And I appreciate the mark. I believe the mark that came in supports the development of those systems. And they are designed to come online when the current systems run out of backups. If we can continue the funding and the progress on the programs that we have set up today, there is no issue with maintaining the basic satellite coverage and improving the position.

Now, there has been discussion of a satellite called QuikSCAT——

Senator CANTWELL. But, without gaps in——

Admiral LAUTENBACHER. Without gaps.

Senator CANTWELL. OK.

Admiral LAUTENBACHER. Without gaps. There are no gaps in our basic systems. The plans and the money and all of the backup that we have sent up allow us to continue our continuous coverage and improve technology for these two basic satellite systems.

The issue that we've seen in the paper recently is something about a satellite called QuikSCAT, which is an experimental satellite that NASA funded a number of years ago, which we are learning to use in our forecasting of hurricanes, at this point. In the last year, our forecasters have come and said, "This looks like, really, a promising technology. We would like to pursue it." We started, immediately, to look at ways to introduce this technology into our current system. We have, right now, spent money, as soon as we got it from Congress, to start preliminary studies, to look at how to incorporate this technology, either as a free-flyer—a separate satellite system—or incorporated into these two systems that I've just talked about. So, we're very concerned, involved, and supportive of providing the latest technology for the American public.

Senator CANTWELL. Senator Snowe——

Senator SNOWE. Thank you.

Senator CANTWELL.—turn it over for your round.

Senator SNOWE. Thank you.

Admiral Lautenbacher, in looking at the budget again it does represent a major decrease and, as the Chair indicated, you're talking about 3 years of consecutive decline, so it really does have a cumulative impact.

If you look at the inflationary factor, that would be more than 6 percent, when you compare this year's costs versus what we can estimate for the future. So, how do you expect to implement your budget programs with a 2 ½ percent decrease from the level enacted in Fiscal Year 2006, not even accounting for inflation? Furthermore, in looking at the Joint Ocean Commission's Initiative, they recommended $747 million in funding for NOAA above the 2006 level, which would be $4.6 billion versus the $3.9 billion that you have proposed, and that does represent a 2 ½ percent decrease from last year.

So, how do you expect that your level of funding will adequately cover the responsibilities that you are obligated for?

Admiral LAUTENBACHER. Let me add a little perspective to that. We have been able to, each year, increase the President's budget, so our requests to Congress have been increasing. And this year it was increased over $100 million. And that's an important benchmark.

I realize—and I think we all realize—that, in the end, the budget is a compromise between what the President requests and what Congress believes is the right level for funding.

Now, we will have difficulties with inflation and cost of doing business, and I don't—I can't dispute that. Part of the reason is that our actual budget that we've been spending has been capped at around $3.9 billion for the last 3 years, for a variety of reasons. But the good news is that, at least as we've been able to find money and support, working through our programs, we've raised the level, which is very close to what Congress approved last year. The marks that were approved this year are actually not that much different. I think we are doing better, in terms of arriving at something that is a national consensus on the levels of funding for NOAA. I will continue to—as you all know, I'm an enthusiastic advocate of every program we have, and I will work hard to continue

to try to get the funding to ensure that we can promote and provide the programs the public needs.

Senator SNOWE. I understand. And obviously we're in a cost-cutting era, and we have to look at where we can achieve those savings. It just seems to me that, given what Congress actually proposed, over and above what the administration did last year, the level of decrease is going to have an impact on some of these programs, without question. Looking at the Ocean Observing System, for example, the Ocean Commission recommended $138 million to initiate the National Ocean Observing System, escalating to a half a billion dollars within 5 years. And I recognize that that may be an extraordinary amount, at this point in time. But your request is for $2.5 million for the implementation system, and then, in addition, $11.5 million for the regional observations.

So, how exactly is that going to work adequately in supporting this system? That seems to be a small amount, comparatively speaking, to the Ocean Commission's proposals.

Admiral LAUTENBACHER. It is—it is a relatively small amount, but it is better than zero. We—which is what we have had for the last 4 years—we've been able to, first of all, develop an architectural plan that people will support, which requires a great deal of effort. We need to have regional associations which are fairly consistent in how they work together so we can have a national setup. And I think this takes some pressure off of Congress to look at extra funding—extraordinary funding mechanisms to help us move forward. It represents a beginning of a coalescence of agreement on the need for an Integrated Ocean Observing System, which we know is strongly supported by the Ocean Commissions, and is now supported by the Administration.

And so, I look forward to working with you in the future, and in this budget, to try to improve our ability to bring that system online.

Senator SNOWE. Well, I guess the point is that the Administration has relied on Congress to increase the budget. That's exactly what we did last year. Now the Administration has come in with a budget that's less than what we provided for last year. So, that's the position we find ourselves in. Now, we do that year in and year out, but I think it is important for the agency to indicate what is critical for more funding in the areas that it requires. The Ocean Observation System achieves savings, in the final analysis. Report after report has indicated that. We saw that in the Pacific Ocean, they did a report recently, and it saved a billion dollars annually, and the Woods Hole study, which I mentioned in my opening comments. The shipping industry saved, based on the report, $300 million, by revising their weather-based routing system in response to the real-time data that they were able to get. Not only from a financial standpoint, it represents a savings to the government, but also, in terms of lives saved, as well. And so, we have to make sure in this instance, that we give the kind of support to get this system underway, particularly now that we have the authorization. Hopefully, we can get it through the entire Congress. We have managed to get it through the Senate unanimously, but not in the entire Congress. Hopefully that course will reverse itself.

I thank you for the support in getting it included in the agency's budget, and I hope that we can do more to make sure that we solidify this critical program for the entire country. It may be regionally based, in terms of where the systems are located, but it is to benefit the entire country and what we can anticipate for changes in climate and weather forecasting and conditions. So, I thank you for that.

New England groundfishing, as you know, is very critical. As you know, we're in some extremely dire and challenging times. And this is another area that I think warrants tremendous support from NOAA, in terms of investments in cooperative research, for example, that I think is absolutely vital to serve as the underpinnings for any course of action that's taken. Now, the New England Fishery Management Council, last week, decided to table proposals that could have replaced the existing Days-at-Sea program, or at least examine it. I don't think the industry had—you know, they were looking at different proposals. The point systems, for example, was, you know, one proposal, and area management was another.

The groundfishermen have an average of just 40 days at sea, and estimates suggest that levels could be reduced up to an additional 30 percent under Amendment 16 in 2009, leaving fishermen with just 33 days to make a living. Well, if the groundfishing industry is in a crisis, that will become a catastrophe, without question.

So, I guess, what I am concerned about is: why don't we have any existing programs within the agency, given the magnitude of the impact of these regulations they're going to impose on the industry, and people's livelihoods? Why aren't there any existing programs within NOAA that could support additional research and also do an evaluation and examination of alternatives to days at sea, so that we have more information, better information, with which we can make these decisions?

Now the Council delayed any decision, deferred it, because they didn't have enough time. But we don't have enough data, and I think that we should be doing everything that we can to examine potentially preferable systems to days at sea. Now, maybe there aren't any, but we don't know. And when you get an industry in a crisis, clearly it demands looking at ways in which we can find alternatives, and investing a sense of urgency in this situation, that certainly could help other situations across the country. Do we have any programs that could help in this regard, in a timely fashion? I'm not talking about years, here, because they're now contemplating Amendment 16, in 2009, and they're devastated as they are. I mean, we're talking about 47 days at sea. I mean, it has really been having a major impact on the industry.

Admiral LAUTENBACHER. I agree with everything you said. It does have a major impact, and it's very important.

We have, in this budget, about $6 million to look at the research and the needs to try to devise these kinds of programs you're talking about, which are different than days at sea. So, this is an attempt to try to get more emphasis on it.

We have a commitment to try to double the number of what's euphemistically known as the "Limited-Access Privilege Programs" across the Nation. We also have added some funding to increase

the scientific staffs of the—or access to scientific information from the councils so that we can expedite some of the groundwork that's needed to do, to understand what those plans mean and how they would be brought into effect.

So, I'm just as interested in doing this as—in an urgent fashion as you are, Senator, and we'll continue to try to do that.

Senator SNOWE. What would be the timeframe, for example, to get this type of information and analysis and assessment of alternatives? I mean, because that, number one, is critical. Second, you know, the Council indicated that they had to table their decision, because they had to implement a decision before the deadline. Do we have any flexibility in the deadline? That's another question that I'd like to ask, because I think this is truly having some devastating consequences. And we want to look at other alternatives to see if there are any possibilities other than days at sea, so that we have examined an array of options, and we know what is available, what isn't available. I understand that $6 million is targeted for the Limited-Access Privilege Programs, not non-IFQ programs. Is that true, too?

Admiral LAUTENBACHER. I'm sorry, I missed the last——

Senator SNOWE. The 6 million is——

Admiral LAUTENBACHER. It's for——

Senator SNOWE.—targeted for Limited-Access Privilege Programs, not non-IFQ programs. The $6 million that you referred to.

Admiral LAUTENBACHER. Yes, but that money is—can be—could be used to try to work on alternative schemes to what we have today. So, when I used that euphemistically——

Senator SNOWE. OK.

Admiral LAUTENBACHER.—that's what I mean. So, I don't—I can't give you—the Council just had their action. We're going to—we're going to review it and see what——

Senator SNOWE. OK.

Admiral LAUTENBACHER.—we can do to help them get the resources they need, because we would like them to get through their analysis as quickly as possible, obviously. And so, let me get back to you——

Senator SNOWE. OK.

Admiral LAUTENBACHER.—on what a——

Senator SNOWE. I would appreciate——

Admiral LAUTENBACHER.—timeline would be for the results from this latest action, which just occurred.

Senator SNOWE. No, I appreciate that. And you understand the urgency——

Admiral LAUTENBACHER. I do.

Senator SNOWE.—of the circumstances. Thank you.

Admiral LAUTENBACHER. Thank you, sir—ma'am.

Senator CANTWELL. Senator Nelson?

STATEMENT OF HON. BILL NELSON,
U.S. SENATOR FROM FLORIDA

Senator NELSON. Thank you, Madam Chair.

Senator Snowe, we are going, in July, to have a hearing—and I think Chairman Inouye is going to do it at the full-Committee level—on the overall question of the Earth Observing Systems, par-

ticularly with regard to the—with regard to the weather. We are trying to get that set for the date of July the 11th. And, with your interest in this area, if you could be there with us, Chairman Inouye, in my capacity as the Space Subcommittee Chairman, is asking me to chair the meeting—and, of course, with Chairman Cantwell, as well—if you all could participate in that—because it goes far beyond just the narrow question of space, it goes to some of the questions I'm going to ask right now of the Admiral.

Admiral of course we've got the problem with QuikSCAT. What's NOAA's plan for—well, let me say what QuikSCAT is, for everybody. It has been up for about 8 years. It has a 4-year life, and it has lived 4 years longer. It is operating today, giving us wind at the surface, which is a component of determining the direction and ferocity of a hurricane—of an inbound hurricane. It is one of the computations that is used. And, of course, from the satellite position, as opposed to a buoy—a buoy would get certain measurements, but right there. But you don't have thousands of buoys out there. We tried to get NOAA to have additional buoys. The satellite gives you those data points all over the ocean, which then go into their computers that make up the model.

So, this little thing is like the Energizer Bunny, it just keeps going and going, but you never know when it's going to go on the blink. And, years ago, NOAA planned to have a replacement, called NPOES, N-P-O-E-S. NPOES was going to be many things to many people, and that's the problem. They loaded it up too much, and then they found that it wasn't going to work, and it got delayed, it got overpriced, et cetera, et cetera. And now, NPOES is somewhere in the middle of the next decade, like 2015–2016.

So, Admiral, why don't you share for the Committee—What are NOAA's plans for a replacement of QuikSCAT, the quick satellite that is the scatterometer?

Admiral LAUTENBACHER. Yes, thank you, Senator.

As I—let me just mention again that the primary satellite systems that we have for weather forecasting or hurricane forecasting are online with adequate backups, and are working, and plans to continue these with increased technology are in place and on track. We are, as you mentioned—you asked the question about QuikSCAT, which is the experimental satellite that's been put up to try to use data from a scatterometer, which you mentioned, to improve our hurricane forecasting. We have found out, in the last year, from our forecasters, who have spent several years trying to learn how to use the information, that it is valuable. When we found that out, last June, we started an investigative Committee to look at replacing or incorporating that technology, which was not the preferred technology before that point, into the next systems, either as a free-flyer, which we think is the more interesting option, rather than incorporated on satellites which are passive satellites. The QuikSCAT is an active satellite, which needs to be—ensure that you don't over-flood the receptors on the satellites that are passive receivers.

