

## **Boeing and Naval Oceanographic Office Successfully Demonstrate Autonomous Underwater Vehicle**

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The Boeing Company [NYSE:BA] and the Naval Oceanographic Office (NAVOCEANO) announced today the successful completion of more than two weeks of demonstrations of the Autonomous Underwater Vehicle (AUV) system, setting the stage for performing commercial surveys for the world's oil and gas industry.

Operations were conducted aboard the survey ship USS Pathfinder (T-AGS 60) in the Gulf of Mexico. Under a Cooperative Research and Development Agreement (CRADA), testing demonstrated safe and efficient AUV launch, recovery and deck handling equipment and methodologies, which optimize the effectiveness of military and commercial ocean survey operations.

"The demonstration's success was a result of excellent teamwork between the Boeing team and the highly capable and professional NAVOCEANO crew," said Dan Jones, Boeing director of advanced information systems for Space and Intelligence Systems at Boeing's Integrated Defense Systems.

Designed to operate at ocean depths of as much as 10,000 ft., an AUV can autonomously perform survey missions without the need for an umbilical for towing or data transmission. AUV systems offer significantly faster surveys in deep water than traditional towed survey systems, as well as improved stability and enhanced navigational accuracy for higher data quality. In addition, it can be mobilized onto a ship in less than 24 hours.

"Launch and recovery for AUVs larger than 10,000 pounds is extremely challenging from high-freeboard oceanographic survey platforms such as the T-AGS 60," said Rick Swanson, director of ocean analysis division, Naval Oceanographic Office at Stennis Space Center. "This research agreement provided the Navy and Boeing an opportunity to evaluate a new approach."

The innovative AUV system features a unique cage launch and recovery, which has significant benefits over conventional recovery systems. The cage, which houses the vehicle, is deployed amidships. Launched approximately 150 feet below the surface, it protects the vehicle from damage at the air/sea interface, allows for operations in high seas and maximizes personnel safety during recovery. Testing included multiple launches and recoveries of the AUV. Vehicle operations included site and pipeline route surveys at depths of 3,800 feet.

The new AUV system, developed under a partnership consisting of Boeing, Fugro GeoServices and Oceaneering International, addresses the need for cost effective deepwater survey for the oil and gas industry. The AUV provides faster and less expensive surveys in deepwater, giving the oil and gas industry better data quality at a significant cost savings. The system is designed to be easily transportable and does not require any special type of vessel for launch and recovery.

Boeing Integrated Defense Systems, a unit of The Boeing Company, has more than 30 years of experience in developing and operating autonomous underwater systems for the U.S. government, and designed and developed the AUV for the commercial marketplace. Fugro GeoServices, a U.S. subsidiary of the Netherlands-based company known as a world leader in offshore survey services, had responsibility for underwater sensors and positioning and data analysis system. Houston-based Oceaneering International, a leading operator of remotely operated vehicles, was responsible for the vehicle launch and recovery system.

The Naval Oceanographic Office, comprised of 1,000 military and civilian personnel, responds rapidly and effectively to the evolutionary demands of the U.S. Navy. NAVOCEANO acquires and analyzes global ocean and coastal data to provide specialized, operationally significant products and services for warfighters and civilians, national and international customers.

Boeing Integrated Defense Systems, or IDS, is one of the world's largest space and defense businesses. Headquartered in St. Louis, Boeing Integrated Defense Systems is a \$23 billion business. It provides systems solutions to its global military, government and commercial customers. It is a leading provider of intelligence, surveillance and reconnaissance; the world's largest military aircraft manufacturer; the world's largest satellite manufacturer and a leading provider of space-based communications; the primary systems integrator for U.S. missile defense; NASA's largest contractor; and a global leader in launch services.

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