



*William Hanson, Chair
Joyce Miller, Vice Chair*

November 1, 2017

RDML (Ret., U.S. Navy) Tim Gallaudet, PhD.
Acting Under Secretary of Commerce for Oceans and Atmosphere
U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, D.C. 20230

Dear Rear Admiral Gallaudet:

On behalf of the NOAA Hydrographic Services Review Panel (HSRP), below please find the highest priority recommendations and a summary with background information on the HSRP Fall 2017 meeting, held in Portsmouth, NH, September 11-13, 2017. Attached please also find two issue papers and the HSRP consensus comments to the draft Office of Coast Survey (OCS) Autonomous Systems Strategy.

HSRP recommendations:

- NOAA Administration should highlight and emphasize the value of the National Ocean Services' infrastructure services to the Department of Commerce, the Office of Management and Budget, and to Congress and should prioritize funding at levels that will accelerate navigation services infrastructure improvement including:
 - CO-OPS' Physical Oceanographic Real Time System (PORTS) funding;
 - "Making Precision Navigation the New Norm in Approaches and Ports" (paper attached);
 - Replacement and upgrades for the NOAA hydrographic survey fleet;
 - Hydrographic mapping and services overall, but particularly in Alaska;
 - Modernization of the National Spatial Reference System;
 - Hurricane and flood response.
- Prioritize research and development funding for organizations such as and with structures similar to the Joint Hydrographic Center (JHC) and Center for Coastal and Ocean Mapping (CCOM) at the University of New Hampshire (UNH) that facilitate rapid transfer of technology to the private sector and education of hydrographers and mappers as well as provide benefits to a broad spectrum of users nationwide. "Research and Development Benefits for NOAA and US Industry" (paper attached)
- HSRP consensus recommendations to the draft OCS Autonomous Systems Strategy.

Sincerely,

Handwritten signature of William Hanson in black ink.

William Hanson
Chair, HSRP

Handwritten signature of Joyce E. Miller in black ink.

Joyce E. Miller
Vice-Chair, HSRP

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Hydrographic Services Review Panel
Meeting Summary and Comments
Portsmouth, New Hampshire
September 11-13, 2017

The HSRP appreciates that Senators Maggie Hassan (D-NH), Jeanne Shaheen (D-NH), and Angus King (I-ME) and Representatives Carol Shea Porter (D-NH) and Chellie Pingree (D-ME) sent staff members, letters and videos supporting the work of the HSRP and emphasizing the importance of maritime commerce to New Hampshire, Maine, the Arctic, and the entire nation.

Although our meeting coincided with NOAA's response to Hurricane Irma's arrival in Florida and the southeast U.S., Dr. Paul Doremus, Acting Assistant Secretary for Conservation and Management, RADM Shepard Smith, Director, Office of Coast Survey (OCS), Mr. Glenn Boledovich, Director, National Ocean Service (NOS) Policy Coordination and Analysis Division, Ms. Juliana Blackwell, Director, National Geodetic Survey (NGS), and Mr. Richard Edwing, Director, Center for Operational Oceanographic Products and Services (CO-OPS), were able to attend at least a portion of the meeting, even while engaged in responding to a hurricane. These key NOAA personnel provide HSRP with operational continuity and insight into NOAA's challenges and progress, and we greatly appreciate their advice and participation. *The HSRP would like to highlight the invaluable disaster-related services provided by OCS, NGS, and CO-OPs, including flights to provide imagery of the damage done to Texas and Florida coasts, deployment of Navigation Response Teams to quickly re-open harbors, and issuing storm QuickLook products around the clock, which are all vital to our nation's infrastructure and preparedness for and recovery from natural disasters. We would also like to better understand the mechanisms and realities for funding hurricane response and interagency funding mechanisms, especially since many hurricanes coincidentally occur at the end of the fiscal year.*