We have put in place a—as soon as we got money, we put in place a study with the Jet Propulsion Laboratory to give us options on how to replace the current QuikSCAT as quickly as possible. And that——

Senator NELSON. And when is that? We have a limited time, we're going to vote on the cloture——

Admiral LAUTENBACHER. I'm sorry. OK. We——

Senator NELSON.—we're going on the cloture motion on the immigration bill, so——

Admiral LAUTENBACHER. We're going to get——

Senator NELSON.—when are you going to have a replacement?

Admiral LAUTENBACHER. We're going to have the study in January of the next year, and then we're going to make a decision. If there's a good—it's—and we don't want to do—have another NPOES, which you've talked about, so we've got to make sure that what we do is correct. We will make a decision, based on a JPL and the expertise that we get from the reviews, on whether to replace that satellite with—as it is——

Senator NELSON. That a——

Admiral LAUTENBACHER.—or go to another technology.

Senator NELSON. OK. But that's a long way to get around to answering my question, which is, when are we going to have a replacement?

Admiral LAUTENBACHER. It will take 3 to 5 years to replace the satellite, as it is. Now, what I want to mention is that we have—that satellite has just—is in good operating condition. We just talked with Mike Griffin the other day. It—we expect——

Senator NELSON. Let's——

Admiral LAUTENBACHER.—it to last another——

Senator NELSON. Knock on wood. Let's hope——

Admiral LAUTENBACHER.—to 4 years, but——

Senator NELSON.—it keeps going.

Admiral LAUTENBACHER.—but we also have in place, in orbit today, another scatterometer. It's on the Joint U.S.-European Polar Orbiting Satellite System. That scatterometer will be in operation through the year 2018 to 2019.

Senator NELSON. And does that scatterometer replace, fully, this scatterometer?

Admiral LAUTENBACHER. It has slightly different specifications on it, but neither scatterometer actually meets the needs of our forecasters.

Senator NELSON. It's——

Admiral LAUTENBACHER. It's all below the levels.

Senator NELSON. It does. Does the data that goes into the computers from the QuikSCAT, which is 4 years beyond its life—its planned life—does what you have up there now replace that? Does it replace it by half? Does it replace it a quarter? What does it replace?

Admiral LAUTENBACHER. We don't——

Senator NELSON.—in the determination, at the end of the day, to get the data for accuracy for the National Weather Service and the National Hurricane Center, to predict the path and intensity of a hurricane.

Admiral LAUTENBACHER. We don't know the answer to that question yet, because that instrument was just launched a few months ago. I have directed the Hurricane Center and our researchers to take the information and start putting it into the models, as we have had to do with QuikSCAT, to try to find out how much it does

replace, or doesn't replace. We don't know the answer to that question. We do know we have a scatterometer that's going to last for another 10 years, should there be a problem with the one that we have today. We are also looking at other ways to—and remember, this is data to one model we're—we're talking about model. The forecast is done by forecasters looking at whole sets and varieties of information.

Senator NELSON. Admiral, there is a huge debate in the weather community over what you said is accurate, or not. You are representing one point of view. There is another point of view. You just stated that it was going to take 3 to 5 years, once you decide to build another replacement for QuikSCAT. You said, earlier, that you're going to have a study, and then decide, then you've got to come and get the appropriations here, it's got to go through that process. So, we're in hurricane season 2007. At the earliest, we could get the money in 2008, and another 3 to 5 years, you're now looking at 2013, if the decision was, in fact, made. And the question is, Is the Nation unprotected by NOAA having flubbed the dub with NPOES? And are we in a situation that we are in an unprotected position? And what are we going to do about it?

Admiral LAUTENBACHER. We are clearly not in any position like that, Senator. We have very good satellite systems that are up there today. They produce 90 percent of the information that goes into our models and our predictions. We have, in process, a set of satellites that are going to replace those, that are working. NPOES is on schedule, it's back on track. Until a year ago, the technology that everybody wanted was conical microwave imaging to get the wind field on the surface of the Earth. In the last year, people have decided that maybe the scatterometer will work better, so now we are looking at both, we are going to build—we are going to build a microwave imager, as well, to put on the NPOES satellite, and there is also a WINDSAT up there today, which has that technology on it, which is being tested. I've also directed that that be put into the models, as well, to look at—see what's going on with it.

So, we have a number of backups in place to help us continue our progress. We—you have to look at the progress on hurricane forecasting. It's improved 3 ½ percent year—per year for the last 20 years, because of a variety of observational inputs—and thanks to Congress for helping us for those inputs—our aircraft, which make up the most important part of determining the track, and our modeling, which—where we've been able to use higher-power computers, better representations of the physics of the formation of vortices that begin the hurricane. So, we have had improvements over 20 years, and I suspect that we're going to have an improvement this year to—thanks to the buoy systems you've talked about and the new instruments and the new aircraft that we're putting up, as well.

So, there's a variety of—defense-in-depth, I would call it, from a military point of view, that we have. And no one is unprotected, at this point, Senator.

Senator NELSON. Admiral, I represent a state that cannot afford a mistake, to have the very best data in accuracy of predicting the path of a hurricane. And I'm going to ride this one hard. There's

no excuse for NOAA and the other agencies to have goofed, as they have with NPOES. NPOES could not even be considered before 2015. If we're going to get a satellite up—when, by the way, do you think that you will have the recommendation and the plan for replacing QuikSCAT? When can you come to the Congress so that we can go to work on that?

Admiral LAUTENBACHER. I'm hoping that we can have something for the 2009 budget. And I have enough money to continue that process to ensure that we can make a—what I would call a reasoned decision that we're not wasting money, and we're providing the best protection that we can get.

Senator NELSON. Thank you, Madam Chairman. And let me just say that I can't tell you the intensity—Admiral, you and I have discussed this privately—I've shared with you, privately,—the intensity of the feeling of the people that live in the path of a hurricane to have the most reliable and accurate data.

Thank you, Madam Chair.

Senator CANTWELL. Well, thank you, Senator Nelson, for your line of questioning and for arranging for a full-Committee hearing on this. Prior to you arriving, both of us—Senator Snowe and I had brought this issue up. Admiral Lautenbacher assured us that we weren't going to see any gap in service during that time period. So, I think having a much more illuminating hearing, just specifically about the technology, is vitally important. We want to make sure that not only is it the right technology and robust enough, that its deployment is at a time and an implementation that does leave no gap in service.

So, we will look forward to participating in that, I believe, July 7—or——

Senator NELSON. It's the eleventh.

Senator CANTWELL.—the eleventh—July 11 hearing, and discussion on that.

And, plus, I also believe that the implementation and technology decisions, given tight budget times—we can't make mistakes, either, in finding out later that there was something that was more robust—leaves us without the ability to go back and make that acquisition, too. So, let's make sure we're getting it right and getting it implemented. And so, I applaud you for your concern.

Admiral Lautenbacher, if I could go through a couple of other issues. You and I had a chance to talk, in my office, about the Tsunami Warning System and its buoys and its upgrades, and I will not go further on that, although I think we probably will have some more conversations, to make sure that that system is reaching its—with the second version of deployment of what I'm calling "smart tsunami buoys"—reaching its achieved performance, and that we aren't seeing, again, gaps in—or, let's say, breakdowns in buoys that have been deployed, and then aren't working, and then aren't giving communication and data back. So—but, at some point, maybe you and I—we can have, in a—follow-up written questions, answers to that.

But radar is an important issue. And can you explain why the coastal regions of Washington and Oregon have significantly worse radar coverage than the rest of the continental United States? And what can we do to protect the fishermen in those areas who are

obviously practicing their trade and rely on that important system for information?

Admiral LAUTENBACHER. There are radar shadows, obviously, on the Pacific—on the Olympic Peninsula Coasts. So, while we have radar coverage, they are altitude-limited by the shadows that the mountains cast.

Our systems were set up to cover what I would call the most populated, important areas of where people—most of the people live, and where our airports are. So, there are some places that don't have complete coverage. The options could be smaller radar systems, such as the weather channels use today, to put in place, that have smaller coverage. That's about the only thing that could be done, at this point, is to have some kind of another radar system put in place for a smaller area, beyond the shadow of those mountains.

Senator CANTWELL. And that's something that NOAA could do within its budget?

Admiral LAUTENBACHER. We do not have that planned in our budget, at this point, no.

Senator CANTWELL. Well, I think we need to look at making sure that there aren't gaps in service, particularly in—we don't, in the Northwest, have as severe a weather forecast as my colleague from Florida was talking about, but I think we need to understand where there are gaps in services, and how those are being met with, and, I think, figuring out whether smaller systems can add to full coverage. So, we'll look forward to trying to resolve that issue with you.

I see many participants from the salmon recovery efforts in the Northwest in the audience, and wanted to ask you about the proposed plan to meet the BiOp—the Federal BiOp requirements on endangered salmon and steelhead, and to make sure that we are going to continue to execute that plan, working with a variety of parties. I know that you've submitted a preliminary plan. Obviously, we have a Federal court review, wanting to see that we have an adequate plan on salmon recovery, or we're going to end up back in the courts on this issue. So, how are we proceeding in making sure that all parties are participants in the development of what will meet a Federal standard for salmon recovery?

Admiral LAUTENBACHER. We have funding to continue to support our partnership with the various entities in the Northwest, and we continue to work on the BiOp that we have to ensure that we can—and we're looking at the Congressional review after the late—or judicial review after the latest Supreme Court decision. This continues to be an extremely important facet of our Northwest issues, and we will continue to work to provide whatever funding we can in the partnership, and develop recovery plans, and meet the needs of the recovery plan.

Senator CANTWELL. I think you just said the optimum words, though. With the reduced funding, do you think that you can meet and come up with a plan that will meet——

Admiral LAUTENBACHER. I——

Senator CANTWELL.—Federal requirements? That's my question.

Admiral LAUTENBACHER. Yes. I believe we have enough funding in our budget to meet the requirements that will come up, and——

Senator CANTWELL. Even though we've seen a significant decrease in those funds in the last several years.

Admiral LAUTENBACHER. And I would—I don't—I hesitate to point out that that was—that cut was originated by Congress, originally, so it was very hard for me to go back and get any more money in the Salmon Recovery Fund, if you're—if that's what you're talking about, the State money that's distributed. So, we have been able to meet——

Senator CANTWELL. I'm talking about overall budget requests, from where they've been, say, over 7–8 years.

Admiral LAUTENBACHER. The Salmon Recovery Fund is at the levels that Congress set it at a couple of years ago, and it continues to be supported at those levels.

Senator CANTWELL. I think that there's a difference of numbers, but we'll get back to you——

Admiral LAUTENBACHER. OK.

Senator CANTWELL.—as it relates to—it's been historically funded at a much higher rate than we are currently funding it at, and my point is that the—below historical lows, that—the question is, what does it take for us to meet that Federal mandate on coming up with a concrete plan?—or we'll be back to a much more aggressive Federal process for salmon recovery. I think that, as I mentioned in—earlier, that things are working well with a collaborative effort, but they need to have the resources, at the local level, to implement that plan. So?

We are looking forward to seeing your recovery plan for the orca whale population. Do you have sufficient funds and the critical research information to provide that? And when will we see that particular recovery proposal?

Admiral LAUTENBACHER. We do believe there is sufficient money to complete that recovery proposal. We're expecting that it will be finalized by the end of this year.

Senator CANTWELL. The integration of that plan with other Federal agencies—I understand that the Navy is planning an exercise off the coast, to test their sonar capabilities. In the past, we have seen that those sonar capabilities have an impact on the orca population. Will your mitigation plan include discussion and recommendations on the Navy's sonar system?

Admiral LAUTENBACHER. I can't sit here and prejudge what the exact plan will look like, but I can——

Senator CANTWELL. But will it——

Admiral LAUTENBACHER.—assure you that it is taking into account the issues of sonar transmissions, because that is part of the public record and part of what we're going to deal with as we look at the plan. So, that will be specifically taken into account——

Senator CANTWELL. And you will——

Admiral LAUTENBACHER.—in the plan.

Senator CANTWELL.—give us a recommendation, one way or another? I'm not saying—I'm not prejudging what that recommendation is, but you will address——

Admiral LAUTENBACHER. We will address it.

Senator CANTWELL.—what have been the concerns of many about the sonar impact on that population.

Admiral LAUTENBACHER. We will address that—that fact—directly.

Senator CANTWELL. And, last—I don't know if my colleague has further—well, let's—I know we have a vote, so I'll let Senator Nelson jump in, here.

Senator NELSON. Admiral, on a different subject, the NOAA budget cut the research on red tide from $21 million to $10 million—$21 million was back in 2005, and it's down to $10 million—in extramural research. We've had a phenomenon, the last several years, particularly on the west coast of Florida, of enormous problem with all kinds of physical, medical effects on people from the red tide. And I want to know if there's any way, in these harmful algal blooms, that we can get that research up.

