

# Rapid Fielding of Capability to the Fleet: Guest Editor's Introduction

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## ABSTRACT

*With a focus on critical contributions to critical challenges and striving to create defining innovations, staff members at the Johns Hopkins University Applied Physics Laboratory (APL) often hearken back to the Laboratory's legacy in developing and fielding the proximity fuze and global navigation satellites (TRANSIT), as well as its role in developing and fielding the nation's first sea-based strategic deterrent (Polaris). These efforts required the staff to seek out and understand the needs of the warfighter, often as active participants in platform-based installations, field tests, and training exercises. These exciting projects resulted in delivery of unprecedented capabilities to U.S. forces while also attracting the best and the brightest to APL. In the spirit of this legacy, APL's Force Projection Sector has focused this issue of the Johns Hopkins APL Technical Digest on rapid fielding of capability to the Fleet. The articles in this issue represent all three of the sector's mission areas—Strategic Deterrence, Sea Control, and Precision Strike—and give some insight into the breadth and depth of the work we do to put capabilities in the hands of the warfighter, ranging from developing analysis and training tools to deploying prototype systems on Navy platforms.*

While a single edition of this publication cannot do justice to all the efforts in the three mission areas of the Johns Hopkins University Applied Physics Laboratory (APL) Force Projection Sector, this issue highlights some of the recent activities that have enhanced warfighter capabilities. Staff members in the Strategic Deterrence Mission Area are experimenting with commercial unmanned systems to create portable acoustic ranges to support missile testing in both the launch area and downrange impact area. In support of cost reduction for the Ohio replacement program, the Strategic Deterrence Mission Area's work combines the compu-

tational increases associated with Moore's law with real SSBN-based subscale testing to move away from empirically based computational fluid dynamics codes to physics-based models that will replace large-scale underwater launch tests with predictive underwater launch simulations.

Staff members in the Sea Control Mission Area are developing game-changing technologies for submarines, as well as training and analysis tools for fielded submarine combat systems. Sea Control staff members have also developed a unique method for producing low-cost, mission-specific unmanned systems by combining

additive manufacturing, commercial components, and virtual testing using environmentally accurate, high-fidelity simulations. In an effort to build trust in autonomy, they are also deploying test and evaluation tools for subsequent evaluation of these autonomous unmanned vehicles at Navy test ranges. For perspective on what an oceanographic scientist experiences on an extended test cruise, this issue offers a first-hand account of what it is like to be deployed on a submarine for the very first time.

Precision Strike staff members are enabling the deployment and integration of unmanned aircraft systems into complex airspace environments that include manned aircraft.

None of these achievements could have been accomplished without the amazing staff members dedicating themselves to the hard work and travel necessary to field these capabilities rapidly and effectively. These accomplishments are just a few examples of the positive impact APL's Force Projection Sector has on our nation's deployed forces and systems. I thank our staff for their collaborative spirit and their contributions, and I hope you find this collection of articles as fascinating as I do.



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As head of APL's Force Projection Sector, Lisa Blodgett oversees the work of the sector's three mission areas: Precision Strike, Sea Control, and Strategic Deterrence. Before becoming Sector Head, she served as the Mission Area Executive for Sea Control. In recognition of her contributions to the Advanced Processor Build/Acoustic Rapid COTS Insertion Program that revolutionized submarine sonar systems, in 1999 she received the Hammer Award from the National Partnership for Reinventing Government. Blodgett was also a key participant in the 2006 Way Ahead in ASW study, which produced recommendations that were implemented to improve the state of anti-submarine warfare. Blodgett collaborated with Johns Hopkins Hospital to develop a device for diagnosing pediatric heart murmurs. In 2005, this project resulted in patents and commercial licensing. Blodgett holds a bachelor's degree in electrical engineering from Purdue University and master's degrees in electrical engineering and technical management from Johns Hopkins University. Blodgett is Co-Chair for the Submarine Technology Symposium, a member of the Naval Submarine League Board of Directors, and an Advisory Council member for the National Defense Industrial Association Undersea Warfare Division. She served on the Defense Science Board Task Force for Next-Generation Unmanned Undersea Systems and also served on the Submarine Superiority Technical Advisory Group. Her e-mail address is [lisa.blodgett@jhuapl.edu](mailto:lisa.blodgett@jhuapl.edu).