

**WRITTEN TESTIMONY OF  
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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
U.S. DEPARTMENT OF COMMERCE**

**LEGISLATIVE HEARING ON H.R. 2864**

**BEFORE THE  
SUBCOMMITTEE ON INSULAR AFFAIRS, OCEANS, AND WILDLIFE  
COMMITTEE ON NATURAL RESOURCES  
U.S. HOUSE OF REPRESENTATIVES**

**May 6, 2010**

Good morning Chairwoman Bordallo, Congressman Brown, and Members of the Subcommittee. My name Captain John Lowell, and I am the Director of the Office of Coast Survey at the National Oceanic and Atmospheric Administration (NOAA). Thank you for inviting me to testify before you today on H.R. 2864, a bill to amend the Hydrographic Services Improvement Act of 1998 to authorize funds for enhancing NOAA's hydrographic services delivery in the Arctic.

Although our existing mandates already cover all U.S. waters, including the U.S. Arctic, and even allow activities outside U.S. waters, we certainly support the legislation's intent to recognize the Arctic as a region in need of NOAA services for safe navigation, delineating the United States' extended continental shelf, and monitoring and describing coastal changes. In fact, NOAA is currently validating a proposed Arctic strategy in which hydrographic services are a priority for navigation safety, maritime security, and environmental protection. These same geospatial services are also fundamental to many other activities in the Arctic, including effective climate adaptation, community resilience, coastal resource management, and marine spatial planning strategies.

NOAA's surveying and charting responsibilities have existed since 1807, and we have specific authorities under the Coast and Geodetic Survey Act of 1947 (33 U.S.C. 883a *et seq.*) and the Hydrographic Services Improvement Act (33 U.S.C. 892 *et seq.*), which include:

- The acquisition and dissemination of hydrographic, tide and current, and shoreline information for safe navigation of commerce, and
- Management of the National Spatial Reference System, which provides the fundamental geospatial control for transportation, mapping and charting, and any other activities requiring accurate latitude, longitude, and elevation data.

NOAA's hydrographic services cover the 3.4 million square nautical miles of the U.S. Exclusive Economic Zone (EEZ), including the nearly 1 million square nautical miles of U.S. Arctic<sup>1</sup> waters. Because of the authorities referenced above, we do not believe that explicit direction and funding authorization to work in the Arctic is necessary for NOAA to deliver its hydrographic services to this important region. In response to the Committee's question as to whether this legislation would impact NOAA's capabilities to conduct hydrographic surveys in other priority areas of the EEZ, we do not foresee any detrimental impacts of this bill on those efforts, pending the outcome and specific language of the annual appropriations process.

As I noted earlier, however, H.R. 2864 puts a well-deserved spotlight on emerging Arctic issues. The Administration is looking closely at Arctic policy and management, as evidenced by the work underway to implement the January 2009 National Security Presidential Directive-66/Homeland Security Presidential Directive-25 on an Arctic Region Policy, and the Interagency Ocean Policy Task Force's recognition of the Arctic as an area of special emphasis in its interim report released September 2009. The interim report calls for "better ways to conserve, protect, and sustainably manage Arctic coastal and ocean resources ... new collaborations and partnerships to better monitor and assess environmental conditions ... [and] improvement of the scientific understanding of the Arctic system and how it is changing in response to climate-induced and other changes."

As you know, there is now widespread evidence of climate change in the Arctic region, most dramatically observed in loss of sea ice. In four of the last five years, we have witnessed the lowest sea ice extents on record, as well as a 35 percent decrease in thicker multi-year sea ice during the same time period. As access to the region increases with sea ice retreat, we are seeing a corresponding growth in international and domestic Arctic interests – such as extended continental shelf claims under the United Nations Convention on the Law of the Sea – as well as maritime domain awareness concerns and opportunities for economic development and access to Arctic resources. Oil companies are investing more in energy exploration, commercial shipping interests are anticipating an open Arctic trade route, and the potential for cruise, fishing and other economic sectors may exert pressure on Marine Transportation System infrastructure and our security assets to promptly respond to risks in the region. These economic drivers can also threaten ecosystems and Arctic inhabitants already impacted by the rapidly changing climate. As Dr. Jane Lubchenco, the NOAA Administrator and Under Secretary of Commerce for Oceans and Atmosphere, has said,

"Most of what we have seen in the Arctic Ocean has led us to believe that warming is happening even faster than many of the models are predicting. The melting of the ice in the Arctic Ocean is happening at a faster pace than we had predicted. And that is creating new opportunities in the Arctic Ocean... [opportunities that] need to be pursued in ways that are precautionary and take into the account the need to ensure that those systems remain healthy and resilient through the coming changes." (Alaska, August 2009)."