Admiral LAUTENBACHER. The harmful algal bloom budget, and the program, is very important to us. We have a number of efforts going on—in west Florida, in particular—to try to deal with it. I believe our budget that we have today can continue those efforts. We have been given some funds, occasionally over the years, on special projects that Congress has considered very important, and, obviously, we want to work with you on—in any way we can deal with those issues. But we have funds in there today to help continue the program. We have—first of all, we put out month—or weekly bulletins to all the managers up and down the coast. We provide "harmful algal bloom" forecasts. So, we're at the point now where we can tell people when it's going to happen, warn people. We also have programs that are looking at the research onto what it takes to find out how they got started, to begin with, the causes, and then look at trying to mitigate that in some way, so we can eventually work to the process where we don't have these things. But that's going to require more in-depth research for the causes and for mitigation effects. But there are several projects that are funded in the budget that will do that.

We also look to expanding these "harmful algal bloom" forecasts throughout the Gulf into the Texas region, as well, given—with the funding that we have.

Senator NELSON. So, you want to stick with the $10 million in that extramural research, instead of increasing.

Admiral LAUTENBACHER. I'm here to support the President's budget, Senator.

Senator NELSON. Thank you.

Senator CANTWELL. Admiral Lautenbacher, one more question about operationalizing climate change and the science and information. How can NOAA play a larger role on that?

Admiral LAUTENBACHER. I think that there is a need to have what I would call definitive climate information from a source. There has been much talk over the years about a National Climate Service and what that would entail. I think we're matured to the stage—we didn't talk about more of the satellite issues, but we also have climate sensors to put on satellites, as well. The climate needs to be defined in a way that we have reliable, verifiable government information that comes from one agency, or whatever is decided, that is operational, that is something—this is the Government Climate Forecast, whatever it is. Today, we have a consortium of agencies that work on it, which is important, and we've done a lot

of good work—with NASA, with Energy, with Agriculture, with Interior, with the Commerce and NOAA—working together on the research end of it. What I'm suggesting is that it's probably time to think about an operational component that provides regular, verifiable reports, which are government data, in which I'm subject to the questioning of the Committee. It's open. It becomes something that's public record and can be believed and trusted by everyone.

Senator CANTWELL. And you think NOAA could play a larger role in that.

Admiral LAUTENBACHER. I think that NOAA is certainly—would be a good candidate to look at ways to work on this, and I'm certainly always—I have been interested in this for a long while.

Senator CANTWELL. Well, thank you, Admiral Lautenbacher, for your testimony today and answering our questions. As you can see, the Committee members that showed up have very intense regional issues, but they are national in scope, as well. So, we'll look forward to continuing to work with you on this budget authorization legislation.

This Subcommittee meeting is adjourned.

[Whereupon, at 11:15 a.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

This year the National Oceanic and Atmospheric Administration (NOAA) is celebrating the 200th anniversary of the creation of its U.S. Coast and Geodetic Survey, or the "Survey of the Coast" as it was called when created by President Thomas Jefferson in 1807. As our Nation's first scientific agency, this agency provided nautical charts to the maritime community, and laid the foundation for the standard set today for safe navigation of our waterways.

Ironically, for the past several years, the budget for hydrographic services has been insufficient, and at the current rate, the backlog of surveying critical areas will not be complete until 2020. This year's budget proves no different. Unfortunately, the budget for hydrographic services is simply a reflection of the systemic underfunding of NOAA's critical programs during the past several years.

Senator Stevens and I have been longtime supporters of NOAA and have spent our careers working to improve its capabilities and advance its service to the Nation. NOAA is a remarkable, national resource, particularly when one compares the accomplishments of its missions against the agency's budget.

Whether it is accurate forecasting for landfall of a hurricane, or weather forecasting of early freezes, all of which have significant impact on personal safety and the economy, or fisheries management, or climate research, these are all missions that have an impact on society today and for future generations. Meanwhile, NOAA's budget has remained stagnant; specifically, this is the third year in a row that the NOAA budget reflects level funding.

The Joint Ocean Commission Initiative released a report card earlier this year to assess how well we are collectively doing to implement the recommendations of the U.S. and Pew Ocean Commissions. They once again rated progress in increasing ocean funding as an "F."

It is clear that we are at a crossroads. The growing number and severity of problems compromising the health of our coasts and oceans is obvious. The science of global warming is clear.

The delays and cost overruns of our satellites are unacceptable. I look forward to hearing Admiral Lautenbacher's assessment of how all of these developing needs can be addressed given current budgetary trends.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MARIA CANTWELL TO VICE ADMIRAL CONRAD C. LAUTENBACHER, JR.

General Budget

Question 1. While I understand that you support the President's budget, does this year's FY08 budget request give you the funding you need to do *all* the things required of NOAA by Congress? If not, what do you estimate you would need?

Answer. The FY 2008 President's Budget Request provides a sufficient amount of funds for NOAA to carry out its statutorily mandated responsibilities while addressing our highest priorities.

Question 2. Admiral, we understand that the appropriations subcommittee on Commerce, Justice, and Science marked up a spending bill this week that would provide NOAA with $4.2 billion for FY 2008. We further understand that up to $795 million of this would be used to implement the recommendations of the Joint Ocean Commission Initiative. Can you please tell me how NOAA would prioritize implementing these recommendations?

Answer. The priorities outlined in *U.S. Ocean Action Plan* are NOAA's top priorities. NOAA is requesting a total of $123 million in spending directly related to the *U.S. Ocean Action Plan* in the FY 2008 President's Budget, including $60 million for enhanced ocean science and research, $38 million for protection and restoration of marine and coastal areas, and $25 million for sustainable use of ocean resources.

The increases will allow NOAA to continue to implement several priority management goals, including vessel tracking and enforcement, and ecosystem characterization for the recently designated Papahānaumokuākea Marine National Monument. Funding is included to implement a number of requirements of the recently reauthorized *Magnuson-Stevens Fisheries Conservation and Management Act,* including improvements in data collection of recreational fishing information, and the development of Limited Access Privilege Programs that provide exclusive privileges to harvest a quantity of fish. The President's FY 2008 budget request also includes funding that will allow NOAA to develop initial operating capability for regional components of the Integrated Ocean Observing System (IOOS). To date, 73 of the 88 actions from the *U.S. Ocean Action Plan* have been met, and a key factor in implementing the *U.S. Ocean Action Plan* actions has been NOAA's commitment to invest in moving the plan forward.

Satellites

Question 1. As our current climate and ocean monitoring satellites age and begin to fail, how does NOAA plan to mitigate the loss of the critical weather-related and climate data they provide?

Answer. NOAA has a continuous planning process to develop its next generation satellites to provide data on weather, satellite oceanography, and climate. NOAA's plan is to provide uninterrupted satellite data through at least 2026 from the next generation geostationary satellites, known as the Geostationary Operational Environmental Satellite R-Series (GOES–R), and the next generation polar-orbiting satellites, known as the National Polar-orbiting Operational Environmental Satellite System (NPOESS). Through the NPOESS and GOES–R systems, NOAA has been working closely with the National Aeronautics and Space Administration (NASA) and, where applicable, the U.S. Air Force to satisfy requirements of the National Weather Service, National Ocean Service, and the NOAA Climate Program.

In response to a request from the White House Office of Science and Technology Policy (OSTP), NOAA has been working with NASA to identify options to mitigate the loss of climate sensors from the Nunn-McCurdy certified NPOESS program. NOAA and NASA requested assistance from the National Research Council (NRC) Space Studies Board to assess the state of Earth observations, including the impact of the 2006 changes to the GOES–R and NPOESS programs. A special NRC group of experts has assessed the impact on climate monitoring capability of the NPOESS Nunn-McCurdy certified program. NOAA and NASA are currently preparing a mitigation assessment for the Executive Office of the President.

Question 2. Does the current state of the NOAA satellite program pose a threat to our ability to research, monitor, and understand climate change in the coming years?

Answer. The current state of NOAA's satellite programs does not pose a near-term threat to our ability to research, monitor, and understand climate change. NOAA's Polar-orbiting Operational Environmental Satellites (POES) continue to provide invaluable global data to support climate monitoring. A major improvement in the quality of data to measure select climate parameters will occur with the launch of the National Polar-orbiting Operational Environmental Satellite System (NPOESS) Preparatory Project (NPP) in 2009 and the first NPOESS satellite in 2013.

In addition to using POES, NOAA is currently making full use of National Aeronautics and Space Administration (NASA) research satellites, the Department of Defense's Defense Meteorological Satellite Program, and international agency collaborations to satisfy the climate data requirements. NOAA continues to work with NASA to implement a plan to minimize the gap in climate data record, including preparing a mitigation assessment for the Executive Office of the President. As discussed in the joint NOAA–NASA July 10, 2007 report submitted to Congress pursuant to Pub. L. 109–155, NOAA and NASA are examining re-establishing the Operational Satellite Improvement Program to refine instrument requirements and plan for future NOAA operational missions that build on NASA research activities.

Climate Change, Hurricanes, and Ocean Acidification

Question 1. Can you please detail specifically how the proposed 9 percent cut to NOAA's climate change programs would be implemented and specifically what programs would be affected? Why exactly were these cuts made?

Answer. In FY 2008, NOAA has requested $239.8 million for climate-related activities. This figure is 8.3 percent less than the $261.5 million NOAA will spend on climate-related activities in FY 2007. It is important to note that the President's FY 2008 Budget request for climate-related activities reflects an increase of $13.3 million over the President's FY 2007 request.

Examples of the major programs funded in the FY 2007 spend plan that are not included in the FY 2008 President's Budget include approximately $15 million for satellite climate sensors. The Administration included this funding in FY 2007 to maintain some options while evaluating whether climate sensors that had been demanifested (removed) from the Nunn-McCurdy certified NPOESS program should be restored. The Office of Science and Technology Policy (OSTP) coordinated a joint NOAA-National Aeronautics and Space Administration (NASA) study to assess the impact of the demanifested sensors. NOAA and NASA are preparing a mitigation assessment for the Executive Office of the President.

In addition, in FY 2007, approximately $4 million in one-year funding was included for the Integrated Ocean Observing System (IOOS) climate sensors. The remainder of the additional FY 2007 funding was for climate-related grants and contracts. The President's FY 2008 budget also includes a $1.3 million reduction to base funding for the Global Climate Observing System to partially offset the climate-related increases requested, and no other cuts to climate funding were made.

The FY 2008 budget request includes $239.8 million for climate-related activities, and this figure includes:

- $20.5 million for drought-related activities, $8.4 million of which is specifically for the National Integrated Drought Information System (NIDIS) in support of the NIDIS bill signed by the President in December 2006;
- NOAA's contribution for the Climate Change Science Program, of which $46 million is for programs that directly support the Climate Change Research Initiative; and
- $11.2 million for understanding and predicting abrupt climate change, which includes a $5 million increase for studying the Atlantic Meridional Overturning Circulation, *i.e.,* the "ocean conveyor belt".

Question 2. Can you elaborate on what NOAA is doing to develop a clear, coherent strategy, for improving our understanding of the science underpinning the interactions of ocean and climate? Will parts of this strategy address how we equip Federal, state and local managers to mitigate the impacts of climate change in coastal areas?

Answer. The Administration's *U.S. Ocean Action* plan provides the foundation to advance the next generation of ocean, coastal, and Great Lakes policy. The National Science and Technology Council's Joint Subcommittee on Ocean Science and Technology (JSOST) recently completed *Charting the Course for Ocean Science in the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy,* which presents research priorities focusing on the most compelling issues in key areas of interaction between society and the ocean. One of the major themes of *Charting the Course for Ocean Science* is the ocean's role in climate. In particular, the President's FY 2008 budget request for NOAA includes $5 million for research to assess the Atlantic Meridional Overturning Circulation and its role in climate variability in support of one of the four near-term priorities outlined in *Charting the Course for Ocean Science*. This research is an integral part of NOAA's strategy to address how to equip Federal, state and local managers to mitigate the impact of climate change in coastal areas. This request will support the development of now-casting capabilities and experimental products critical to predicting the current and future state of the Atlantic Meridional Overturning Circulation as well as support an assessment of potential impacts of rapid Atlantic Meridional Overturning Circulation changes on ecosystems, regional sea-level changes, regional climate, and socioeconomic systems. These capabilities and products will be a valuable resource for understanding the impacts of potential abrupt climate change.

The Intergovernmental Panel on Climate Change Fourth Assessment Report's Working Group II report entitled "Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability" identifies several potential impacts of climate change on the people and natural systems of coastal regions as a result of rising sea levels, coastal erosion, changes in sea surface temperature, and increased flooding. The report also identifies the importance of human pressures and behavior in shaping the vulnerability and adaptive capacity of coastal regions. Given NOAA's coastal science and management mandates, the agency has a key role to play in supporting adaptive capacity of communities and ecosystems in coastal regions.

