NEWS RELEASE

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FUGRO GEOS' REAL-TIME DATA SOLUTION FOR ORMEN LANGE

Working at depth, in an area of complex seabed topography and powerful and unpredictable currents, combined with extreme wind and wave conditions make Ormen Lange in the Norwegian Sea a highly challenging project. Knowledge of the strength and direction of those currents, waves and winds at any given time is vital for safe construction work on the enormous gas field and associated pipeline.

Having provided measurement services to the pioneering project since 2001, Fugro GEOS is now contracted to Norsk Hydro to provide all-important real-time current profile, wind and wave data for operations relating to both the pipeline and the field itself. Previously the data was being logged, now, thanks to an exciting combination of instrumentation, the gathered data is transmitted to a land-based web server and then displayed in real-time on a dedicated web page for use by vessels working on the Ormen Lange project.

"Moored instrumentation at three locations along the Ormen Lange pipeline route are providing the real-time metocean data," explains Fugro GEOS project manager Richard Gaches. "At a water depth of 880m, the Template Area location is certainly the most challenging of the three locations. That is where we have installed two moorings working in combination; a Fugro OCEANOR Wavescan buoy with wind and wave sensors. Suspended underneath the Wavescan is an RDI ADCP (Acoustic Doppler Current Profiler) profiling the top 400m of the water column. Below this, mounted in a short seabed mooring, is another RDI ADCP looking upwards and profiling the lower 500m of the water column.

"The data from the lower ADCP is transmitted via Benthos modems to the surface Wavescan and all of the metocean data (wind, waves, current profile) is transmitted via Inmarsat to the land-based server at our Trondheim office. Currents at 18 depth levels are updated at half-hourly intervals and the surface wind/waves hourly – this is more data than we have ever produced in real time before.

Closer to shore

The two other buoys are deployed at the Slide Wall and at KP23, a near shore location. "At the Slide Wall location (further inshore along the pipeline, in 380m water) a Wavescan buoy is deployed with an RDI ADCP suspended underneath. The ADCP profiles the entire water column and the data is transmitted via Inmarsat," explains Richard Gaches. "At the near shore location, there is a Wavescan buoy with wind and wave sensors and an RDI ADCP suspended underneath, profiling the whole 205m water depth and again transmitting data via Inmarsat."

The MV Elisabeth owned by Elisabeth AS was used for mobilisation of the equipment and for service visits. "Their assistance and excellent facilities helped ensure visits were

accomplished efficiently and safely," says Richard Gaches.

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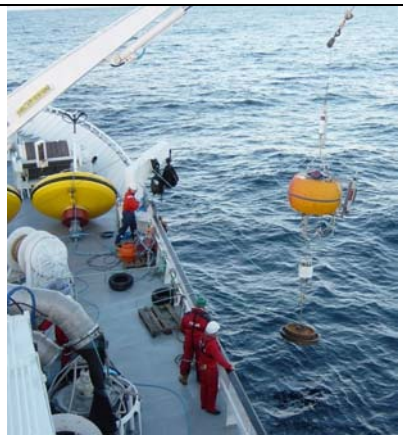

Deployment of Seabed mooring with RDI ADCP and Benthos modem.

Wavescan Buoys transported on the MV Elisabeth