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In This Issue

Geodynamics Adds 30-foot Survey Boat to Fleet

The *R/V Benthos* on the Morehead City, North Carolina, waterfront. The boat is equipped with state-of-the-art hydrographic and onboard navigation equipment. The 8kW genset allows for a multitude of both DC and AC power configurations and a hydraulic PTO to run the vessel's A-frame used to deploy geophysical survey equipment. The vessel has the capability to have full high-speed Internet, which allows surveyors to transfer data back to the office and also bring in Internet based real-time kinematic GPS corrections.

By Judith Powers

Geodynamics, LLC, based out of Morehead City / Beaufort, North Carolina, took delivery of a 30-foot Armstrong catamaran in the 3rd quarter of 2012. The boat, the *R/V Benthos*, was custom designed for hydrographic survey operations and configured to be rapidly trailered, which reduces cost to clients, according to Chris Freeman, company president.

Among his clients are dredging companies Marinex Construction, Great Lakes Dredge & Dock, Norfolk Dredging and Weeks Marine. The services Geodynamics offers are condition surveys, before and after dredge surveys to calculate volumes, interim surveys to adjust templates or inspect the project, inspection surveys to determine placement of construction materials or equipment, and IHO* special order surveys for vessel clearance.

Geodynamics uses the state-of-the-art platform for both multibeam and single beam sonar operations, as well as geophysical operations such as sidescan sonar and sub-bottom profiling.

"The Armstrong vessel is a great asset to our company's continued growth," Freeman told *IDR*.

"Our experience with the Armstrong build was amazing. They understood our needs and made many suggestions along the way on things we didn't think about. In fact, they put equipment on the vessel that exceeded the specifications at no cost to us in an effort to build the best boat possible. Armstrong truly wants to see the customer happy and have a vessel suited to the client's needs," said Freeman.

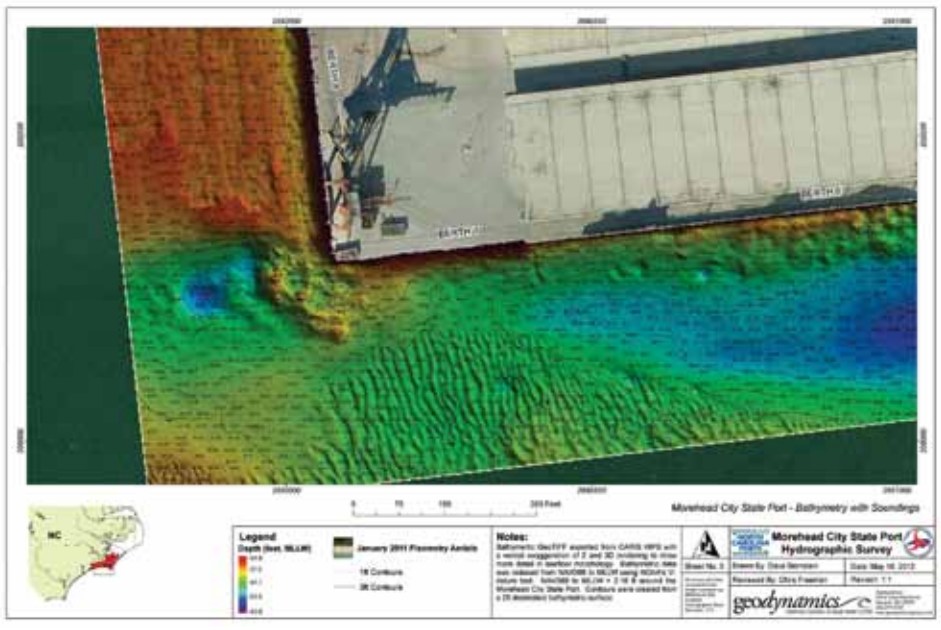
The company serves clients on the Atlantic Coast, doing approaches to ports, port channels and tidal inlets. It is also a prime contractor for the Corps Wilmington District.

Besides the new *R/V Benthos*, the company runs three other survey boats: the 25-foot *R/V 4-Points* designed for shallow water survey; The 21-foot *R/V Echo*, a catamaran designed for ultra-shallow survey; and the *R/V Surfzone Explorer*, a Yamaha Wave Runner for extremely shallow water hydrography. For open or deep ocean 24-hour operation surveys, Freeman leases a variety of vessels/ships, which he equips with his own survey equipment to tailor hydrographic and geophysical surveys for clients such as the U.S. Navy or NOAA.