Numerous NOAA offices and programs involved in coastal efforts are actively considering the implications of climate for their stakeholder communities and partners, and several have initiated or are expanding existing courses of action to address the issue. NOAA recently convened a highly successful workshop on Climate Science and Services: Coastal Applications for Decision Making through Sea Grant Extension and Outreach in Charleston, South Carolina (April 10–12, 2007). The workshop

marks an important step in the development of an expanded partnership among NOAA's climate and coastal programs in an effort to provide enhanced support and services for national, state, and local constituencies concerned with coastal resource management and planning in the face of a dynamic climate system. Another example is the efforts of NOAA's Office of Ocean and Coastal Resource Management, which over the past year has been working in partnership with the Coastal States Organization in leading a visioning exercise involving coastal managers and stakeholders on the future direction of coastal zone management. By far, the foremost topic among emerging issues identified at the visioning forums has been the need to anticipate the impacts of climate change through enhanced technical assistance, planning and management.

Question 2a. How can we *operationalize* climate change science to provide the information products local communities and managers need?

Answer. There are several NOAA programs that provide climate information and products to local communities and managers. One example of a program that demonstrates how NOAA operationalizes climate change science to provide these information products is the Regional Integrated Sciences and Assessments (RISA) program. The RISA program supports integrated place-based research across a range of social, natural, and physical science disciplines to expand the options of decisionmakers in the face of climate change and variability at the regional level. The RISA program does this in a manner that is cognizant of the context within which decisionmakers function, and the constraints they face in managing their climate-sensitive resources.

RISA teams are comprised of researchers from the physical, natural, engineering and social sciences who work together and partner with stakeholders in a region to determine how climate impacts key resources and how climate information could aid in decisionmaking and planning for those stakeholders. This effort often includes analyses of adaptation options in the face of a varying and changing climate.

Because RISA teams conduct research, assessments (*e.g.,* develop white papers, newsletters, and/or seasonal outlooks) and stakeholder interactions (*e.g.,* workshops, focus groups, extension activities) on a continual basis, they are being called upon more and more to act as a bridge for bringing climate impact information to decisionmakers. These teams also work with the climate services networks within their region, such as, state climatologists, National Weather Service offices, Regional Climate Centers, and other Federal agencies working on climate impact information. Topics covered by individual RISA's depend on regional interests. Examples include: agriculture, wildland fire, water resources, drought planning, fisheries, public health, coastal climate impacts, and transportation.

Another example of a program that provides climate information and products to local communities and managers is the Climate Dynamics and Experimental Prediction (CDEP) Program. The CDEP program supports NOAA's efforts to improve global climate predictions on seasonal to interannual timescales, and brings the science of climate forecasting into policy and decisionmaking. In particular, NOAA plans to improve its operational intraseasonal to seasonal drought and climate forecast capability by using ensembles of multiple state-of-the-art coupled climate models to better quantify forecast uncertainties and reduce forecast errors. NOAA also plans to increase the scope and applicability of its operational climate forecasts by developing new and improved drought forecast products to meet the needs of decisionmakers.

Another example is the National Integrated Drought Information System (NIDIS). NOAA's vision for NIDIS is a comprehensive, user-friendly, web accessible system to serve the needs of policy and decisionmakers at all levels concerned with drought preparedness, mitigation, and relief/recovery. Water resource managers, ranchers, farmers, hydropower authorities, municipalities and state agencies will have more comprehensive and timely information to inform their decisions regarding allocation of water, or planting and purchasing feed for livestock. NIDIS is supported by NOAA's current operational drought monitoring and outlook products and NOAA's applied climate research. In June 2007, the *NIDIS Implementation Plan* was published, which outlines the governance structure, priorities, and operational requirements needed to meet the objectives of the program.

The Transition of Research Applications to Climate Services (TRACS) Program is another program designed to operationalize climate change science. The TRACS program supports the transition of well-developed research and prototype products, processes and policy tools that will expand the use of climate information by regional decisionmakers (*e.g.,* private sector, agriculture, state and local government). The TRACS program seeks not only to support the implementation of these transitions, but also to learn from users how we can better accomplish technology transition in the future, for public goods applications and improved risk management.

TRACS works with universities, NOAA laboratories and operational units, and stakeholder groups.

Question 3. While reducing emissions of CO_2 to ensure that climate change remains in check is an incredibly important effort, the fact remains that climate change is already happening. Our local managers need to have the tools to cope and adapt in the face of the changes we're seeing and are likely to see. Admiral, are NOAA managers factoring climate change into their management strategies in order to ensure species remain resilient and able to *adapt*?

Answer. NOAA is both the Nation's climate information provider and also a consumer of that information, with respect to managing the effects of climate change in marine and coastal environments. Resource managers at the Federal level are now beginning to factor climate change into their management strategies and planning. In addition, through partnerships with NOAA, state and local resource managers are being provided with the information needed to do the same.

NOAA's Coral Reef Conservation Program provides a variety of tools and information to help NOAA and other managers incorporate climate change as a factor when developing management strategies to promote resilient coral reef ecosystems. NOAA's Coral Reef Watch program provides reef managers and others around the world with near real-time warnings of coral bleaching events. These warnings allow managers to mobilize targeted monitoring efforts to assess impacts and identify areas of high resilience to bleaching events, keep users and the public informed of reef conditions, and take management action to reduce other stressors on the reef.

In 2006, NOAA and its partners produced *A Reef Manager's Guide to Coral Bleaching,* which articulates the state of knowledge on the causes and consequences of coral bleaching, provides information on responding to mass bleaching events, and highlights how to develop bleaching response plans and other management strategies. The guide helps reef managers increase the resilience of coral reefs and related ecosystems to expected changes in the global climate system. NOAA and its partners are conducting trainings for coral reef managers on use of the guide in 2007–2008. In addition, coral reef managers in Hawaii, Guam and American Samoa have developed Local Action Strategies to address impacts of climate change on coral reef ecosystems as part of a U.S. Coral Reef Task Force initiative. NOAA is helping to support implementation of these plans and development of similar plans in other U.S. coral reef regions.

With assistance from the Federal Coastal Zone Management (CZM) Program, several state CZM programs have already undertaken initiatives to identify and adapt to climate change and sea level rise. Among those initiatives:

- The Maryland CZM Program (MCZMP) has developed a Sea Level Rise Response Strategy for the state of Maryland, acquired high resolution elevation data for coastal areas, and funded a state-wide reassessment of shoreline change and erosion rates. The work of the MCZMP was instrumental in the development and issuance of an Executive Order establishing a State Commission on Climate Change. The MCZMP is leading the State Commission's Adaptation and Response Working Group that will develop a Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change.
- The San Francisco Bay Conservation and Development Commission (BCDC) is conducting a climate change study to identify the impacts of climate change, update policies that may pertain to climate change effects, and organize a regional program to address climate change. BCDC is working with the NOAA Climate Program's Regional Integrated Sciences and Assessments Program to obtain data to develop maps of San Francisco showing the impacts of a one-meter rise in sea level.
- The New Jersey Coastal Management Program is preparing guidance for establishing buffers to allow wetlands to migrate in response to sea level rise.
- The North Carolina Division of Coastal Management has been an active partner with the NOAA Ecological Effects of Sea Level Rise Research Program. The State has provided invaluable input on planning the pilot project for North Carolina, designing the research, and the use of modeling tools.

NOAA also has the Climate Regimes and Ecosystems Productivity program designed to understand and predict the consequences of climate variability and change on marine ecosystems. The goal of the program is to develop forecasts of changes in fishery, coastal, and coral reef resources in response to climatic changes. The forecasts provide users and managers of ocean and coastal resources information, such as the Fishery Management Councils and Coastal Zone Managers, the information they require to adapt to changing climate regimes. Specifically, the program focuses on climate change and ecosystems in the North Pacific.

Presently, the only U.S. fishery that explicitly uses climate data in its management plan is the Pacific sardine. For this fishery, a variable fraction of the population is allowed to be harvested depending on the average ocean temperature for the preceding three seasons. This management approach allows more of the stock to be harvested when conditions are conducive to high sardine productivity, while less is harvested when conditions are less conducive to sardine productivity. This management strategy thus ensures adequate stock size for reproduction for future years by factoring climate information into the management plan.

A number of NOAA's research programs have begun to consider how climate change, and specifically ocean acidification scenarios, may impact other regulated species—particularly bivalve mollusks, crustaceans, and species dependent on shallow-water coral reefs. Over 50 percent of the value of U.S. fisheries derives from clams, scallops, and oysters, and various species of shrimp, crab, and lobster. These shellfish are thought to be particularly vulnerable to the effects of reduced levels of calcium carbonate in the oceans due to increasing acidity. NOAA's National Marine Fisheries Service has initiated a few pilot studies to attempt to understand these impacts.

Ocean Governance

Question 1. In implementing the recommendations of the U.S. Ocean Action Plan, which do you believe is the larger hurdle—obtaining the necessary funding for oceans programs, or overcoming the inadequacies of our current system of ocean governance?

Answer. The Administration responded to ocean governance issues with an Executive Order that established, within the White House, the Committee on Ocean Policy and mandated coordination among Federal agencies including coordination and consultation with local and foreign governments and the private sector. The Committee on Ocean Policy and its associated governance structure (including the Interagency Committee on Ocean Science and Resource Management Integration, the Subcommittee on Integrated Management of Ocean Resources, and the Joint Subcommittee on Ocean Science and Technology) are facilitating the development and implementation of common principles and goals for governmental activities, as laid out in the *U.S. Ocean Action Plan.* The overarching goal is to improve the collection, development, dissemination, and exchange of information across agencies, and reduce fragmented management and policy approaches.

NOAA is requesting a total of $123 million in spending directly related to the *U.S. Ocean Action Plan* in the FY 2008 President's Budget, including $60 million for enhanced ocean science and research, $38 million for protection and restoration of marine and coastal areas, and $25 million for sustainable use of ocean resources.

NOAA believes these are bold steps in the right direction toward the intent of the U.S. Commission on Ocean Policy and the *U.S. Ocean Action Plan.* Ocean and coastal governance is benefiting from more systematic collaboration and better interagency coordination across Federal agencies as a result of the Committee on Ocean Policy, and associated governance structure.

Question 2. The Administration has suggested an organic act for NOAA. It is my understanding that NOAA's responsibilities are spread out among over two hundred separate statues. Do you think passage of an organic act should be a priority for this committee and for Congress? How would it help NOAA better accomplish its mission of protecting and restoring our oceans and coasts?

Answer. The U.S. Commission on Ocean Policy stated that Congress should "solidify NOAA's role as the Nation's lead civilian ocean agency through the enactment of a NOAA organic act that codifies the agency's establishment within the Department of Commerce, clarifies its mission, and strengthens the execution of its functions." The U.S. Commission on Ocean Policy and the Administration, as stated in the *U.S. Ocean Action Plan,* agree that the single most important step that can be taken to ensure NOAA meets its operational goals and fulfills mission responsibilities is the enactment of a NOAA Organic Act. We believe enactment of a broad organic act that provides basic agency-wide authorities would allow NOAA to more efficiently conduct the activities needed to meet its statutory requirements. The Administration transmitted a NOAA Organic Act to Congress in 2005, and has plans to transmit a bill again in the 110th Congress.

Weather Radar Coverage on the Northwest Coasts

Question 1. I understand from Washington state fisherman and mariners that there is little useful weather radar coverage over Northwest coastal waters. Unfortunately, in contrast to the rest of the country, this means that Northwest weather forecasters lack crucial information about dangerous weather features such as heavy precipitation and strong winds. Do you think additional radar information could

help improve coastal search and rescue operations in that region and potentially save lives?

Answer. The radar coverage over the coastal waters off and along the Pacific Northwest coast was improved with the installation of the Weather Surveillance Radar-1988, Doppler (WSR–88D/NEXRAD) network. NOAA's National Weather Service (NWS) weather forecasters use data from several sources including buoys, satellites, surface reports, and spotter reports, in addition to weather radar data, to prepare weather forecasts and warnings. In March 2005, the NWS completed a study titled: *Objective Methodology and Criteria to Assess Requirements for Additional Weather Radars*. We applied this methodology to the west coast of Washington and determined NWS has no requirement for an additional WSR–88D radar in western Washington.

We agree with the recommendations from the National Research Council study *Flash Flood Forecasting over Complex Terrain: With an Assessment of the Sulphur Mountain NEXRAD in Southern California* (National Academies Press, 2005), stating all available Federal radar data should be made accessible to the NWS, as well as local television station Doppler radars and operational radars from other organizations. The study recommends, "The NWS should consider augmenting the NEXRAD network with additional short-range radars to improve observation of low level meteorological information." NOAA is addressing these recommendations by accessing Federal Aviation Administration (FAA) Terminal Doppler Weather Radars (TDWR) and FAA radars supporting air traffic. In addition, we are working with the University of Massachusetts and the National Science Foundation's Center for Collaborative Adaptive Sensing of the Atmosphere program to determine the feasibility of integrating a number of small-scale Doppler radar technologies into our observing systems in the future.

