

# Committee on Resources

## Subcommittee on Fisheries Conservation, Wildlife and Oceans

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### Statement

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**TESTIMONY OF  
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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
DEPARTMENT OF COMMERCE  
BEFORE THE  
SUBCOMMITTEE ON FISHERIES CONSERVATION, WILDLIFE AND OCEANS  
COMMITTEE ON RESOURCES  
U.S. HOUSE OF REPRESENTATIVES  
JULY 27, 2000**

Thank you, Mr. Chairman and Members of the Subcommittee, for this opportunity to appear before you today to testify on the hydrographic and navigation services of the Department of Commerce's National Oceanic and Atmospheric Administration. One of NOAA's major missions is to Promote Safe Navigation. With your support and leadership, and that of the chairman of the Resources Committee, new authorizing legislation for the programs supporting this mission was passed by the last Congress and signed into law by the President. I also am appreciative of your efforts to secure appropriations for these programs through your "Dear Colleague" letters and other efforts.

The navigation services are also a priority for the Department and NOAA. They directly support the Department's missions to support the Nation's economic infrastructure; to promote science, technology and information; and to improve resource management and stewardship. These programs are an important part of the environmental assessment and prediction mission of NOAA. Because these services help reduce the risk of maritime accidents and the potential for an ecological disaster, they also support the agency's environmental stewardship mission. We have made significant strides in achieving our goals to reduce survey backlogs and modernize these programs. At the same time, we are actively involving the private sector through contracting and other mutually beneficial agreements. Successes in our efforts to implement digital charting databases and products and reduce the critical survey backlog could not have been accomplished without our private sector partners.

The fundamental task of NOAA's navigation services is to provide mariners with accurate, up-to-date, navigation information. Our navigation programs have undertaken a deliberate and consistent effort to listen to and work closely with the user community, and to enlist the support of the private sector and academia in data collection, product design, and research and development. Putting customers first and utilizing innovative partnerships epitomize the reinvention and performance-based government envisioned by both the Congress and the Administration. These efforts were recognized last year when the Marine Chart Division of NOAA's Coast Survey received a National Partnership for Reinventing Government Hammer Award for the public/private partnership that computerized the charting process and developed the raster digital chart to achieve dramatic improvements in efficiency and accuracy.

Of course, fiscal concerns require a realistic strategy for modernization. Throughout NOAA's navigation services - hydrography, charting, and water level data - the basic strategy has been to make investments where they will yield the greatest benefit to the public and mariners. Typically, this has meant first focusing efforts and implementing advanced technologies in those waters in and around the Nation's busiest ports and in areas where the nature of the cargo (especially people and chemicals) presents the highest risk of harm. The underlying goal of these programs is to prevent accidents. Success is therefore sometimes difficult to measure directly, i.e., it is difficult to track accidents and disasters that were avoided. But recent investments in the navigation programs have resulted in services and products that are more up to date and accurate, which in turn have generated renewed confidence among clients using these long-standing government services.

The Federal government, through NOAA and its predecessor agencies, has been conducting hydrographic surveys, producing nautical charts, and providing tidal and positioning information for U.S. waters since 1807. NOAA's navigation products and services continue to support a variety of national needs, including national defense, commerce and trade, and reducing the risk of accidents and the accompanying harm to life, property, and the environment. The Department provided in-depth testimony on these services when it testified before this Subcommittee at a hearing in 1997. Rather than reiterating many of the points made in that testimony, including descriptions of the programs themselves, I have provided a copy along with this written testimony and ask that both be made a part of the record of this hearing. Today, I would like to focus on updating you on our efforts since 1997.

#### STATUS OF CONGRESSIONAL REPORTS

Mr. Chairman, I know that one reason for holding this hearing is to review reports NOAA was required to provide under the Hydrographic Services Improvement Act of 1998. One report is on our Physical Oceanographic Real Time System (PORTS) and the other is on maintaining Federal expertise in hydrographic services. I am pleased to note that the PORTS report has been delivered to the Committee, but apologize that the Federal Expertise report is late, and that we were unable to provide it in time for this hearing. We have been keeping the Committee informed of the status of the Federal Expertise report throughout the process, and it is currently under review by the Administration.