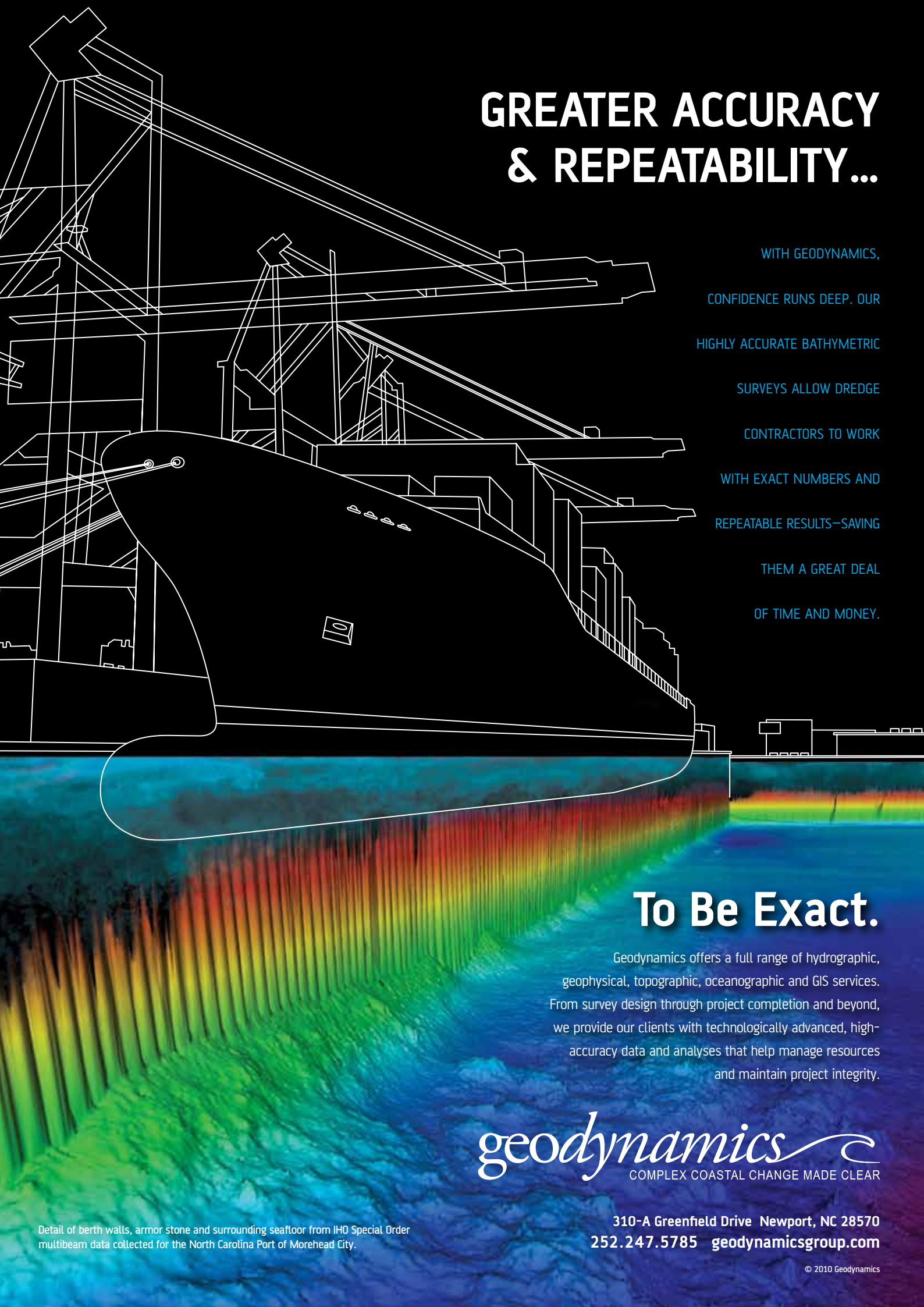
Geodynamics' Logistics and Operations Manager Aron Lemke with the assistance of Chief Hydrographer David Bernstein did all the basic electronic rigging, the design and implementation of a multibeam sonar mount and

** IHO, the International Hydrographic Organization, is the governing body for the hydrographic survey industry, on which both NOAA and the USACE base many of their standards.*

The sidescan being readied for deployment from A-frame.



Final data from a high-resolution multibeam sonar survey at the Morehead City Port Terminal. Data were used to assess depths for vessel clearance and to determine rock placement for scour abatement around the berths by Weeks Marine.



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Geodynamics offers a full range of hydrographic, geophysical, topographic, oceanographic and GIS services. From survey design through project completion and beyond, we provide our clients with technologically advanced, high-accuracy data and analyses that help manage resources and maintain project integrity.

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COMPLEX COASTAL CHANGE MADE CLEAR

Detail of berth walls, armor stone and surrounding seafloor from IHO Special Order multibeam data collected for the North Carolina Port of Morehead City.

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completed the sophisticated computer networking after taking delivery of the *R/V Benthos* in the third quarter of 2012. "Basically the boat has been ready to survey for the last six months," said Freeman.

The cabin accommodates a full range of survey equipment. While a typical survey will need two hydrographic survey techs, the vessel has room to run multiple survey equipment simultaneously, such as a geophysical or oceanographic survey, and can accommodate five surveyors and a captain.