Question 2. I understand that offshore military operations would also greatly benefit from this crucial weather information. As a former Navy Admiral, do you concur with this assessment?

Answer. The Department of Defense (DOD) requirements for weather radar coverage along the Pacific Northwest coastal waters were met with the installation of the original NEXRAD network installation. I am unaware of any new DOD requirements.

Magnuson-Stevens Act Implementation

Question 1. I'm concerned that NOAA does not have adequate resources budgeted to meet many of its congressional mandates. In particular, I'm concerned about funding for implementation of the Magnuson-Stevens Act, which we passed just last year. The Congress and the Administration were very clear—Magnuson was supposed to end overfishing in this country. NOAA requested $6.5 million for Magnuson Implementation in the President's FY 2008 budget request. This request will help initiate the implementation of MSA but is nowhere near the estimated $70 million it will take to fully implement MSA requirements or the $348 million MSA authorized for FY 2008 alone. We have a long way to go on this. I understand that approximately $1 million of the $6.5 million requested would be used to establish Annual Catch Limits, a key part of ensuring we don't overfish. However, there are 530 stocks that need an Annual Catch Limit and NMFS currently has only 150 prepared.

Admiral, what is your plan and time-table to fully implement the Magnuson-Stevens Act?

Answer. NOAA has developed a plan and time-table to implement the revised Magnuson-Stevens Act. The plan's priorities are based on provisions with Congressionally-mandated deadlines.

Including:

- Fishery management plans meet annual catch limit requirements (2010 and 2011)
- Revise procedures for compliance with NEPA and MSA 2006 (Jan. 2008)
- Establish a program to improve the data currently generated by the Marine Recreational Fisheries Statistics Survey (Jan. 2009)
- Submit the first international report and certification procedures for Illegal, Unregulated, and Unreported fisheries (Jan. 2009)
- Establish a Bycatch Reduction Engineering Program (Jan. 2008)
- Publish guidelines on limited access program referenda for New England and Gulf Councils (Jan. 2008).

The Agency provides a publicly-available tracking report of implementation progress. This report shows the status of thirty one activities required under the reauthorized Act. (*http://www.nmfs.noaa.gov/msa2007/implementation.htm*)

Question 2. Do you have the resources you need to achieve this?

Answer. To implement requirements of the reauthorized Magnuson-Stevens Fishery Conservation and Management Act (MSRA), the President requested an increase of $12.5M in his FY 2008 Budget. This included $6M to facilitate the development of market-based approaches to fisheries management, and $6.5M to implement other aspects of the MSRA, including initiating development of annual catch limits (ACLs), improving the marine recreational fishery survey, reducing illegal, unregulated, and unreported fishing, improving the scientific review process, and working on the Pacific Whiting Treaty. NOAA continually evaluates its resource requirements with the Administration through the budget process.

In FY 2007, NMFS spent approximately $360M on programs authorized by MSRA, including fisheries research and management, stock assessments, salmon management activities, survey and monitoring of habitat and fish stocks, grants to Fishery Management Councils and states for fisheries management and research activities, efforts to reduce bycatch, law enforcement and surveillance, providing fisheries observers and sustainable habitat management.

Question 3. How do you expect to establish Annual Catch Limits for 530 fish stocks when only about $1 million in this year's budget will go toward accomplishing that? What is your time-table for establishing these Annual Catch Limits?

Answer. The $1 million identified in NOAA's funding request is a first step toward establishing annual catch limits (ACLs). NOAA's funding needs for ACLs will change over time. How these needs will be met will be determined in the context of the Administration's annual budget formulation process. ACLs will be designed to end and prevent overfishing in the Nation's fisheries. Approximately 139 stocks currently have adequate stock assessment data with which to establish ACLs. As resources become available or reprioritized, NOAA will continue to improve stock assessment data and address ACLs for additional stocks.

To implement effective ACLs by 2010 (for stocks subject to overfishing) and 2011 (for all other stocks), the Agency must define and explain the statutory provisions related to ACLs and accountability measures (AMs). NOAA solicited public comments to identify issues to consider addressing in potential guidance on ACLs and AMs between February 14, 2007 and April 17, 2007. NOAA is currently considering these comments and the scope of issues to address in guidance on ACLs and AMs. NOAA is working on formal ACL guidance that will revise National Standard 1 and plans to have proposed and final rules published in early 2008. This will allow the Regional Fishery Management Councils time to develop fishery management plan (FMP) amendments or proposed regulations and time for NOAA to implement the measures, if approved, or take a separate action. In addition, NOAA is also in the process of evaluating current FMPs to identify fisheries that will need new or improved measures. Last, NOAA plans to develop technical guidance by the spring of 2008 for the Regional Fishery Management Councils and their Scientific and Statistical Committees (SSCs) to use as they implement annual processes for setting ACLs.

Reduction of Funding for Marine Mammals

Question 1. In the FY 2008 President's budget, funding for the Marine Mammal Initiative is terminated and marine mammal funding in the Protected Species Research and Management program is reduced by $991,000. Could you please describe the specific impact that these reductions, if implemented, would have on existing NOAA marine mammal programs?

Answer. The reduction of $991,000 to the Marine Mammals line refers to the difference between the President's Budget request for FY 2008 of $39,221,000, and the FY 2006 enacted funding level of $40,212,000. The net decrease is the result of a series of offsetting increases (such as the respread of the Alaska Composite and $1.0 M to increase the North Pacific Southern Resident Orca) and the termination of Congressionally directed projects, including the Marine Mammal Initiative.

The largest reduction in marine mammals is associated with unrequested funding which has been used for the Marine Mammal Initiative (MMI) which has provided for marine mammal conservation and recovery work since 2005. Congress provided $9,856,134 in unrequested funding in FY 2005, and $4,931,204 in unrequested funding in FY 2006. NOAA has allocated $4,961,882 in FY 2007 for base activities such as stranding and unusual mortality event (UME) response coordination; collection and analysis of samples from Strandings/UMEs; stock assessments; and Take Reduction Team activities. This funding supports the highest priority needs of the marine mammal program.

Tsunamis

Question 1. In your opinion, where are the most vulnerable gaps in our tsunami warning system as it currently stands?

Answer. The FY 2008 budget request continues the Administration's commitment to strengthen the U.S. Tsunami Warning Program. While the overarching focus of this larger effort embraces the three integrated components of the National Tsunami Hazard Mitigation Program (improving tsunami warning guidance, improving tsunami hazard assessment, improving tsunami mitigation), NOAA's initial efforts in strengthening the U.S. Tsunami Warning Program have been on improving tsunami warning guidance. This has included expanding NOAA's DART station network, expanding and upgrading NOAA's sea-level reporting network, expanding and upgrading NOAA's seismic networks, and upgrading the operations of NOAA's two Tsunami Warning Centers to 24/7 operations. While NOAA has also expanded and accelerated its tsunami inundation, mapping, modeling and forecast efforts as well as its TsunamiReady and tsunami preparedness programs, the number of at-risk communities justifies continued involvement in these important areas, as requested in the President's FY08 budget.

Question 2. I'm pleased to see the Administration following through on the $37.5 million pledge to get the Nation moving in the right direction with respect to tsunami preparedness. What have the last several years of funding bought us in terms of preparedness? I'm wondering if you can give specific examples of how these funds have been spent to reduce the risk to human life from tsunamis.

Answer. Since FY 2005, NOAA has made dramatic improvements in its efforts to strengthen the U.S. Tsunami Warning Program. As of July 31, 2007, 32 operational Deep-ocean Assessment and Reporting of Tsunami (DART) stations have been deployed, with seven more to be deployed by March 31, 2008. There are now 42 TsunamiReady communities, up from 11 at the beginning of 2005. We completed 17 of 75 tsunami inundation mapping and forecast models, with nine more to be completed by the end of this fiscal year.

For FY 2008 NOAA is requesting $23.2 million to continue strengthening the U.S. Tsunami Warning Program. With this request, we will achieve full operating capability in FY 2008. The FY 2008 Budget Request supports funding to:

- Complete the deployment of the planned 39 DART Station Network;
- Continue NOAA's tsunami inundation mapping, modeling, and forecast efforts, by completing 9 additional models (for a total of 35) of 75 planned tsunami inundation mapping and forecast models;
- Continue NOAA's tsunami education/outreach activities, including support for NOAA's TsunamiReady program, for all U.S. communities at risk;
- Continue 24/7 Operations at the Pacific Tsunami Warning Center and the West Coast/Alaska Tsunami Warning Center; and
- Continue funding for the National Tsunami Hazard Mitigation Program.

Question 2a. Where are we in our efforts at evacuation and emergency preparedness preparation?

Answer. Since the December 2004 Indian Ocean tsunami, NOAA has been working with its partners to identify at-risk coastal communities and accelerate and expand its tsunami community preparedness activities, including the TsunamiReady program. A key element driving the success of this program is the willingness of the at-risk coastal communities to voluntarily participate in the program. NOAA is committed to working with each at-risk coastal community to ensure that they, and their emergency management officials, fully understand the tsunami hazard and take appropriate preparedness actions. These actions include a well-designed tsunami emergency response plan. NOAA's goal is to recognize all at-risk coastal communities as "TsunamiReady" communities.

Law of the Sea

Question 1. The President recently stressed the importance of accession to the U.N. Convention on the Law of the Sea as one of your top ten priorities. You cite the global nature of addressing the declining health of our oceans, as well as the need for the U.S. to assert international leadership and enhance our own security and economic needs. The U.S. Navy and the Coast Guard have testified that joining the convention will strengthen our freedom of navigation, and all major U.S. industries support accession to the convention. Can you please tell us, from the NOAA perspective whether you believe the Senate should act on this important treaty?

Answer. NOAA strongly supports favorable Senate action on U.S. accession to the Law of the Sea Convention during this session of Congress. Accession is a key priority of the *U.S. Ocean Action Plan* and just this past May, the President issued

a statement urging the Senate to approve the Convention.[1] Accession to the Convention is important to NOAA because it provides the basic legal framework for marine protection and utilization.

Question 2. Is the Administration fully implementing our rights under UNCLOS to protect our coastal and ocean resources?

Answer. Since 1983 it has been official U.S. policy, as stated by President Reagan, to recognize and abide by the all of the provisions of the Convention except for the deep seabed mining provisions.[2] However, until the U.S. accedes, we cannot fully implement the rights afforded Convention parties to protect our coastal and ocean resources. For example, as a non-party, we do not have access to the Commission on the Limits of the Continental Shelf and cannot maximize the legal certainty concerning the outer limit of the U.S. continental shelf beyond 200 nm from the baseline (commonly termed the "extended continental shelf").

The U.S. extended continental shelf is estimated to be among the world's largest, encompassing thousands of square miles of seabed and subsoil. It is difficult to estimate the value of the area because research to date has been extremely limited and the values of the resources are subject to market fluctuations. However, a 2000 study estimated that the global value of the non-living resources in all the offshore areas that may be claimed by coastal states at $11,934 trillion (at 2001 raw commodity prices).[3]) Beyond non-living resources, a variety of sedentary species hold commercial and ecosystem values. Until the U.S. accedes to the Convention, our exclusive sovereign rights to manage the natural resources of the extended continental shelf would be open to challenge.

As a non-party, our ability at international fora to influence other countries to be as protective of shared living marine resources (*e.g.,* straddling fish stocks) is limited.

Question 3. If not, what are some of the additional measures, from NOAA's perspective, that should be taken?

Answer. To conserve and manage its ocean and coastal resources, the U.S. should accede to the Convention during this session of Congress. In addition, Congress should fully fund the President's FY 2008 budget request to allow NOAA, in cooperation with the State Department and other Federal agencies, to collect and analyze all relevant data, and to prepare the necessary documentation, to establish the outer limit of the U.S. extended continental shelf in accordance with international law.

Question 4. What impact would that have on NOAA and the work that your agency does?

Answer. Accession to the Convention would allow NOAA to fully implement, affirm, and codify U.S. rights to sustainably manage living marine resources in our Exclusive Economic Zone and on our continental shelf, conduct marine scientific research, and support mining of the deep seabed by U.S. industry. Accession would also enhance NOAA's ability to persuade other coastal nations to better conserve and manage their natural resources and protect the marine environment across a wide range of international programs and engagements it carries out.

Federal Columbia River Power System (FCRPS) Biological Opinion (BiOp)

Question 1. Last month the Federal agencies in the ongoing Columbia River Power System BiOp remand in Judge Redden's Court in Oregon submitted their latest Proposed Action to recover salmon and steelhead in the Federal Columbia River Power System. This Proposed Action is the result of well over a year of collaboration among Federal agencies, states, and tribes, which began in October 2005 when Judge Redden directed NOAA to revise the 2004 BiOp. When NOAA submitted the 2004 BiOp to Judge Redden, it did so without involving the sovereigns and used a completely new approach that was a surprise to all the parties. That is when Judge Redden directed NOAA to work collaboratively with the sovereigns to achieve regional consensus and using the best available science in revising the 2004 BiOp.

