WRITTEN STATEMENT OF

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Chairman Watkins, thank you for your kind introductory remarks. I would like to thank you and the members of the Commission for providing me with this opportunity to testify at your regional meeting here in the beautiful State of Hawaii. For the record, I am Vice Admiral Conrad Lautenbacher, Under Secretary of Commerce for Oceans and Atmosphere and the Administrator of the National Oceanic and Atmospheric Administration.

It is a real pleasure for me to be here with you today. During my stay, I am also visiting various NOAA facilities. Since my appointment, I have made it a priority to get out and in the field. Thank you for providing an added incentive to get acquainted with NOAA employees here in Hawaii.

The members of this Commission bring a diverse amount of knowledge and experience to the table. The Oceans Act charges you with a daunting task – developing proposals for a coordinated and comprehensive national ocean policy. I would like to thank each of you for your investment of time and energy and for your commitment to public service. NOAA supports your efforts.

This is a pivotal time. We stand at the crossroads of many promising and exciting opportunities for the oceans. In addition to the appointment of this Commission, the President recently unveiled his Climate Change initiative, which will help provide the science to support critical future policy decisions on issues ranging from emission standards and business practices to coastal development and resource management.

The President's budget proposal includes $18 million in new climate research funding.
Included in the $18 million is $4 million for NOAA to bolster the U.S. contribution to the ARGO float array. This will support the Global Ocean Data Assimilation Experiment, which in turn will support operational oceanography, seasonal to decadal climate forecasts and analyses, and real-time marine weather and ocean forecasting. We obtained this with little planning and I feel that under the President's initiative we may be able do more by planning strategically.

An integrated and sustained ocean observing system is important to understanding the complex interactions between the oceans and atmosphere and to improving our climate assessment and predictions capabilities. The ocean is an important influence

on seasonal variability and long-term climate change. The ocean is both a source and sink for carbon dioxide and contains 50 times more carbon than the atmosphere. Sea level change is another potential consequence of climate change—an issue that is especially important here in the island State, territories, and Nations of the tropical Pacific.

Ocean observing systems allow us to take the pulse of the planet. We have already begun to demonstrate the value of sustained ocean observations in predicting cyclical events, such as El Nino, with the Tropical Atmospheric Ocean array – called the TAO array. Data from the TAO array in the equatorial Pacific is again helping to identify the recurrence of El Niño. The Secretary of Commerce is very interested in this array and understands the link between research, observations and predictions.

As an aside, the NOAA vessels KA'IMIMOANA and TOWNSEND CROMWELL, which are both home ported here in Honolulu, provide direct support to the maintenance of the TAO array. The TOWNSEND will be replaced this fall by the OSCAR ELTON SETTE, a former Navy T-AGOS vessel. Another T-AGOS vessel, the VINDICATOR, will also be based in Hawaii beginning in 2004. In addition to ocean observations in support of climate, these vessels will support important fisheries, coral reef, and related research. The VINDICATOR will be used to support work in the Northwestern Hawaiian Islands.

The TAO array sets an excellent example. But, we also need to better understand other ocean cycles (e.g., Antarctic Circumpolar Wave & Indian Ocean Dipole). For example, we lack information on the ocean "conveyor belt" that transports heat around the planet. Shifts in this major system—called the thermohaline circulation—can result in significant changes in temperature, rainfall, and storms. Understanding how this system may respond under a changing climate can provide critical information to decision-makers.

I want to emphasize that an operational ocean observing system will not be limited to improving our understanding of climate change. It will include other important environmental parameters, such as coastal weather forecasting and sustaining and restoring healthy coastal ecosystems and living marine resources. As the Nation's population is increasingly clustered along our coasts, we must pay renewed attention to the environment.

New ecosystem forecasting tools that can be derived from the coastal components of an ocean observing system will support management strategies to help ensure we balance economic growth with environmental protection. A sustained, integrated ocean observing system is important to maintaining and improving the management of living marine resources, such as our world's fisheries.The connection between ocean observing systems and the economy is probably most obvious and immediate as it relates to fisheries. Understanding and predicting changes in ocean circulation will allow managers to respond to associated shifts in populations or stock abundance. The accuracy and timeliness of predictions of annual fluctuations in spawning stock size, distribution, recruitment and sustainable yield for exploitable fish stocks is critical to appropriately managing living marine resources.