Survey hardware includes: Applanix POS MV inertial navigation system; Odom CV 100 digital singlebeam echosounder; Kongsberg / Simrad EM 3002 dual head multibeam echosounder; EdgeTech 4200 dual frequency sidescan sonar; custom built acquisition and processing workstations and six monitors. Software includes HYPACK, CARIS HIPS/SIPS, POS View, POS Pac, SIS and ISIS.

One of the first projects for *R/V Benthos* was pre-dredge channel survey work for Great Lakes Dredge & Dock on the Morehead City approach channel.

"The trailerability of the boat is probably the single most important thing," said Freeman. "We work over the entire U.S. East Coast, the Gulf of Mexico and the Caribbean (with larger boats), so we can save our clients money by having a fully-equipped and calibrated survey boat that can be trailered very rapidly versus having to steam to the location. It saves on time getting the job done, and saves the client in reduced mob/demob and fuel costs. An example of rapid response work is when a hurricane like Sandy or Irene hits an area, we often do rapid response surveys for the USACE or U.S. Geological Survey. But in general, trailering the boat serves our dredging clients very well because the projects typically require very rapid turnarounds, which we pride ourselves on."

Hydrographic Surveyors Ben Sumners and David Bernstein (seated) collect both multibeam and sidescan sonar to NOAA and IHO specifications for the Port of Morehead City project to investigate conditions of the berths for ship clearance. The onboard computer network consists of two custom built acquisition PCs running Kongsberg SIS, HYPACK and Triton ISIS. Data are preliminary-processed onboard with a high end dual processor workstation with multicores.

Financial Partners Visit Panama Canal Expansion Site

Civil Engineer Supervisor Ramon Porcell Rivera points out the expansion works in the Atlantic side, to members of the delegation, Oscar Paitrovi of Inter American Development Bank and Cheryl Edleson Hanway of International Finance Corporation. Photo courtesy of the Panama Canal Authority.

Representatives from the five institutions that have signed agreements for financing the Panama Canal Expansion Program took part in the annual visit to the Canal in January.

"This visit is part of the agreement signed between the Panama Canal Authority and the five institutions that have provided partial financing for the Expansion Program," Panama Canal Administrator Jorge L. Quijano said at the end of the tour.

The Panama Canal Authority (ACP) has held annual visits since 2008 to oversee the program's progress. The representatives visit the expansion site to verify that the different aspects of the financing agreement are met.

This year, the delegation visited project sites on the Atlantic and Pacific sides and received details about the overall progress of the project, which is 50 percent complete. At the beginning of 2013, several projects were completed, such as the dredging of the navigation channels on the Pacific and Atlantic sides.

Dredging along Culebra Cut began in March 2008. Culebra Cut is difficult to access because of the type of material, and it is also at the narrowest portion of the Canal's navigation channel. ACP equipment was used for this project, including the dredges *Mindi, Rialto M. Christensen* and *Quibian I*, and the drill barges *Thor* and *Baru*.

On March 6, the Panama Canal Authority (ACP) announced the completion of dredging to deepen and widen the navigational channels along Culebra Cut.

In addition, contracted equipment was also used: the dredge *II Principe*, property of the Jan de Nul Group, and the dredge *Cornelius*, property of Royal Boskalis Westminster N.V.

A total of 3.2 million cubic meters (4.1 million cubic yards) were removed during the deepening of Culebra Cut.

In early March, the project achieved another milestone, when the first million cubic meters of concrete were poured in the locks construction site on the Atlantic side. This represents 1,800 cubic meters of reinforced concrete poured in the wall of the southeast wing, at the point where the vessels will enter the locks from Gatun Lake.

During the recent visit to these sites, the delegation also received reports on the safety and occupational health, environmental safety and the social aspects of the projects – the strict requirements that guarantee the financing of the program.

The representatives also received updates on the waterway's performance during the last fiscal year, the Panama Canal forecast, budgeted activities and the program's financial requirements for 2013, the different conflict resolution and claim mechanisms, and the construction of the bridge on the Atlantic side of the Canal.

The delegation included experts from the Inter-American Development Bank (IDB), the European Investment Bank (EIB), Japan Bank for International Cooperation (JBIC), International Financing Corporation (IFC), and the Andean Development Corporation (CAF).

In December 2008, ACP signed agreements with a group of five multinational institutions to procure financing of up to US$2.3 billion required for the Expansion Program.

In total, agreements were signed for US$800 million with the JBIC, US$500 million with the EIB, US$400 million with the IDB, US$300 million with the IFC and US$300 million with the CAF.

To date, the JBIC (US$ 800 million), the EIB (US$100 million) and the IDB (US$100 million) have been paid out for the program.

The Panama Canal Authority (ACP) completed dredging to deepen and widen the navigation channels along Culebra Cut.