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[1] "President's Statement on Advancing U.S. Interests in the World's Oceans" (May 15, 2007) *available at http://www.whitehouse.gov/news/releases/2007/05/20070515-2.html.*

[2] The United States' concerns with the Convention's deep seabed mining provisions were subsequently addressed by an agreement concluded in 1994 that modified the objectionable provisions governing seabed mining. The United States was actively involved in the negotiation of this agreement (the Agreement Relating to the Implementation of UNCLOS Part XI), and signed it in July 1994.

[3] Murton, B.J., Parson, L.M., Hunter, P. and Miles, P.R. *Global Non-Living Resources on the Extended Continental Shelf: Prospects at the year 2000.* Proceedings of the Meeting on Non-Living Marine Resources Beyond 200 Nautical Miles. International Seabed Authority Technical Report No. 1.

With this current Proposed Action, what is NOAA's plan to continue to coordinate with the sovereigns and the collaborative Policy Working Group in putting the 2007 BiOp together to achieve regional consensus and using the best available science?

Answer. NOAA will continue to coordinate and collaborate with the sovereigns and the Policy Working group through the completion of the BiOp. In August the FCRPS agencies will submit their Biological Assessment and a comprehensive analysis that will further describe their proposed Reasonable and Prudent Alternative (RPA). The August version will be a refinement of that submitted to the court and parties in May 2007, reflecting the results of further collaboration with the region's sovereigns. NOAA's National Marine Fisheries Service contributed significantly to this ongoing sovereign collaborative process through which the Federal agencies are developing their proposed RPA for the FCRPS. In writing our biological opinion, we will follow the proposed RPA and utilize the same analytical methods developed in the sovereign collaborative process to evaluate the effects of the RPA on the affected salmon and steelhead. On October 31, 2007, we will provide the sovereigns and Policy Working Group a draft biological opinion for their consideration and comment to further inform our final biological opinion.

Question 2. NOAA and the Federal agencies have been working for nearly 10 years to craft a plan for operating the Federal Columbia River Power System that will also recover endangered salmon and steelhead. The courts have struck down past plans that were inadequate and there have been many delays in crafting a viable plan. In the recent status conference in the ongoing BiOp remand, Judge Redden gave the agencies an October 31, 2007 deadline for issuing a BiOp that has regional consensus and is based on the best available science. What is NOAA's plan to ensure that there is adequate staffing in place to achieve the October 31 deadline without any further delays?

Answer. The Court-ordered October 31 deadline is for NOAA's issuance of a draft biological opinion which will mark the beginning of a comment period for regional sovereigns and parties to the litigation. A deadline for issuance of a final biological opinion will be set by the Court after the draft biological opinion is available. NOAA is committed to meeting the court's deadline. Compliance with Judge Redden's order is a priority, and resources will be found, even if other activities are delayed. A significant number of staff are currently assigned to this effort and using Fiscal Year 2007 FCRPS Biological Opinion funding we have contracted with additional support staff that will assist with document organization, editing and data management.

Question 3. In the BiOp remand, Judge Redden directed NOAA to conduct a life-cycle analysis for each endangered fish species that considers all 4 "H's"—Hydro, Habitat, Hatchery, and Harvest. Since NOAA is conducting a life cycle analysis for the Columbia River Power System 2007 BiOp, what implication does this have for other BiOps? Is NOAA going to use the same life cycle analysis for the "harvest" BiOp in the *U.S.* v. *Oregon BiOp,* which is due in December?

Answer. Whenever NOAA issues a biological opinion, including those for harvest actions, it must take into account the current status of the threatened or endangered salmon and steelhead. NOAA must determine how that status has been affected by future actions that have already been found, in an ESA consultation, to satisfy the ESA standards of avoiding jeopardy and adverse modification of critical habitat. Thus, the effect of the FCRPS RPA will become the baseline for future Federal actions in the same area, such as *U.S.* v. *Oregon,* after NOAA completes its ESA consultation. An equally important factor for NOAA is the judicial interpretation of the ESA and its application. Thus, future biological opinions will conform to the decisions of the Ninth Circuit Court of Appeals in the *NWF* v. *NMFS* and related litigation, affirming Judge Redden's decisions.

Question 4. Earlier this month, Seattle Federal Judge John Coughenour issued a ruling that flatly rejected the idea that if enough salmon can be produced in hatcheries, then there is little need to protect wild stocks. Judge John Coughenour ruled that the Endangered Species Act has a "central purpose of preserving and promoting self-sustaining *natural* populations." What are the implications of this ruling on the hatchery portion of the Columbia River Power System 2007 BiOp?

Answer. The ruling from Judge Coughenour emphasized the intent of the ESA to protect naturally self-sustaining salmonid populations and the habitats they rely on. While the challenge was to a listing decision and not a biological opinion, the judge's ruling is consistent with NOAA's past application of the ESA, including the analysis of biological effects of proposed actions, and development of biological opinions.

NOAA's National Marine Fisheries Service has never suggested, in a listing decision or a biological opinion, that "if enough salmon can be produced in hatcheries, then there is little need to protect wild stocks." In his Order, Judge Coughenour

stated in part: "NMFS has interpreted the ESA to focus on the protection and promotion of naturally self-sustaining populations. . . ." (ORDER at 29)

The ruling in this case set aside NOAA's Hatchery Listing Policy and reinstated the endangered listing of Upper Columbia steelhead. The holding in this case pertains to the listing process described in Section 4 of the Endangered Species Act. As such, it does not directly affect biological opinions described in Section 7(a)(2).

NOAA intends to continue using the best available science regarding hatcheries, including their effects on natural populations, in the FCRPS Biological Opinion. NOAA will draw on the work of the Hatchery Science Review Group (HSRG), the technical recovery teams, and other technical experts to assess the effect of the proposed action on listed species. The proposed action includes hydropower, habitat, hatchery and harvest elements and NOAA's biological opinion will evaluate the effects of all of those elements on each of the thirteen listed species in the Basin.

Salmon Recovery in the Pacific Northwest (in general)

Question 1. I understand NOAA is continuing to work hard to develop salmon recovery plans for the Columbia River Basin. These recovery plans serve as foundations for Federal agency BiOps and blueprints for recovering endangered salmon and steelhead basin-wide. To help achieve this goal, I have worked with my colleagues to ensure that the Pacific Coastal Salmon Recovery Fund is sufficiently funded so that these plans will in fact recover endangered salmon and their habitat. What is the schedule for getting the recovery plans done in the Columbia River Basin?

Answer. Significant progress has in fact already been made in completing recovery plans for ESA listed salmon and steelhead. The Washington portion of the Lower Columbia was completed in 2005. The recovery plan developed under Washington's "Shared Strategy" for Puget Sound was completed in December 2006. The Hood Canal chum recovery plan was completed in May 2007.

Question 1a. How is NOAA going to oversee the implementation of these plans when they are going to be executed by multiple parties?

Answer. The current schedule for additional recovery plan completion is as follows:

- Upper Columbia Chinook and steelhead plan: Fall 2007.
- Snake River plans: Early 2008.
- Mid Columbia steelhead plan: Summer 2008
- Entire Lower Columbia (incorporating the already-completed Washington plan with Oregon's plan): Summer of 2008.
- Willamette plan: Late 2008.

Question 1b. How is NOAA going to oversee the implementation of these plans when they are going to be executed by multiple parties?

Answer. The ESA statute directs NOAA Fisheries to "develop and implement" recovery plans. Most plans are multi-"H" in scope, addressing impacts of habitat changes, hatchery management, harvest and the region's hydro system. Also, most plans were developed locally to ensure local, state and tribal participation and to enhance buy-in. As a result, there is considerable pride-of-ownership in the plans completed to date and high expectations that they will be implemented by the appropriate agencies.

NOAA's National Marine Fisheries Service has two fundamental obligations for implementing ESA recovery. The first is to promote recovery, which will entail the use of recovery plans to inform regulatory and non-regulatory mechanisms. While the recovery plans are not regulatory documents, they do provide the best available science on recovery goals, viability criteria, limiting factors, threats, and priority actions. The plans will guide NOAA Restoration actions through the Pacific Coastal Salmon Recovery Fund and NOAA Restoration Center and will also be used to implement actions by other agencies, state and local governments, local organizations and tribes. NOAA will use the plans to communicate information about recovery at regional and local scales and to use recovery information when implementing our responsibilities and additional mandates to provide for sustainable fisheries and meet our treaty and trust obligations to the tribes.

NOAA's second fundamental obligation is to measure progress toward recovery under ESA sections 4f and 4g. Meeting this obligation requires knowing the status of listed fish, the threats that endanger them, and the progress of actions undertaken to assist recovery. This, in turn, requires us to assume a leadership role in developing and coordinating cost effective research, monitoring, evaluation (RME), adaptive management, and reporting processes. Perhaps the most important use of these results will be in making decisions pertaining to the species' listed status.

These results will be provided periodically to the Administration, Congress, and public through 5 year status reviews, biennial reports, and other mechanisms.

The National Marine Fisheries Service's Northwest Regional Office assigned its staff to geographically based teams in order to aid local recovery planning efforts. We will continue to work with the NOAA Fisheries Science Center and local teams to integrate recovery implementation and RME programs with the region's regulatory and non-regulatory activities.

Question 1c. What is NOAA's plan to ensure that its salmon recovery policies are in line with the funding levels of the Pacific Coastal Salmon Recovery Fund?

Answer. NOAA has consistently worked to align PCSRF funding with West Coast salmon recovery. The Administration's budget request over the past 3 years has contained language designed to target additional resources toward recovery of ESA listed salmon populations and their habitat and to support tribal treaty rights. Congress has not enacted this language. Under the terms of the Revised Continuing Appropriations Resolution, 2007, NOAA was able to apply additional resources to the above priorities and better align funding with recovery needs. Absent Congressional direction, NOAA will continue to apply resources to high priority needs based on competitive grant applications. Once grants are awarded, recipients are encouraged to increase the amount of effort targeted at addressing those factors that are limiting the recovery of ESA listed salmon.

Question 2. The Pacific Coast Salmon Recovery Fund provides grants funding to western states and tribes to assist state, local, and tribal efforts to conserve and recover Pacific salmon and their habitat. The Fund is being used to make significant progress in protecting and restoring these important species of fish, which are critical to the economic, ecological, and cultural well being of the Pacific Northwest. Between its establishment in 2000 and 2005, average appropriations for the Fund were about $87 million per year. In FY 2006, despite Senate efforts to ensure that the Pacific Coast Salmon Recovery Fund included appropriations above historical levels at $90 million, the final appropriation for the Fund was cut to $66.5 million. In your testimony, you indicated that Congress, despite Senate efforts to the contrary, and not the Administration chose to impose the recent funding cuts to drop the Fund below historical appropriation levels. Yet, in FY 2007 and FY 2008, the Administration has not requested to restore the Fund to historical levels, requesting only $67 million for each fiscal year. Whereas in those fiscal years, the Senate restored the Fund to historical appropriation levels at $90 million. Does the Administration support the historical average appropriation level for the Pacific Coast Salmon Recovery Fund at or above $87 million per year?

Answer. The Administration has not supported funding PCSRF at its historical average of $87 million. In FY 2007 and 2008, NOAA has requested $67 million in the Pacific Coastal Salmon Recovery Fund, which is consistent with the FY 2006 enacted level. NOAA's requests for PCSRF funds have proposed language to distribute funding based on the priorities of ESA salmon recovery, tribal treaty rights, and habitat protection and restoration to ensure the funds are used for projects that will provide most return on investment. The Administration believes that NOAA can achieve the same gains for the recovery of listed pacific salmon at the requested level of $67 million rather than at the historical average of $87 million, if resources were targeted to priority areas of salmon recovery.

Question 2a. What salmon recovery and restoration work is not being done due to Pacific Coast Salmon Recovery Fund appropriation levels below their historical average?

Answer. The Administration's budget request for PCSRF does not define a distribution of funds among the eligible states or tribes. In FY 2006, funds available for ESA listed salmon recovery work were reduced for the states of OR, CA, and ID and the tribes through Congressional direction. The Administration believes that NOAA can achieve the same gains for the recovery of listed pacific salmon at the requested level of $66.8 million rather than at the historical average of $87 million, if resources were targeted to priority areas of salmon recovery. As such, with the funds available in FY 2007, funding was allocated to work that supported the three priority areas for recovery and NOAA expects an increase in the efficiency of the program to address ESA salmon recovery with the funds provided.