While NOAA clearly has a critical role to perform in this effort, true success will depend on partnerships and collaborative ventures. At the broadest level, this is an international effort, generally called the Global Ocean Observing System or GOOS.

Also, on the international front, just last month I had the honor and privilege to serve as the U.S. representative to the first Asia-Pacific Economic Cooperation (APEC) Oceans-related Ministerial Meeting held in Seoul, South Korea.

The U.S. objectives at APEC included gaining support for expanding global ocean and climate observing systems that play a key role in providing data to forecast long range climate events such as El Nino. The U.S. also called for a broader ecosystem-based approach to managing marine resources for sustainable fishing practices and integrated coastal and ocean management.

The Seoul Declaration addresses the critical issues of implementing ecosystem-based management of marine resources, expanding global ocean and climate observation systems, I am pleased to report that the Seoul Oceans Declaration is a document that will serve as a cornerstone for future ocean resource management. I will provide the Commission with a copy of the Declaration.

The U.S. effort to establish operational ocean observing systems involves several federal agencies, state and local governments, industry, academia, NGOs and other stakeholders in the ocean community. At the local level, we are already witnessing the proliferation of numerous regional coastal observing systems. One goal is to integrate these regional observation and data management systems into a consistent and accessible national system.

The overall effort is too big for any single entity. The societal needs to be met by an integrated and sustained ocean observing system do not align neatly with any single agency or bureaucratic boundary. For this opportunity, we need to bring together the stakeholders and expertise to begin the process of developing a phased, prioritized implementation plan for the ocean observing system. By working collaboratively, we will be able to generate new ideas, develop strategies, gain public support and – most importantly – get something done.
Congress has indicated its interest in an ocean observing system. Last year one committee stated, and I quote -- "The Committee maintains a strong interest in an integrated interagency ocean observing system. A coordinated national approach, linked effectively with similar programs in other nations, is an essential prerequisite for effective use and management of the oceans. The nation cannot realize the economic, social, and security benefits of the oceans in a responsible, sustainable manner without such a program." More recently, the Senate version of the Energy Bill that was passed in April includes a section authorizing an ocean and coastal observing system.

In March, a major meeting was held in Virginia featuring leading oceanographers, marine scientists and policy experts from around the country. Convened by the National Ocean Research Leadership Council through OCEAN.US and the U.S. Global Ocean Observing System steering committee, the meeting was a significant step in advancing an implementation plan for an integrated and sustained ocean observing system. A report from that meeting is being prepared at this time.

Operational needs are a key driver for this system. We must also continue to identify key ocean research areas and technological requirements. We need to push the research into an operational capacity for this system. We need to continue to advance the technologies that already are making new observations not only possible, but also economically feasible. At NOAA, I am working hard with my team

to evaluate all the pieces within the agency that can fit into this observing system. Every major Line Office within NOAA (OAR, NOS, NESDIS, NWS, OMAO, and NMFS) has activities that are fundamental to an integrated and sustained observing system.

A major advantage of modern technologies, such as satellite and in situ sensors, is that they can provide ongoing, 24/7 observations, sending their data directly to researchers, modelers, technicians, and data managers. The logistics—and perhaps, more importantly, the costs—of conducting such observations from vessels alone would be prohibitive. The implementation and continued development of technologies provides us with a tremendous opportunity to gather much-needed data at a much lower cost. This data will support a backbone for the science-based decision making to which this Administration is committed.

In some cases, existing systems may require modernization. For example, NOAA is home to the Nation's oldest coastal observation programs, which were initiated in 1807 to produce nautical charts, geodetic and tidal information of our coastal waters. Today's tidal program—called the National Water Level Observation Network (NWLON)—consists of 190 real-time stations nationwide. This system provides a backbone of important tidal and water level observations that are used in monitoring sea level rise, issuing coastal storm surges, delineating property and political jurisdictions, and other purposes.