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<sup>1</sup> The Arctic Research and Policy Act of 1984 defines 'Arctic' as "all United States and foreign territory north of the Arctic Circle and all United States territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers; all contiguous seas, including the Arctic Ocean and the Beaufort, Bering and Chukchi Seas; and the Aleutian chain."

However, as the United States begins to confront these Arctic challenges, it is evident that despite some exploration and research to date, even the most basic data are lacking and the science to inform many decision-making processes and support services is frankly inadequate. Because the region until recently has been relatively inaccessible, thus precluding the need for such information, the Arctic is severely deficient in many of the hydrographic services capabilities that NOAA provides to the rest of the Nation. The region currently has:

- virtually no geospatial infrastructure for accurate positioning and elevations;
- sparse tide, current and water level prediction coverage;
- obsolete shoreline and hydrographic data;
- poor nautical charts; and
- insufficient weather and ice forecast coverage.

For example, most Arctic waters that are charted were surveyed with obsolete technology, some dating back to the 1800s, before the region was part of the United States. Most of the shoreline along Alaska's northern and western coasts has not been mapped since 1960, if ever, and confidence in the region's nautical charts is extremely low.

By strengthening its Arctic science and stewardship, NOAA aims to better inform policy options and management responses to the unique challenges in this fragile region. We are currently validating with our stakeholders a comprehensive NOAA Arctic Strategy that aligns our capabilities in support of the efforts of our International, Federal, State and local partners, and within the broader context of our Nation's Arctic policies and research goals. The Strategy recognizes that NOAA can make the highest positive impact to Arctic communities and sustainable economic growth by providing products and services for safe navigation and security, oil spill response readiness, and climate change adaptation strategies. Much of this can be accomplished through improvements in the hydrographic services available to the Arctic region, including:

- Overhauling the Arctic geospatial framework of geodetic control and water levels, which will correct meters-scale positioning errors and enable centimeter-scale measurements to support such critical needs as marine transportation, sea-level change analysis, erosion and permafrost thaw impacts to infrastructure, oil and gas resource exploration, and storm surge modeling; and,
- Surveying and mapping Arctic waters and shoreline for accurate coastal maps and nautical charts, which will benefit navigation and national security, sea level change impact assessments, habitat characterizations, and extended continental shelf delimitation.

While much of NOAA's Arctic efforts are focused on assessing and prioritizing the region's needs, our navigation-based programs are taking initial steps to provide the essential geospatial foundation described above. For example, NOAA is working with partners like the U.S. Coast Guard and local vessel pilots to prioritize surveys of likely shipping lanes in the North Bering and Chukchi Seas to help address the Bering Strait chokepoint in particular and more broadly to reduce the risk of accident and environmental impact in Arctic waters. In FY 2010, NOAA is conducting demonstration surveys in key areas of interest to the U.S. Navy, with a few more

surveys planned for FY 2011. On the international front, in our role as U.S. representative to the International Hydrographic Organization, NOAA is working with other Arctic member states to establish an Arctic Regional Hydrographic Commission. The Arctic is the only ocean body without a representative Commission to foster collaboration on hydrographic surveying, nautical charting, and other mapping activities.

We are also continuing a strong push to collect gravity data over the State of Alaska, which will vastly improve the positioning accuracies for elevation measurements. This effort will help coastal communities in particular with infrastructure-hardening challenges and decisions on erosion controls and flood protections. In addition, NOAA is completing a tide gauge demonstration project in Barrow in order to develop the technology and approaches necessary for long-term water level measurements under harsh Arctic conditions. Finally, NOAA and its Federal partners on the Committee on the Marine Transportation System (CMTS) recently established the U.S. Arctic Marine Transportation Integrated Action Team, a CMTS working group whose mission is to facilitate interagency coordination to strengthen the marine transportation system in the Arctic.

However, there is a great deal of work yet to be done, and NOAA is positioning itself to provide the information, products, and services needed to meet the Arctic's emerging needs. In particular, the region poses unique operational challenges for hydrographic surveying, such as in predicting future ice conditions, planning surveys in advance, and conducting those surveys under harsh environmental circumstances. NOAA and its contractors have some capability for working in ice conditions, but we are currently evaluating the need for additional capacity and the best and safest approach to data collection. As indicated above, NOAA is also evaluating the technology and strategies needed for long-term monitoring of tides, water levels, and currents under harsh Arctic conditions.

Putting good information into the hands of mariners is essential for safe navigation and environmental protection, and coastal communities and scientists must have the same foundational support for good operational and research decisions. NOAA's hydrographic services are an essential component of an Arctic where conservation, management, and use are based on sound science to support U.S. economic growth, and resilient and viable ecosystems and communities.

Thank you again, Chairwoman Bordallo and Members of the Subcommittee, for the opportunity to talk about NOAA's role in the Arctic with respect to hydrographic services. We appreciate the time and attention the subcommittee is devoting to this important issue, and look forward to working with you further on this legislation.