Enhancing Stewardship

Question 1. Highlight the elements within your agency's 2008 budget request that address the U.S. Commission on Ocean Policy's research priorities of enhancing the stewardship of natural and cultural ocean resources and improving ecosystem health. In particular, please address the following:

- Explain how this effort will enable the management of West Coast groundfish stocks to move toward a more ecosystem-based approach.

Answer. NOAA's Ecosystem Approach to Management (EAM) has been encouraged by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (16 U.S.C. 1882, § 406 f(1–2)), the U.S. Ocean Action Plan (2004) and An Ocean Blueprint for the 21st Century (2004). In response, NOAA's FY08 request includes $5M for the Comparative Analysis of Marine Ecosystem Organization (CAMEO) program, a priority of the Administration's Ocean Research Priorities Plan. CAMEO will support the development of advanced marine ecosystem models as well as research to improve the effectiveness of marine protected areas (MPAs) as management tools. While the program will be national in scope, it is likely that some resources will be directed to research that will help to advance ecosystem approaches to management in the California Current ecosystem.

West Coast groundfish comprise a diverse assemblage of more then 80 species utilizing a wide range of habitats in the California Current ecosystem. Conditions in this ecosystem are strongly driven by climate, which is known to have a significant influence on the survival and productivity of several species, and is suspected to influence the biology of many other commercial, recreational and forage species. Given the highly dynamic features of the ecosystem, it is widely recognized that improved data and models are needed to improve further the management of West Coast groundfish.

Recently, NOAA Fisheries has initiated pilot projects that will be important to an ecosystem-based approach to management. These efforts include testing of advanced technology for surveying habitat not accessible to conventional survey methods; compilation of coast-wide marine habitat data into a dynamic, web-based system that allows overlay of habitat with biological data; initiating development of a California Current scale ecosystem model; and initiating the inclusion of ecosystem considerations into selected stock assessments of groundfish species. These are some of the key needs to move toward and implement an ecosystem approach to management. The requested FY08 funds will allow the pilot projects to continue at their current pilot level.

Question 1a. Highlight budget elements that support greater state and tribal participation in the stewardship of natural and cultural ocean resources.

Answer. NOAA has several programs working with states. The Office of Ocean and Coastal Resource Management (OCRM) conducts the Coastal and Estuarine Land Conservation Program (CELCP) to provide states with grants to preserve many important coastal and estuarine lands. OCRM also implements the Coastal Zone Management Act in coordination with states, and partners with states in developing the National Estuarine Research Reserve System (NERRS), which has 27 reserves across the Nation. The National Marine Sanctuaries program collaborates with states on sanctuary designation and management. The National Centers for Coastal Ocean Science have labs in several states and fund extramural research at academic institutions to address important state coastal issues such as harmful algal blooms and coral conservations research. In addition NOAA is developing a National Height Modernization program to fund the establishment of accurate geodetic positioning in states. Accurate geodetic provides for safe and efficient transportation and commerce, understanding climate change and mitigating damage from coastal storms by measuring and monitoring sea level rise, information to enable emergency response deciders to plan for and respond to natural disasters.

NOAA's National Ocean Service (NOS) works closely with tribes on stewardship of natural and cultural ocean resources through the National Marine Sanctuary Program, the Office of Ocean and Coastal Resource Management, the Office of Response and Restoration, and the National Centers for Coastal Ocean Science.

National Marine Sanctuary Program:

The Olympic Coast National Marine Sanctuary (OCNMS) signed a Memorandum of Agreement with the state of Washington and four coastal tribes—the Makah Tribe, Hoh Tribe, Quileute Tribe and the Quinault Nation—in January 2007, creating an Intergovernmental Policy Council. The Intergovernmental Policy Council's goal is to bring together state, Federal, and tribal governments in a forum for efficient communication and discussion of the management of marine resources and activities within the boundaries of the OCNMS. The OCNMS supports tribal cultural activities such as an annual tribal canoe journey and tribal festivals with vessel support and educational and outreach programming.

The Channel Islands National Marine Sanctuary (CINMS) works in partnership with a variety of Chumash Indian people and some Chumash organizations to accomplish projects of mutual interest, such as canoe (tomol) voyages and development

of a documentary film about the sanctuary. CINMS has created a non-governmental Chumash Community seat on its Sanctuary Advisory Council, reflecting its policy that the Chumash people are important advisers to the sanctuary and deserve a seat at the table.

Office of Ocean and Coastal Resource Management (OCRM):

The OCRM Marine Protected Area (MPA) Center works with tribes to develop a national system of MPAs as directed by Executive Order 13158. This involves notification of all federally-recognized tribes on key milestones associated with the development of the MPA system, and active outreach to tribes in the Pacific Northwest and Great Lakes responsible for co-management of marine and Great Lakes resources.

Over the years, OCRM has coordinated with numerous tribes on Coastal Zone Management Act (CZMA) Federal consistency issues between states and Tribes, and has mediated CZMA disputes between tribes and states.

Office of Response and Restoration:

- NOAA's Damage Assessment, Remediation, and Restoration Program (a collaborative program among the Office of Response and Restoration, the National Marine Fisheries Service Restoration Center, and NOAA General Counsel for Natural Resources) maintains ongoing partnerships with numerous tribal governments. As natural resource trustee agencies under the authorities granted them by the Comprehensive Environmental Response, Compensation, and Liability Act and the Oil Pollution Act, NOAA and tribes collaborate to evaluate and resolve liability for injury to natural resources from releases of oil and hazardous substances, and also from vessel groundings in National Marine Sanctuaries. In addition, we work together to oversee restoration of natural resources. Particularly in the Western United States, where treaties have established the rights of tribes to use their traditional fishing grounds, NOAA and tribes have mutual interests to protect and restore natural resources in coastal areas.

National Centers for Coastal Ocean Science:

The National Centers for Coastal Ocean Science have several projects that involve Tribal communities and/or resources. Projects include:

- *Creating an Approach to Utilizing Traditional and Local Ecological Knowledge in Resource Management* (AK—Native Village of Port Graham & the Chugach Regional Resources Commission) engages native communities to help document their traditional knowledge of the coastal environment.
- *The National Status and Trends Mussel Watch Program* worked with the second chief (James Kvasnikoff) of Nanwalek, AK to collect mussels for an expanded Mussel Watch Project in Alaska and specifically to sample and analyze marine food items that are used by subsistence fisherman.
- *Monitoring Domoic Acid in Marine Food Webs and Water* to develop sensitive, cost effective detection methods for domoic acid (DA), the toxin produced by harmful diatoms. One goal of the research is, ultimately, to transfer the technology to local tribes and state health officials.
- *Olympic Region Harmful Algal Bloom (ORHAB) Project* is investigating the origins of harmful algal blooms off the Olympic Coast of Washington State. The ORHAB project brings knowledge to the local communities on the Olympic peninsula of the Washington coast, empowering local tribes and state managers to make scientifically-based decisions about managing and mitigating harmful algal bloom impacts on coastal fishery resources.

NOAA Corps

Question. The Hydrographic Services Improvement Act of 1998, as amended, contains language authorizing up to 299 officers in the NOAA Corps. Given the increasing demands on the NOAA Corps, is this level sufficient for meeting NOAA's operational needs well into the future?

Answer. In FY 2007, under the present authorization of 299 officers, NOAA will be able to meet operational needs into the near future. Beyond that, future NOAA Corps staffing needs are dependent on the size of the fleet, the ratio of officers in shore-based billets to sea/air billets, and the Corps ability to respond to national emergencies such as hurricane response and recovery, man-made disasters, etc.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN F. KERRY TO VICE ADMIRAL CONRAD C. LAUTENBACHER, JR.

Question 1. As the result of the 2006 re-scoping of the National Polar-orbiting Operational Environmental Satellite System, 7 of the sensors needed for monitoring essential climate variables were either "de-manifested" entirely or will be used at decreased capacity levels. A report to the White House Office of Science and Technology Policy by senior scientists at NOAA and NASA spelled out in detail how this rescoping will undermine our future monitoring of climate change, sea-level rise, and other essential related variables. This problem was raised at a hearing on climate science held by this committee on February 7 of this year. Admiral Lautenbacher, the administration did not request funds in the FY2008 budget to rectify this situation. You have not committed to developing the needed sensors, including the solar irradiance sensor (TSIS), the Earth radiation budget sensor (ERBS) and the Ocean Altimeter sensor (ALT). How do you justify this decision?

Answer. NOAA remains committed to its responsibilities to develop and implement a robust climate program. The Office of Science and Technology Policy (OSTP) coordinated a joint NOAA-National Aeronautics and Space Administration study to assess the impact of the demanifested sensors. NOAA and NASA are preparing a mitigation assessment for the Executive Office of the President.

Question 2. The National Research Council has warned that the Nation's long-term satellite monitoring system is at risk of "collapse." Given NOAA's role in studying climate change, are you concerned about the state of our current satellite program? What steps would you take to strengthen it?

Answer. NOAA has a continuous planning process to develop its next generation satellites. NOAA's plan is to provide uninterrupted satellite data through at least 2026 from the next generation geostationary satellites, known as the Geostationary Operational Environmental Satellite R-Series (GOES–R), and the next generation polar-orbiting satellites, known as the National Polar-orbiting Operational Environmental Satellite System (NPOESS). Through the NPOESS and GOES–R systems, NOAA has been working closely with the National Aeronautics and Space Administration (NASA) and, where applicable, the U.S. Air Force to satisfy requirements of the National Weather Service, National Ocean Service, and the NOAA Climate Program.

In response to a request from the White House Office of Science and Technology Policy (OSTP), NOAA has been working with NASA to identify options to mitigate the loss of climate sensors from the Nunn-McCurdy-certified NPOESS program. NOAA and NASA requested assistance from the National Research Council (NRC) Space Studies Board to assess the state of Earth observations, including the impact of the 2006 changes to the GOES-R and NPOESS programs. A special NRC group of experts has assessed the impact on climate monitoring capability of the NPOESS Nunn-McCurdy certified program. NOAA and NASA are preparing a mitigation assessment for the Executive Office of the President.

Question 3. In real dollars, the Federal research budget for climate change science has fallen since the mid-1990s. In your opinion, have these budget cuts decreased the ability of Federal climate scientists to do their jobs? Does NOAA need more money to adequately understand climate change risks?

Answer. The President's Budget Requests for NOAA, in both FY 2007 and FY 2008, have included program increases for climate-related activities. NOAA has a diverse mission ranging from managing fisheries to predicting severe weather to increasing our understanding of the Earth's climate. The Administration's requests over the past several years have focused on a balanced set of priorities to sustain NOAA's core mission services and address its highest priority program needs.

NOAA continues to move forward with research to better understand the risks associated with climate change. Some examples of NOAA's recent contributions to climate change science are as follows:

- NOAA's climate scientists have continued to make substantial contributions to our understanding of the Earth's climate and climate change. The expertise and contributions of NOAA climate scientists were evident in the recent Intergovernmental Panel on Climate Change 4th Assessment Report. NOAA scientists made valuable contributions to the reports of both Working Group I (The Physical Science Basis) and Working Group II (Impacts, Adaptation and Vulnerability) reports. NOAA climate scientists co-chaired a report and coauthored chapters, and NOAA-sponsored research made enormous contributions to the assessment.
- NOAA led the 2006 International Ozone Assessment, which tracked the outcomes of the Montreal Protocol and indicated the protocol is working. For the

first time, the assessment shows that ozone depleting substances in the atmosphere have decreased.

- NOAA also released the *National Integrated Drought Information System (NIDIS) Implementation Plan: A Pathway for National Resilience* in hardcopy in June 2007. NIDIS will enable users to determine the risks associated with drought and provide supporting data and tools to inform drought mitigation. The *Plan* describes how accessible and usable drought information will be developed, deployed, and utilized to facilitate informed decisionmaking by resource managers and others.

Question 4. The effectiveness of fisheries management depends in large part on having reliable and accurate data on the resource. NOAA has for 25 years conducted a survey of sea scallop abundance throughout the range of the fishery. That data set is extremely valuable to the management process, particularly given the duration and continuity of the survey.

The research vessel at the New England Fisheries Science Center in Woods Hole, MA, the ALBATROSS, has been the platform used to conduct the scallop survey. The ALBATROSS is about to be replaced by the new research vessel, the BIGELOW. NOAA has indicated that they have no plans to continue the scallop survey on the BIGELOW once the ALBATROSS is retired.

The continuation of this survey is extremely important to the continued health of this important fishery, which is valued at $500 million in direct landings, and makes about a $2 billion total contribution to the economy. Will NOAA continue the survey once the ALBATROSS is retired?

Answer. The Northeast Fisheries Science Center intends to maintain the 25-year survey time series for Atlantic sea scallops. We have a plan that addresses the retirement of the R/V ALBATROSS IV and the transition to a replacement survey platform. In 2008, the R/V ALBATROSS IV and her survey scallop dredge will be inter-calibrated with a program-funded charter vessel, either a UNOLS (University-National Oceanographic Laboratory System) research vessel or a commercial fishing vessel, along with a new improved scallop dredge designed with industry advice. In 2009 and subsequent years, we will support the sea scallop time series with a program-chartered vessel and the newly calibrated survey dredge.

