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TESTIMONY OF
REAR ADMIRAL JOSEPH SERVIDIO
ASSISTANT COMMANDANT FOR PREVENTION POLICY

ON
"FEDERAL NAVIGATION SAFETY SYSTEMS"

BEFORE THE
HOUSE TRANSPORTATION AND INFRASTRUCTURE SUBCOMMITTEE
ON COAST GUARD AND MARITIME TRANSPORTATION

FEBRUARY 4, 2014

Good morning Chairman Hunter, Ranking Member Garamendi and distinguished Members of the Subcommittee. It is a pleasure to be here today to update you on the Coast Guard's efforts to improve the safety of navigation on our nation's waterways.

The Coast Guard assumed responsibility for the Nation's system of aids to navigation (ATON) from the U.S. Lighthouse service in 1939. In 1939 there were 24,000 visual aids to navigation; now there are 50,000 Federal visual aids to navigation and an equal number of private aids. As the number of visual aids has more than doubled over the last 75 years, the Coast Guard has also implemented numerous improvements to the broad range of fixed and floating aids including solarization to extend battery life and the use of LED lighting, as well as better coatings and improved moorings to improve visibility, increase reliability, and reduce maintenance requirements.

As the Coast Guard continues to make improvements to the nation's visual ATON system, we are also leveraging the latest technological developments in radar, echo sounding, and perhaps most importantly, the Global Positioning System (GPS), to holistically improve navigation safety. These efforts include modernizing our Automated Identification System (AIS) and Vessel Traffic Service (VTS), as well as adopting the latest Electronic Chart Display and Information Systems (ECDIS). All of these efforts support an ever evolving mix of vessel types and sizes engaged in both recreational and commercial activities on our Nation's waterways.

A key component of our strategy to manage, maintain, and modernize our navigation safety systems is to achieve the proper balance of visual and electronic navigation aids that best facilitates the safe flow of commerce, at the best value to the taxpayer. This effort requires careful assessment and adoption of new technologies as well as operation and maintenance of our multi-mission buoy tender fleet, Aids-to-Navigation Teams (ANTs), and program infrastructure at the Headquarters, District, and Sector levels.

Today, the Coast Guard ATON program consists of 68 cutters, 184 boats, and almost 2,500 Coast Guard personnel. As we continue to focus our efforts on modernizing the Nation's navigation safety systems, we are also assessing the optimum mix of visual aids, electronic aids, and other resources to support these systems.

Aid Mix

The constellation of more than 50,000 Federal visual aids to navigation the Coast Guard maintains was designed before the advent of highly-accurate electronic systems such as Global Navigation Satellite Systems, electronic chart systems, and the AIS. Our goal is to continue to support waterway users by making available accurate and timely information, and improving its reliability, while providing appropriate redundancy across our navigation safety systems for the broad range of recreational and commercial users. This effort also includes an update to our Waterways Analysis Management Study (WAMS) process, which is the legacy process for identifying the number, type, and location of visual aids for each waterway. In updating this process we will focus on improving how we both capture, and apply waterway-specific data, as well as implement available electronic navigation aids and other positioning and information delivery technologies to determine the optimum mix of aids for each waterway.

Differential GPS

Differential GPS (DGPS) was developed by the Coast Guard to improve accuracy in positioning aids to navigation when the original GPS signal was transmitted for civil users with an intentional error imbedded. This induced error was known as Selective Availability and it decreased the position accuracy of GPS from 5 meters to approximately 100 meters. By using static reference stations to calculate corrections to the GPS signal received from the satellites, DGPS is able to retransmit a corrected GPS signal to users with DGPS reviewers; providing accurate positioning information to within approximately 10 meters. In May of 2000, the U.S. Government decided to permanently turn off Selective Availability, providing all users with GPS receivers with the maximum accuracy available from the GPS satellites. Furthermore, the newer GPS III satellites do not even have the capability to transmit with an induced error.

