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CURRENT METER TRIALS REVEAL BEST SOLUTION FOR PORT MONITORING

Working with NOAA's CO-OPS Division (Center for Operational Oceanographic Products and Services), Fugro GEOS has just completed a study comparing two current monitoring devices near the Freeport Entrance Channel in Texas.

The study focused on the comparison of a traditional seabed-mounted current meter and a buoy-mounted device. It was undertaken alongside a programme to obtain profiles of current speed and direction for Freeport LNG Development LP, which is designing and constructing an LNG receiving terminal at Freeport, Texas.

Current measurement solutions are important to the Port of Freeport, as it plans to install a real-time current monitoring system off the port entrance to assist pilots bringing in ships. When the LNG receiving terminal is built, the volume and size of vessels entering and leaving the port will increase dramatically and an understanding of currents around the channel will be critical for the safe navigation of vessels. A real-time solution will also assist the Port's decisions about vessel admission at night (which is not possible currently). This will improve port efficiency by maximizing tonnage and will help protect the coastal environment by reducing the risk of spills.

Initially, Fugro GEOS installed an RDI Workhorse Acoustic Doppler Current Profiler (ADCP) seabed mooring to obtain vertical profiles of current speed and direction during a six-month period from November 2003 to April 2004. This period had been chosen to cover the most severe conditions, outside of tropical cyclones. There are a number of limitations with this configuration for a permanent system, including the relatively high costs to install and maintain the mooring and cable, with divers often required, and the risk of damage to which the cable is exposed. If the frame is too light in weight, strong currents may move it, but if it is too heavy, it can be prone to sinking. Burial or cover by fine sediments can also be a problem.

Understanding the Port's need for the cost-effective provision of long-term measurements in real-time, Fugro GEOS recommended NOAA's Clamparatus system. The Clamparatus system is comprised of a Nortek Aquadopp Profiler current meter mounted vertically in a 10ft length of piping attached to a mounting clamp, which rests on the side of the Aid to Navigation (ATON) Coast Guard buoys. A waterproof housing containing the electronics and batteries is also clamped to the buoy. An antenna to provide radio communication with shore is attached to the top frame of the ATON.

By joining forces with NOAA, the first Clamparatus system in Texas was successfully installed

PRESS RELEASE

on Navigation Buoy 6 at the Freeport Entrance Channel in January 2004. The systems were deployed approximately 70m apart, in 11m water depth. Fugro GEOS then went on to service both the seabed and buoy-mounted systems, downloading the data and reinitializing the ADCP and Nortek for subsequent phases of data collection before finally demobilizing both in May 2004.

Close collaboration with NOAA to analyze results has shown that the difference in direction between the buoy-mounted and seabed-mounted systems is about 10 degrees for speeds greater than 0.5 knots. This is considered acceptable by the Port, given the alongshelf nature of the currents in this area.

This trial project has involved close cooperation and partnership between the Government, Industry, the Brazos Pilots Association and the US Coast Guard. Fugro GEOS and NOAA hope to continue their collaboration efforts in the future to further refine the Clamparatus system. The full results of the trial will be published and available at a later date.

Digital Images Available to Illustrate Press Release

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