#### HYDROGRAPHIC SURVEYING BACKLOG

In FY 1994 NOAA undertook a detailed assessment of hydrographic surveying needs. NOAA determined it had a backlog of 43,000 square nautical miles of critical surveying requirements out of over 3 million square nautical miles for which NOAA has responsibility. Most of these critical areas are located in and around the Nation's major ports and in Alaska where rapid growth and development in the petroleum, fishing, and tourism industries continue to create new risks and requirements. When NOAA testified before the committee in 1997 the backlog was approximately 39,000 snm. At the end of FY 1999, NOAA has reduced the backlog to about 34,000 snm. In 1994 it was estimated that it would take more than well over 30 years to conduct surveys of these backlogged, critical requirements. At this time, we estimate it will take about 20 years from today to complete these critical surveys. Details on our surveying efforts are shown in Table A.

**Table A**

FY	NOAA Vessel	NOAA Vessel	Contract	Contract	Critical Survey Backlog
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	Production (SNM)	Cost (\$M)	Production (SNM)	Cost (\$M)	(43,000 SNM)
1994	1,522	18.0 *	61	1.2	41,417
1995	1,345	17.8	3	0.1	40,069
1996	1,297	12.4	15	0.1	38,757
1997	1,292	13.2	13	0.2	37,452
1998	997	13.1	421	8.9	36,034
1999	1,080	12.7	869	20.4	34,085
2000(est)	1,120	12.7	410**	16.1	32,555

\* Actual NOAA vessel costs for hydrographic surveying not broken out separately in FY 1994

\*\* Production decrease for contracts is projected due to less funding available, and higher percentage of work in Alaska, which is more expensive than the Gulf of Mexico.

Due to increased investments, the timeline has improved, and it demonstrates considerable progress in providing much needed support. However, 20 years to complete the backlogged critical surveys continues to be a cause for concern to mariners navigating our waters. The Administration's request for NOAA's hydrographic surveying has increased by 150 percent from about \$12 million for FY1998 to about \$30 million for FY2001, and Congressional appropriations show the same trend. Virtually all of that increase has been for contract surveys by the private sector. We also are optimistic that efficiency will continue to improve as contracting procedures become firmly established and contractors gain more experience. Of course, NOAA's in-house survey efforts would be even more efficient if restrictions on our ability to procure modern surveying equipment were lifted. This action would enable NOAA to reduce the backlog sooner and expand expertise; experience with modern surveying equipment and techniques will help ensure an adequate number of our personnel are well trained and help facilitate our efforts to contract, set standards, and negotiate international requirements. As instructed, NOAA is contracting out for at least half of its hydrographic data acquisition, and we look forward to working with appropriators to alleviate any remaining concerns.

## CONTRACTING FOR REDUCING THE HYDROGRAPHIC BACKLOG

Contracting for hydrographic services began in earnest in FY 1998. Subsequent passage of the Hydrographic Services Improvement Act required NOAA to use the Brooks Act, which uses quality based, contracting procedures. Implementing the new administrative, legal, and oversight responsibilities for contracting is going very well. In FY 1998, \$8.9 million in contracts were awarded. In 1999, \$14 million was appropriated for contracting. Using carry over funds, a total of \$20.5 million in contracts were concluded in 1999. We expect that \$16.1 million in contracts will be awarded by the end of the current fiscal year. To ensure fairness and clarify our requirements, NOAA's Specifications and Deliverables for hydrographic surveys have been posted on the Internet. These specifications are the same for all survey crews whether contract or in-house.

I understand that some contractors would like to further reduce the time from contract awarding to work authorization. So would we. The length of time for the contract awards process has caused some frustration, particularly in Alaska because of the short survey season. I assure you that our goal is to facilitate the contracting process, which is operating well in view of the short time NOAA has had to ramp up the Brook Act processes. Currently, the entire process takes nine to ten months, which is comparable to timelines at

other agencies using Brooks Acts procedures. As our reviewing and procurement offices become more familiar with the Brooks Act process, we expect to reduce delays and further streamline procedures. I would note, however, that these are significant sums of money and the Department will continue to fulfill its fiscal and oversight responsibilities. I would also note that NOAA has received praise from contractors for the clarity of its Statements of Work, flexibility, technical assistance and expertise, professionalism, fairness, and promptness of payment. And our contractors are fulfilling their side of the bargain; overall data quality from contract surveys has been acceptable and of chart quality. We will continue to do all we can to improve the efficiency and accuracy of all survey work, both contract and in-house.

Regarding the cost-effectiveness of contract surveys, contractors have generally met NOAA's expectations and the contractual requirements. To date, NOAA has not undertaken any official cost-comparison analysis between contract and in-house surveying. We concluded that such a comparison would be inappropriate at a time when new partnerships with contractors were just developing. NOAA instead has committed its resources to a good faith effort to implement large-scale contracting and to ensure the success of contractors and the outsourcing process. As long as NOAA maintains its expertise through capability in all aspects of hydrographic surveying, it will also continue to assume responsibility for the accuracy and quality of contract data. This should help keep contracting cost-effective and competitive with in-house surveying efforts. NOAA is pleased with the success of these partnerships and will continue to work with its contractors to optimize the efficiency and effectiveness of their efforts. At this time, NOAA foresees a long-standing role for contract survey data.

