



## Airborne Hydrography

The Naval Oceanographic Office (NAVOCEANO) uses many platforms, including ships, aircraft, satellite sensors and buoys, to collect oceanographic and hydrographic data around the world. These data are analyzed and utilized in products supporting the warfighter. Aircraft can cover large ocean areas and, unlike ships, quickly assimilate a synoptic snapshot of many parameters for broad areas.

### The Past

NAVOCEANO's previous airborne collection efforts were aimed at water column data: temperature/CTD profiles, ambient noise and transmission loss. In 1996 NAVOCEANO began using the Scanning Hydrographic Operational Airborne Light Detection and Ranging (LIDAR) Survey (SHOALS) system, a hydrographic airborne laser nautical charting system designed for coastal mapping and charting. Surveys are conducted through the Joint Airborne LIDAR Bathymetry Technical Center of Expertise (JALBTCX), located at Stennis International Airport in Bay St. Louis, Miss. JALBTCX is a partnership among the U.S. Army Corps of Engineers (USACE), Commander, Naval Meteorology and Oceanography Command, NAVOCEANO and the National Oceanic and Atmospheric Administration.

The USACE SHOALS system was retired in 2003, and the knowledge gained over nine years of operation was incorporated into the development of the Compact Hydrographic Airborne Rapid Total Survey (CHARTS) system for the Navy.

### The Present

CHARTS represents the latest airborne charting and mapping technology, integrating a 1,000-Hz hydrographic LIDAR, a 10,000-Hz topographic LIDAR and digital imaging capability into one compact unit. CHARTS is installed in a commercial Beechcraft King Air 200 aircraft operated by Kenn Borek Air of Calgary, Canada with survey personnel from Fugro Chance Inc. of Lafayette, LA. This fusion of government and contractor equipment and personnel makes a very flexible and efficient data collection capability.

The efficiency of the airborne data collection equipment is matched by a fully integrated ground processing software suite that handles everything from survey planning to data processing to survey report generation. CHARTS is a total charting tool able to meet both International Hydrographic Organization Order 1 and USACE Class 1 specifications for depth measurement and coastline positioning requirements.

### The Future

During 2005 NAVOCEANO will take another large step forward in the evolution of the CHARTS system with the integration of a hyperspectral imager called the CASI-700.

The addition of this hyperspectral imager will allow CHARTS to construct seafloor classification maps delineating various bottom types: sand, mud, coral, grasses, etc.

In addition the CHARTS system will be upgraded to a 3,000-Hz hydrographic LIDAR and a 20,000-Hz topographic LIDAR along with improvements to the ground processing system needed to keep pace with the airborne improvements.

*For more information, please contact NAVOCEANO Public Affairs at 228.688.5649 or visit <https://www.navo.navy.mil>.*