This meeting was an excellent opportunity for the HSRP members to visit and learn about cutting edge research and technology work being done at the Joint Hydrographic Center (JHC) and Center for Coastal and Ocean Mapping (CCOM) at the University of New Hampshire (UNH). The JHC is sponsored by NOAA and UNH, while CCOM is the complementary university center that expands the scope of ocean mapping interaction and collaboration with the private sector, other government agencies and universities. Dr. Larry Mayer and Capt. (ret. NOAA Corps) Andy Armstrong are co-directors of JHC/CCOM and non-voting members of the HSRP. The structure implemented at JHC/CCOM provides many benefits to NOAA, other agencies, academia and industry. It has greatly facilitated the transfer of technology developed at UNH to the private sector. Many NOAA officers and civilians, including RADM Shepard Smith, have studied at UNH/JHC and have worked on the technologies developed at UNH. We greatly appreciate our tour of the facility as well as a demonstration of their research vessel and their unmanned surface vessel. HSRP members were especially impressed by the visualization demonstrations and the potential for making complex data more accessible and understandable to the general public and useful for more applications. This will lead to greater collaboration between NOAA and industry to develop new products. *The HSRP would like to recognize and thank Dr. Larry Mayer, Capt. Andy Armstrong and the researchers and faculty for their accomplishments at JHC/CCOM.*

At the panel meeting and at UNH/CCOM the panel learned about the rapidly evolving role of Autonomous Underwater Vehicles (AUV) and Autonomous/Unmanned Surface Vehicles (ASV) in hydrography. With discussions from NOS as well as developers, the panel noted many opportunities and applications for this new survey mode. Most importantly, the panel noted what appears to be a wonderful opportunity to dramatically improve upon the backlog of hydrographic survey needs. One of the options is to have multiple platforms working at once. Using USVs in addition to traditional small launches provides much safer conditions for survey staff. At the request of RDML Smith, the HSRP reviewed NOAA Office of Coast Survey's draft Autonomous Systems Strategy at this meeting, agreed upon a set of comments and recommendations and provided these to OCS on the future of the use of unmanned systems for hydrographic applications. *It is clear that ASV's have broad potential, especially in very shallow areas of interest to recreational boater and for use in frontier regions such as the Arctic. However ASV's neither diminish the need for ships nor are they a replacement for fleet recapitalization. It is apparent the USVs need motherships with special engineering to host the USVs and additional specialized staff would also be required to operate and fully utilize them.*

HSRP has been following the partnership of USACE and NOAA and providing recommendations for a number of years. Jeff Lillycrop of the U.S. Army Corps of Engineers (USACE) updated us on E-Hydro and PLOVER (pipeline and utility crossings), two important programs that have direct NOAA implications for increased data and better charts. In addition, Mr. Lillycrop and RDML Smith both updated us on the latest collaboration efforts. This collaboration is important to the safe and effective navigation in ports, harbors and waterways. We encourage stronger partnerships to fully develop and implement NOAA's mission.

At the HSRP public webinar meeting in June, the panel discussed and endorsed the draft OCS National Charting Plan and provided 13 pages of comments. We appreciate the efforts of OCS to detail their forward-looking thoughts in a comprehensive manner, and are pleased to see that some of the comments provided, particularly those regarding coordination with the USACE, have already been put in motion.

Given the heightened interest of the current administration in potential national infrastructure investments, HSRP discussions have recently focused on how the navigation services portfolio of NOS contributes to our national infrastructure. NOS performs many cost-effective and vital services that contribute to the nation's physical infrastructure, but NOS' most valuable contributions are to the U.S. information infrastructure. NOAA ships and aircraft, sensors and systems produce data and observations that are integrated into databases and provide foundational information that keeps our nation economically competitive. *When compared to huge local physical infrastructure projects such as individual bridges, roads and dams, the investment in these programs provide significant nation-wide benefits at relatively low cost.* Many of the eleven issue papers that the HSRP has produced over the past two years discuss infrastructure-related issues. These papers can be accessed at <https://www.nauticalcharts.noaa.gov/ocs/hsrp/recommendations.htm>.