Building on this system, NOAA employed other technologies in developing the Physical Oceanographic Real Time System or PORTS, which is providing the maritime community with valuable information in several US ports. I understand you learned something about PORTS at your meeting in Florida. PORTS was developed by NOAA scientists and technicians, who since have worked with the maritime community, the private sector and academia to commercialize, augment and improve its capabilities. PORTS represents a direct, real world application of how a coastal observation system can support commerce, the economy and the environment. All PORTS installations are partnership efforts.

The Weather Service's National Data Buoy Center operates and collects data from moored and drifting buoys, floats, voluntary observing ships, and coastal monitoring sites. The resulting data is helping the National Weather Service to improve its forecast capabilities in offshore and coastal areas and its numerical prediction models for improving global forecasts.

On the satellite side, our two polar-orbiting and geostationary satellites are already providing critical ocean data. We are also working with DOD and NASA on our future polar system, the National Polar-orbiting Operational Environmental Satellite System (NPOESS). Nearly a third of its data stream will address ocean requirements. It is important to consider the satellite input when designing a global observing system. Satellites provide a global view of what is going on at the surface of the oceans, and complement the measurements taken at specific depth with buoys. Some of the marine related satellite data include sea surface temperature, sea surface heights, sea ice distribution, and ocean color. NOAA's Environmental Satellite and Data Information Service also is a leading archivist and manager of oceanographic data. Data management and accessibility is a critical element for operational observing systems.

I have provided a sampling of some of NOAA's observational capabilities for the oceans. One of my priorities is to do a better job of putting the pieces together internally and with external partners to meet national requirements. The agenda for your meeting here in Hawaii includes some of those requirements. I would like to take a few minutes to discuss how an operational observing system can provide scientific data to support those needs.

Management of Living Marine Resources, Including Coral Reefs

An improved understanding of the marine environment and ecosystems that support marine life will enhance our ability to manage living marine resources. In your meetings, you have heard a lot about fisheries management. One point made by several witnesses is that it is extremely difficult to sustainably manage a resource when the scientific data are lacking. One part of the solution is improved surveys and assessments of stocks. But another part is improving our understanding of fluctuations and cycles in the larger ecosystem. If we are to pursue and implement ecosystem management, we will need to understand how ecosystems work. An integrated observing system covering a range of ocean and coastal physical, chemical and biological factors would help provide that scientific understanding.

Ocean and Coastal Management and Uses, Including Tourism and Development

In addition to enhancing the management of living marine resources, an ocean observing system will provide data in support of other marine uses and activities. I have already pointed out that the real time observation system developed by NOAA—PORTS—is supporting safe and efficient marine transportation.

Similar oceanographic and meteorological data can make other commercial ocean activities safer and more efficient, including operations associated with offshore oil and gas development and the burgeoning cruise ship industry. Improved observations systems can promote public safety by improving forecasts of extreme coastal weather events. Improved understanding of coastal ecosystems can improve decisions about coastal development projects, including where to best site projects and reduce the impacts on the marine environment.

Monitoring the health of beaches is becoming increasingly important as a matter of public health. Ensuring waters are safe is also critical to the coastal tourism economy. New technologies are providing ways to effectively and efficiently monitor water quality and to pinpoint types and sources of pollution. In Long Beach, Dr. Munk told you that monitoring biological and chemical components would be as important in this century as advances in physical oceanography were in the last. We need to continue to invest in the development of these technologies.

Oceans and Climate

Ocean observations are crucial to improving our understanding of climate variability. As observational gaps get filled, scientists will be able to develop better forecast models that have economic implications in areas ranging from agriculture to public health. An ocean observing system will advance our understanding of climate and will offer insights into a wide array of related areas that offer benefits to all of humanity. An integrated and sustained ocean observing system will be of substantive

and long lasting benefit to the nation and the world and while some elements are already in place, we must integrate existing systems with new technologies to gain the data and resolution needed so that we have the data needed to make sound public policy.

Thank you for the opportunity to address you today and I look forward to continuing to work with all of you.