application brief

Rock dumping, New York – Long Island

Customer

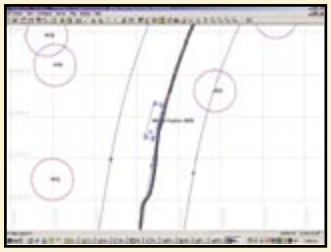
Weeks Marine, Inc. using GEOD Corporation (New Jersey) for positioning services

Project

Rock dumping over a newly installed 24-inch gas pipeline

Project Date

December 2002 to June 2003



SYSTEM FEATURES

- GPS for precise heading and 1" 3D positioning
- Track tugboat and assign tasks from barge
- Coordinate all positioning for multiple vessels / objects

The Challenge

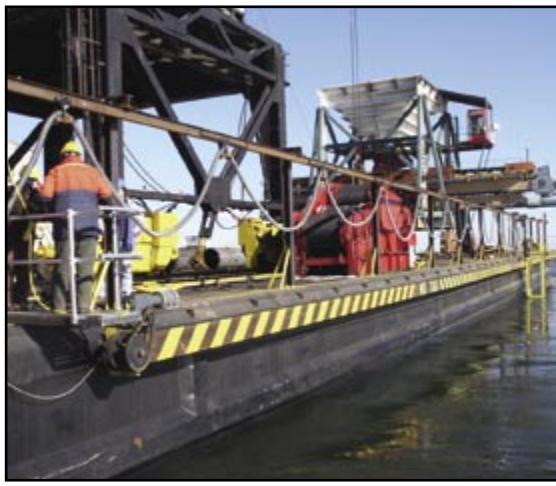
The Eastchester Extension Project is a massive undertaking to install and bury 33 miles of 24-in. gas pipeline deep under water in New York. The pipeline route stretches from a landfall at Northport, through the Long Island Sound and into the East River, and finally ends in the South Bronx in New York City.

The marine portion of the project required providing the pipeline with anchorage protection by burying it under 350,000 tons of rock. This procedure involved positioning a 300-ft rock-placement barge over the laid pipeline, surveying the seabed, placing the rocks, and then surveying the coverage before moving onto the next section. And, of course, the schedule on the project was every bit as demanding as the skills and equipment required—the project began in December 2002 and was scheduled to be completed by June 2003!

The Solution

Weeks Marine, Inc enlisted the assistance of the GEOD Corporation (Newfoundland, New Jersey) to design, install, and operate a real-time positioning and bathymetric survey system for the rock-placement barge. GEOD Corporation put together a team of marine professionals: Measutronics Corporation supplied Trimble equipment and technical assistance for the navigation and positioning system, and Alpine Ocean Seismic Survey, Inc. (Norwood, New Jersey) designed and installed the bathymetric survey system.

The Weeks Marine barge, Barge 529, was outfitted with two Trimble MS750™ RTK GPS receivers interfaced to HYDROpro™ Construction. These receivers provide as-built



survey data for manoeuvring and anchoring the barge along the pipeline. Meanwhile, the anchor-handling tugboat carries two Trimble DSM132 DGPS receivers for positioning and heading, HYDROpro Remote software, and a radio link with the barge. This system enables onboard crew to see seabed features, accept anchor drop placements, and allow control of the tugboat using HYDROpro Construction on the barge.

To ensure that design requirements are met, a multibeam sonar survey system running along the length of Barge 529 receives heading information from the two Trimble MS750 RTK GPS, with a gyrocompass providing a system backup. With the GPS receivers providing horizontal and vertical survey control, the multibeam sonar survey transducer maps the bottom where the rocks have recently been placed. Any deficient areas are identified for further rock placement.

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The Result

The team at Weeks has been impressed by the navigation and positioning system. GEOD Corporation's Joe Priestner, who has been coordinating the positioning side of this project, was "really amazed at how intuitive the HYDROpro software was". The system, while technologically very sophisticated, is easy to learn and use, and simplifies the entire pipe placement process.

The system also offered great accuracy—with fore and aft movement capability spanning 150 ft and athwart ship movement of 30 ft, the operator is able to accurately and efficiently place rock along the entire pipeline length, precisely meeting design specifications. In doing so, the team was able to steer well clear of seabed features such as cables and other hazards.

Despite the challenge of the enormity of the project and the tightness of its schedule, the project is on track to finish on time and accurate thanks to the navigation and positioning system using Trimble GPS products.

The equipment used on this project includes:

- HYDRO*pro* Construction (Rig Flavor)
- HYDRO*pro* Remote – for Tugboat
- MS750 RTK GPS
- DSM132 submeter DGPS
- Reson Multibeam

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