Question 5. I am concerned about the erosion of the budget for Stellwagen Bank National Marine Sanctuary over the past several years. The condition report released earlier this year finds that habitat quality is degrading in the Sanctuary and recommends a series of management actions to improve water quality and habitat conditions. The declining budget since 2005 does not support these efforts. How do you justify this budget decline in the face of degraded conditions in the Sanctuary?

Answer. Since FY 2002, the Stellwagen Bank National Marine Sanctuary has been provided $9.2 million. In FY 2005, the National Marine Sanctuary Program (overall) was appropriated $50.3 million (in ORF) and in FY 2006, $35.1 million (in ORF). Funding for each site is based on the overall National Marine Sanctuary Program appropriation. Thus, in FY 2005, $1.7 million was provided to the Stellwagen Bank National Marine Sanctuary and in FY 2006 $1.5 was provided.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. BILL NELSON TO VICE ADMIRAL CONRAD C. LAUTENBACHER, JR.

Harmful Algal Bloom and Hypoxia

Question 1. Last year, concerns about funding for harmful algal blooms (HABs) research were a high priority through the continuing resolution. Extramural, competitive research funds were requested and assurances were given that this area would be a high priority. In fact discretionary funds were released from higher echelons of NOAA management to NOAA's National Centers for Coastal Ocean Science (NCCOS) for this specific research subject. It has been brought to my attention that funds were then redirected away from its intended HAB research. If top leadership of NOAA is receptive to concerns on certain issues and dedicate monies from the discretionary fund for this, and those funds meant for harmful algal bloom research are then diverted within National Ocean Service and NCCOS, how can NOAA top leadership be more explicit when they send funds down the line with specific research intentions? How can we ensure that funds meant for certain research areas in NCCOS are not reprogrammed away from this important national issue?

Answer. NOAA's FY 2008 President's Budget Request expresses our priorities. While NOAA agrees that harmful algal blooms are important, we must be able to find a balance among all NOAA's needs and requirements, including our priorities in the Gulf of Mexico.

Question 2. For many years now organizations, universities, research institutes and Members of Congress have been concerned with the funding levels of Harmful Algal Blooms research. It is very difficult that the President's budget is continually static at $15.8 million. This year the House and Senate reported Commerce, Justice and Science appropriations bills fund HABs research at $15 million and $17.5 million respectively. With an understanding of the pressing need for research into this marine issue, how can you better exert your influence to regain numbers in this line item to where they were just a few years ago?

Answer. In total, we expect to spend approximately $8.9 million on research related to Harmful Algal Blooms (HABs) and hypoxia. This $8.9 million provides the tools necessary for managers to respond and predict HAB and hypoxia events such as those affecting the New England, Florida, Pacific Northwest and California coasts, as well as the Great Lakes, every year. HAB and hypoxia events threaten human health, kill marine animals, impact fisheries, and cost millions of dollars each year. Multi-year research programs in New England, Florida, the Pacific Northwest and the Great Lakes are also yielding tools and forecasts that are helping coastal communities to mitigate the impacts of harmful algal bloom in these areas.

For example, NOAA has developed the Gulf of Mexico HAB Bulletin, which produces daily information and twice weekly forecasts that are used to determine the current and future location and intensity of harmful algal blooms and the likely impacts to the environment. An addition $5 million is also requested for a near-term priorities project in *Charting the Course for Ocean Science in the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy* to develop sensors for marine ecosystems. This effort will include work to develop *in situ* sensors for rapid detection of pathogens, harmful algae and their toxins in coastal areas. In addition, some of the $5 million requested for Gulf of Mexico Partnerships may be used to support coastal communities in their efforts to address harmful algal blooms and hypoxia events through competitive grants.

National Undersea Research Program

Question 1. Undersea habitats have evolved from a time of testing if and how humans could live and work under the sea, to today where we can effectively use saturation diving and undersea habitats for critical ocean science, education, and technology testing.

The AQUARIUS reef base program in Key Largo, Florida is a unique and state-of-the-art NOAA facility especially well suited for *in situ* experiments on climate change impacts on coral reefs, sensor development and testing for ocean observing, long-term monitoring of coral reefs and to engage the public's imagination and interest. *In situ* experiments that can be done at AQUARIUS are critical if we are going to understand the impacts of problems such as climate change, ocean acidification, coral reef decline, and ecological shifts in the ocean.

Why has NOAA not taken better advantage of their assets at AQUARIUS to conduct research on ocean science topics that are critical to this Nation, such as the impact of climate change on reefs, sensor development and testing for ocean observing capabilities, or education?

Answer. NOAA has taken advantage of the AQUARIUS facility to conduct research on ocean science topics that are critical to the nation, in balance with the other ocean research priorities.

NOAA has operated the AQUARIUS undersea laboratory, located near Key Largo, Florida, since 1987, enabling scientists to live under the sea and conduct valuable studies that have contributed to our understanding of coral reefs and underwater dynamics. Recent additions of advanced information and communications technology has enabled the AQUARIUS to provide 24/7 observing capabilities in an environment monitored by humans, and to reach students, scientists, and the public in real time, allowing virtual participation and observation of missions on-going at the laboratory.

The AQUARIUS now has an expanded network of cabled and non-cabled observing system capabilities, advanced communications capability, deep refill stations, and remote vehicle capabilities. The new capabilities have enabled the AQUARIUS complex to meet a wide range of national needs, including coral studies and exciting education and outreach initiatives. In addition, NOAA works with the National Aeronautics and Space Administration (NASA) to provide the AQUARIUS to NASA for space analog training and testing missions.

Question 2. In the proposed merge of Ocean Exploration and the National Undersea Research Program what will be the balance of expeditionary science with research that is focused on important science topics along our coasts from field sta-

tions, *e.g.,* in Florida on topics such as climate change and reefs? And how will the balance be assured?

Answer. The programs are being merged to enhance the linkage and effectiveness of NOAA's undersea research and ocean exploration activities.

The balance of expeditionary science and research is interdependent and will be determined by the Office of Ocean Exploration and Research as advised by consultations within NOAA, with extramural NOAA partners, and with the NOAA's Science Advisory Board's Ocean Exploration Advisory Working Group. A Strategic Concept of Operations has already been developed for the merged Office of Ocean Exploration and Research which describes the functions and priorities of the new organization as exploration; advanced technology development; research to support both including focused research on extreme and unique environments, continental shelf ecosystems, new ocean resources, and ocean dynamics; operations in support of exploration and technology development; and education, outreach, and data management. These priorities are based on national priorities identified in the Joint Subcommittee on Ocean Science and Technology's *Charting the Course for Ocean Science in the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy,* the NOAA 5-year Research Plan, the NOAA Strategic Plan, and NOAA 20-year Research Vision. In order to increase the focus of investment in these areas, some research areas previously supported by the National Undersea Research Program that are well addressed in other NOAA program areas (*i.e.,* climate, corals) will be de-emphasized.

National Windhazard Reduction Program

Question 1. In October of 2004 Pub. L. 108–360 was signed into law creating the National Windstorm Impact Reduction Program (NWIRP), creating a first time authorization for NOAA, NIST, FEMA and the NSF to undertake an interagency effort to coordinate Federal wind hazard programs and also to empanel a group of 11 to 15 non-Federal wind-hazard experts and interests to consult with the interagency group. The 3 main responsibilities of the interagency group are to improve meteorological understanding of windstorms, measure windstorm impact and identify and promote cost-effective measures to reduce windstorm impact. Is this a reasonably correct summary of the NWIRP?

Answer. Yes.

Question 2. A similar interagency coordination program, focused on earthquakes, known as the National Earthquake Hazard Reduction Program (NEHRP) has been in operation since about 1977, correct?

Answer. The National Earthquake Hazards Reduction Program (NEHRP) was established by the U.S. Congress when it passed the Earthquake Hazards Reduction Act of 1977. At the time of its creation, Congress's stated purpose for NEHRP was "to reduce the risks of life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program." Since NEHRP's creation, it has become the Federal Government's coordinated long-term nationwide program to reduce risks to life and property in the United States that result from earthquakes.

Question 3. Are you sufficiently familiar with the NEHRP program to venture an opinion about its utility and effectiveness in coordinating Federal agency science on earthquakes and earthquake mitigation, and the role of its public panel in advising the agencies and disseminating understandings of Federal science in earthquake mitigation?

Answer. NOAA's expertise and responsibilities does not extend to earthquake research and mitigation and we defer to our colleagues at the National Institute for Standards and Technology (NIST) for an opinion on the NEHRP.

Question 4. Since its enactment in late 2004, can you tell me roughly how much has been done to establish the NWIRP, which was fashioned after the NEHRP?

Answer. The National Science and Technology Council (NSTC) established a working group for Wind Hazard Reduction with representatives from NOAA, National Science Foundation, National Institute for Standards and Technology, Federal Emergency Management Agency (all included in the NWIRP Act), and Federal Highway Administration. The NSTC completed the *Windstorm Impact Implementation Plan* within the first year (2005), and the Windstorm Impact Reduction Program Biennial Progress Report for Fiscal Years 2005–2006 is undergoing interagency review prior to being submitted to Congress. A representative from academia has also presented some ideas on needed research to the working group.

Question 5. Since the enactment of NWIRP in 2004, what major hurricanes/windstorms have impacted the United States?

Answer. Between October 24, 2004, when the National Windstorm Impact Reduction Act of 2004 became law, and March 31, 2007—3,789 major hurricane/windstorm events have impacted the United States. Of these events, 48 were hurricane/typhoon events, 1,241 were tornado events, and 2,500 were high wind events. These totals include all hurricane and typhoon events of Category 1 strength or greater on the Saffir-Simpson hurricane scale (winds 74 mph or greater), all tornado events greater than F0 on the Fujita Tornado Damage Scale (winds roughly 73 mph or greater), and high wind events of 74 mph or greater.

This information was queried from NOAA's *Storm Data* which is an official publication of NOAA. *Storm Data* documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce. Within NOAA's *Storm Data,* events are reported on a per county or forecast area basis, which means for a hurricane/typhoon which passes through 4 counties there will be 4 separate event reports. This applies to tornadoes and wind events as well.

Question 6. I'll ask you whether you have reviewed the report, called the "Windstorm Impact Implementation Plan", which was issued by OSTP after the particularly devastating impact of Hurricanes Rita and Katrina? It observes that the focus on understanding and predicting of windstorm hazards and risks by any one Federal agency is "minimal" at this time, and makes recommendations on implementing a plan to create the interagency working group that was authorized. Do you agree that the program of work outlined in the OSTP plan should be undertaken? If not, which of its recommendations do you suggest should be abandoned? Some may find it ironic that the combined spending authorization for the four principle agencies in the NWIRP is only just over $20 million.

Answer. As a member of the interagency working group for wind hazard reduction, NOAA contributed to the drafting of the *Windstorm Impact Implementation Plan* and has reviewed the completed plan. NOAA agrees that the aspects of the program of work outlined in the *Windstorm Impact Implementation Plan* that NOAA would have responsibility for should be undertaken; NOAA defers to the National Institute for Standards and Technologies (NIST),the Federal Emergency Management Agency, and the National Science Foundation to comment on the appropriateness of the aspects of the program of work that are not under NOAA's purview.

NOAA supports a number of activities related to measuring and predicting windstorms and their impact and under the President's FY08 request NOAA would continue to do so. Past work has included analyzing hurricane surface wind data using NOAA's H*WIND product to the State of Florida for their Public Hurricane Loss Projection Model, public outreach and education on protecting oneself and structures against high wind with a focus on tornados, and several wind resiliency activities with university partners including education on building codes and wind resilient building. NIST includes specific funding in its budget for the National Windstorm Impact Reduction Program and NOAA partners with NIST on windstorm reduction impact activities.

Question 7. Under the NWIRP NOAA is authorized to undertake approximately $2 million in work annually, correct? And would the agency do so if directed to use FY 2008 appropriations for that authorized work?

Answer. The National Windstorm Impact Reduction Act of 2004 provides the authority for establishing a National Windstorm Impact Reduction Program and NOAA is authorized to be appropriated $2.2 million in FY 2008 for carrying out such a program.

If NOAA is directed in enacted FY 2008 appropriation legislation to use appropriated funds as authorized in the National Windstorm Impact Reduction Act of 2004, NOAA would comply.

NOAA supports a number of activities related to measuring and predicting windstorms and their impact and under the President's FY08 request NOAA would continue to do so. The National Institute for Standards and Technologies (NIST) includes specific funding in its budget for the National Windstorm Impact Reduction Program and NOAA partners with NIST on windstorm reduction impact activities.

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