Working with the Department of Transportation, which has responsibility for terrestrial uses of DGPS, the Coast Guard is assessing the need to maintain DGPS. We are currently reviewing public comments received from a Federal Register solicitation on the potential termination of DGPS and expect to make a determination before the end of the calendar year. Options being considered include maintaining the system as-is, divesting of the entire system, or divesting of a portion of the system while maintaining fewer sites to meet specific operational requirements.

e-Navigation

E-Navigation (e-NAV) is an international and national effort aimed at harmonizing the collection, integration, exchange, and presentation of marine information onboard vessels and ashore.

In essence, the development of e-NAV is the movement of shipping into the digital age; enhancing the ability of service providers, notably ATON service providers, to deliver digital information while reducing the administrative burden on mariners and sustaining the safety of maritime transport.

Internationally, significant contributors to the e-NAV effort include the International Maritime Organization representing international shipping, the International Association of Marine Aids to Navigation and Lighthouse Authorities representing ATON service providers, the International Hydrographic Association representing authorities for charting, and the International Radio-Maritime Committee representing marine electronics manufacturers. United States' interests are represented in all these forums.

On the national level, the Coast Guard is working with the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Army Corps of Engineers (USACE), under the auspices of the Committee on the Marine Transportation System (CMTS), which has established an Integrated Action Team for e-Navigation. The focus of the CMTS Team is on developing capabilities for the delivery of electronic maritime safety information and navigation services. In addition, the Coast Guard has a bilateral working group with the Canadian Coast Guard to harmonize e-Navigation efforts.

In 2012, the Coast Guard approved the prototype use of AIS ATON stations. Sixteen virtual AIS aids to navigation were used to support the America's Cup in San Francisco last summer, and 109 physical AIS stations are currently deployed and operating at various USACE locks on the Western Rivers. In 2013, the Coast Guard entered into a Cooperative Research and Design Agreement with the Marine Exchange of Alaska to deploy AIS stations in support of Arctic navigation and marine safety. The goal is to convert their extensive AIS listening network into an AIS broadcast system for providing pertinent marine safety information.

Marking the Waterway of the Future

As vessel traffic increases and ships continue to get larger, we are modernizing and adapting the Nation's ATON system to continue to facilitate the safe flow of vessel traffic. Vessels transporting cargo in and out of U.S. ports have seen a growth from an average of approximately 820 feet to over 1,150 feet in just the past few decades, and their widths have increased by 50 percent. With the increased size of these ships, the margin of error for safe navigation in our Nation's waterways is getting much smaller. Today's mariners require more timely, accurate and consistent information to help manage this increasing risk. The Coast Guard continues to assess these risks. In the future, visual and electronic aids will continue to define high risk sea lanes and exclusion areas. They will support the real-time delivery of safety and security information, as well as identify navigation hazards associated with natural and man-made events.

In addition to changes in vessel size, our navigation safety systems will also have to consider the effects on navigation safety of evolving uses for particular waterways, such as aquaculture, minerals extraction, and renewable energy development. For example, there are currently twelve Wind Energy Areas being considered for the Atlantic Coast, which will require the Coast Guard to develop, mark, and broadcast for the mariner a system of Traffic Separation Schemes and fairways around the proposed structures.

Conclusion

Developing, maintaining and modernizing a comprehensive suite of visual aids to navigation and electronic navigation information systems is challenging. Together with our partners at NOAA and USACE, and with full consultation with waterway users, we are committed to designing and implementing Federal navigation safety systems that leverage the benefits of both visual and electronic technologies in order to fully meet future navigation requirements.

Our efforts to continually improve these safety systems are part of a broader Federal effort to facilitate the safe flow of commerce, protect the mariner and the environment, support the economy, and enhance the maritime public's ability to employ and enjoy one of our most treasured resources: America's waterways.

Thank you for the opportunity to testify today, and for your continued support of the U.S. Coast Guard. I look forward to answering any questions you may have.