#### MAINTAINING FEDERAL EXPERTISE

Until now NOAA has been able to maintain adequate Federal expertise in hydrographic surveying. This is essential if NOAA is to fulfill its legal responsibilities as the Nation's hydrographic and charting office, which include representing and promoting the Nation's interests before international bodies such as the International Hydrographic Organization and the International Maritime Organization. Although expertise currently is being maintained by utilizing the three existing NOAA vessels, restrictions on NOAA's ability to upgrade and procure equipment on all of these vessels act as an impediment to both the efficiency and effectiveness of its in-house and contract operations. NOAA's personnel rotate between sea duty and work on shore to maintain expertise, but expertise is best maintained and enhanced if all of the agency's hydrographers are working with advanced systems while at sea. Not only does this augment efficiency and maintain expertise, it also ensures enough expert personnel are available to lead the agency in years to come and to facilitate and oversee contracting today.

Mr. Chairman, crunching numbers on critical requirements and reporting on miles surveyed per year is only part of the picture. Computing the cost-per-mile for completed surveys is a simple computation, but it does not account for the dynamics of the specific survey task. Statistics alone do not convey the reality of the challenges that our surveyors, government or contract, face on the water. Some survey areas, such as areas known to be strewn with rocks and pinnacles, pose complex challenges. Not surprisingly, vessels surveying in such areas can appear to be inefficient when compared to a ship surveying for shoaling in an area with a sandy, smooth seafloor. Other factors, such as weather and ocean conditions, pose additional uncertainties and challenges that cannot be readily predicted.

When unexpected obstructions are discovered, survey vessels must make more detailed investigations to identify the obstruction and assist other authorities to take appropriate action. For example, this spring the NOAA survey vessel RUDE was completing surveys near a pier for a power plant off Portland, Maine, when it discovered two submerged steel pipes rising nine feet off the bottom to a depth of 30 feet. Oil

barges with drafts in excess of 30 feet routinely transfer fuel at the pier. The discovery was immediately reported to the Coast Guard, local marine pilots and the power plant. Using the positioning data provided by RUDE, divers had the pipes cut within four days.

We also regularly receive unanticipated requests for surveys from the Coast Guard and other entities. For example, this spring RUDE was tasked with investigating a shoal bordering the Boston North Channel, which is routinely crossed by liquefied natural gas (LNG) tankers. Using its sidescan and multibeam sonars, RUDE quickly identified the obstruction. Divers made a further investigation, revealing a 130 foot by 40 foot steel barge rising 10 feet off the sea floor. A Coast Guard vessel was dispatched to place a buoy marking the site. Mr. Chairman, I want to assure you that reducing the backlog remains the number one operational objective, but responding to unforeseen needs is part of the responsibility NOAA has as the Nation's hydrographer.

NOAA also has continued to fulfill its long-standing role as a leader in the development of new survey technologies. Through a small business development grant, NOAA participated in and supported the development of high speed, high resolution sidescan sonar. A significant new development is the establishment of the Center for Coastal and Ocean Mapping and Joint Hydrographic Center at the University of New Hampshire. The Center's mission is to serve as a national resource and world leader in the advancement of research and education in the hydrographic and ocean mapping sciences. It is expanding the scope of interaction and cooperation between government, industry, and academia. The research theme will develop and evaluate a wide range of state-of-the-art hydrographic and ocean mapping technologies and applications. The educational theme will promote and foster the education of a new generation of hydrographers and ocean mapping scientists to meet the growing needs of both government and the private sector.

## NAUTICAL CHARTING AND ELECTRONIC NAVIGATION CHARTS

When NOAA testified before this Subcommittee in 1997, it had recently converted its entire suite of nautical charts to a digital format. This database was intended to support future maintenance, updating, and production of paper charts and the digital Raster Nautical Chart (RNC) developed and produced through a Cooperative Research and Development Agreement (CRADA) with a private firm. At that time, NOAA predicted it would be able to maintain and update this system out of current base funding. We have done so, and we have accomplished much more. This new system has proven to be highly efficient and the charting database is now kept current with all Notices to Mariners on a weekly basis. In just three years, digital RNC sales have become so popular with mariners that they are outselling NOAA paper charts. The most recent development is an update service whereby mariners can subscribe to have their charts updated via the Internet, ensuring that they always have the most recent information at their disposal. NOAA worked closely with its private sector partner in researching and developing this latest innovation. This relationship continues to provide an optimum and efficient mix of private sector innovation and government quality control, helping NOAA to achieve its fundamental goal of providing mariners and the public with affordable, accurate, and up-to-date navigation information.

The international hydrographic community has recognized the utility of the raster product. Since 1997 and due in part to NOAA efforts, the International Maritime Organization has amended its standards to allow for the use of RNCs where more advanced vector Electronic Navigational Charts (ENCs) are not available. The International Hydrographic Organization has written and published a standard for raster charts. The International Electrotechnical Commission is expected to take action on standards supporting the raster chart this summer. In response to these international developments, the U.S. Coast Guard is drafting changes

to U.S. chart carriage regulations authorizing the use of the Electronic Chart Display and Information Systems (ECDIS) with either ENC's or RNC's as appropriate.

These developments are consistent with what NOAA stated it intended to accomplish when it testified before this Subcommittee three years ago. As you may recall, no country in the world has produced a full suite of ENC's meeting international standards. This is due largely to the high cost of creating vector charts from source data. While developing and implementing true ENC's is costly, they are vastly superior to RNC's. NOAA therefore took an incremental approach in developing ENC's, and sought to produce an initial set of ENC's for locations where the benefits would be commensurate with the investment.

NOAA also determined that the public and chart users would not be best served by "vectorizing" its existing charts as some private, international firms are doing. A principal benefit of a true ENC is a dramatic improvement in the accuracy of the position of all chart features, allowing mariners to zoom in on a very large scale as circumstance require. This requires constructing the ENC with the best available source data. Simply converting existing, smaller scale charts to a vector format, i.e. "vectorization," does not achieve this. In fact, it might actually increase risk by instilling a false sense of confidence in the chart user. NOAA's strategy has been to maintain and regularly update its existing chart suite in the paper and raster formats, while it creates the vector ENC's for waters where more detailed data would best promote safe navigation, i.e., principally in waters in and around the Nation's busiest ports. By 2000, NOAA's goal was to have vessels use up-to-date paper or raster charts when navigating in most waters, while providing more detailed and precise ENC's in these critical areas and in a quantity that NOAA could afford to maintain and update.

NOAA originally planned to provide a total of about 200 ENC's for the Nation's busiest ports by the end of 2000. NOAA estimates that a suite of 575 ENC's is required in order to obtain continuous coverage so vessels can utilize ENC's to navigate from port to port. Ultimately, but only in the long term and as resources allow, NOAA anticipates it will provide coverage of all U.S. waters in the ENC format. NOAA was not fully funded in FY 2000 to chart newly acquired hydrographic data and produce the 200 ENC's. A \$1.3 million request pending now in the Congress to support these activities in FY 2001 would help NOAA meet its goals of providing ENC's for the Nation's busiest ports. By the end of 2000, NOAA, in cooperation with its private sector partner, expects to have 65 ENC's produced. Up to 70 more will be released in 2001 for a total of 135 ENC's, which falls short of the 200 needed to cover the Nation's busiest ports. Without the requested increase, this is about the maximum number of ENC's that NOAA will be able to maintain and update. In the interim, NOAA will work with its private sector partner to ensure its charting databases for ENC's and the production of paper and raster charts are kept up-to-date.

NOAA is continuing to pursue a public/private partnership to develop Print on Demand (POD) services for its paper charts. Historically, paper charts have been printed in batches that are warehoused to await sale, perhaps years hence and without interim corrections. The POD product will be printed upon request from NOAA's database, which is updated weekly with all Notice to Mariners and other information. The capability to provide paper (and raster) charts from NOAA's continually updated database will be a first in the world; other national hydrographic offices are already expressing interest in adopting similar capabilities, in order to improve global maritime safety and efficiency.

#### REAL TIME TIDE AND WATER LEVEL SYSTEMS / PORTS

Since 1997, NOAA has continued to support the four (Tampa Bay, San Francisco, Houston-Galveston, New York-New Jersey) original, prototype Physical Oceanographic Real Time Systems (PORTS) in partnership

with local entities, and to demonstrate the feasibility and benefits of this technology. Since the last hearing, NOAA has implemented cost-sharing agreements for each of the four PORTS under which local sponsors pay for local operation and maintenance costs. NOAA has continued to hear from many of its navigation services constituents that the need for PORTS is a high priority. However, we have not been able to support additional PORTS partnerships, as well as maintain the National Water Level Observation Network. This year, NOAA sought and appropriators granted permission to reprogram funds to keep the existing PORTS operational, as well as enable a fifth in Narragansett Bay to be activated. More recently, appropriators in the House of Representatives approved the FY 2001 request for \$15.089 million. This level of funding must be sustained to help maintain and upgrade the basic NWLON system and allow NOAA to provide quality assurance services for an expanded network of PORTS. Without this FY 2001 increase, NOAA will be unable to maintain support even for the existing PORTS locations.

Meanwhile, as I mentioned, all local operation and maintenance of existing PORTS, including Narragansett, is supported by local authorities. Unlike new technologies that have enhanced NOAA's surveying and charting responsibilities, PORTS is much more than a modification of NOAA's historic tide and water level monitoring responsibilities. PORTS requires the installation of extensive new sensor arrays and is therefore more than an extension of the existing NWLON system, which NOAA will continue to maintain and upgrade. Therefore, NOAA's policy regarding PORTS is that the Federal government's role will primarily be to provide ongoing quality control, along with research and development and some assistance in program design. Costs such as design and local operation and maintenance must be met locally.

The Federal role in PORTS is essential to ensure that mariners traveling between ports can expect standardized data, as well as be able to use the quality controlled data with confidence. Having local authorities fund the actual system is in keeping with Administration's policy that the costs and benefits of such highly localized services are best borne by the beneficiaries of those services and those in the community that may benefit indirectly. This also is in keeping with the views of many in Congress, who have indicated that NOAA should not expect funding to build and maintain a national system of PORTS. Since the Congress recently approved NOAA's reprogramming request, the first fully locally-funded PORTS became operational in mid-June for Narragansett Bay. NOAA expects that this unique partnership, based on shared responsibilities, will facilitate the installation of new PORTS around the country. Several of the major ports have expressed interest in obtaining their own PORTS, including Los Angeles/Long Beach, California; Delaware River and Bay/Philadelphia; Charleston, South Carolina; Jacksonville, Florida; Port Hueneme, California; Wilmington, North Carolina; and New Orleans, Louisiana, among others. Because all local operation and maintenance of a PORTS is supported by local authorities, NOAA will implement new PORTS in heavily traveled ports as the local authorities sign agreements and make resources available.

## IMPACT OF RETIREMENT OF NOAA's VESSELS ON FEDERAL EXPERTISE

Finally, as I mentioned earlier, NOAA has been able to maintain adequate Federal expertise in hydrographic surveying to date. However, when the time comes to retire NOAA's three remaining survey vessels, NOAA must have adequate replacement capacity in place to ensure Federal expertise and the efficiency and effectiveness of its contract operations. NOAA's personnel rotate between sea duty and work on shore. Expertise is best maintained and enhanced if all of the agency's hydrographers have experience working with advanced systems at sea. Without such an in-house capability, NOAA may have difficulty fulfilling the Federal role in hydrography and safe navigation. The forthcoming report explores many detailed options that we have examined to ensure that NOAA can indeed maintain Federal expertise into the 21st century.

## CONCLUSION

Mr. Chairman, I understand the Subcommittee is awaiting delivery of reports on real time oceanographic systems and how NOAA intends to maintain expertise in hydrography, especially after the decommissioning of its three surveying vessels. I apologize again that the Federal Expertise report is late. I am pleased to report that implementing large-scale contracting for hydrographic surveys is going very well and that NOAA is satisfied with the overall quality of the data being generated by its private sector partners. We are maintaining our expertise, although we seek to have congressional restrictions on the purchase of advanced equipment lifted to ensure that expert personnel remain available to facilitate both in-house and contract surveying. Also, as NOAA's in-house fleet ages and is eventually decommissioned, we will have to seek solutions for maintaining a core dedicated vessel capability to send our personnel to sea in order to maintain Federal expertise. Furthermore, with the assistance of contractors and other partners, NOAA is updating its paper and raster chart database on a weekly basis. With our partners we are now delivering an update service for the raster chart and are working to provide a commensurate service in the form of Print on Demand for our paper charts. Delivery of the ENC has been slowed, but an initial, smaller set of ENCs will be available this year. Finally, we are optimistic that the budget now pending before the Congress will enable us to put production of ENC's back on track and that we will be able to maintain NWLON and provide quality assurance for PORTS so that local authorities can move forward to design and implement systems based on this technology developed by NOAA.

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Attachment: [PowerPoint Presentation](#) (12 slides)

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