



# The SUBSEA newsletter

Publisher: Kongsberg Maritime  
 Editor: Subsea Division  
 Tel.: +47 33034100  
 Fax: +47 33034384  
 e-mail: subsea@kongsberg.com  
 www.km.kongsberg.com

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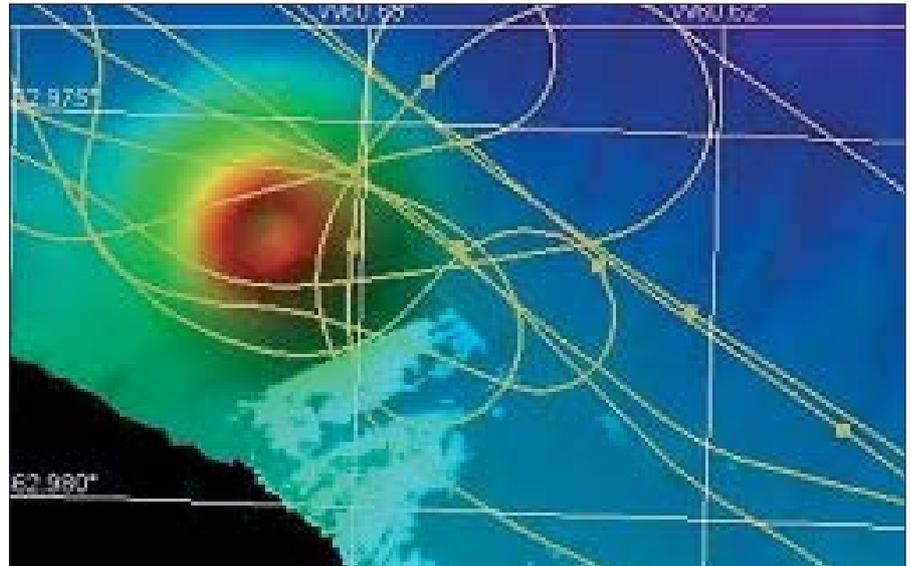
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*The HMS Endurance is believed to have found an active volcanic vent in the Antarctic using its new KONGSBERG EM 710 multibeam echo sounder.*

## From the ship's diary



*Volcanic vent in the Antarctic found using the EM 710 multibeam echo sounder.*

*Photo courtesy HMS Endurance*

An update from Nick Lambert, the Captain of HMS ENDURANCE

As in South Georgia our Multi Beam Echo Sounder – MBES continued to prove its worth, enabling us to survey considerable areas of previously uncharted waters, notwithstanding the substantial pack ice and bergs that confronted us.

The multibeam echo sounder is so effective that we also believe we may have found the first example of an active volcanic vent in about 500 metres of water, so we're delighted with its performance. The picture gives an idea of the quality of the MBES – it is a MBES screenshot of a perfectly formed parasitic volcanic cone on the seabed of Deception Island (which is itself a

caldera - a volcano that has blown its top). The cone is about 120 metres high from the base (light blue) to the top (red) and the MBES has defined the interior of the cone down to about 50 metres (yellow). (Story courtesy HMS Endurance tracking project)

Read the whole story at: <http://www.visitandlearn.co.uk/diaries06/captain2.asp>

### About the HMS Endurance

The HMS Endurance is a Royal Navy ice patrol ship with a mission to patrol and survey the Antarctic and South Atlantic, maintaining very close links with the United Kingdom Hydrographic Office and the British Antarctic Survey. She normally spends up to 7 months each year on deployment.

## U.S. Navy multibeam contract to Kongsberg Underwater Technology, Inc.



Kongsberg Maritime's USA subsidiary, Kongsberg Underwater Technology Inc., has received the first delivery order of \$2,132,109 USD for integrated Multibeam Sonar Systems for the Navy. These systems include deep water multi-beam echo sounders, multi-frequency single beam echo sounders, deep water sub-bottom profilers and acoustic doppler current profilers.

The systems are for permanent installation aboard the six T-AGS 60 class survey vessels operated by the US Naval Oceanographic Office (NAVOCEANO). The contract is for performance over a five year period and if all options are exercised will continue

until February 2011 with an estimated total value of \$29,545,558 USD. The contract includes design, manufacture, test, integration, installation and overall support of the new systems.

The integrated equipment package selected by the Navy includes four sonar systems:

- EM 120 (1° x 1°) - Deep-water Multi-beam echo Sounder for mapping to full ocean depth
- EA 600 (200, 38, 12 kHz) - Multi-frequency Single Beam echo sounder for surveying at all depths
- SBP 120 (3° x 3°) - Deep-water Sub-Bottom Profiler for high-resolution sub-bottom data to full ocean depth
- ADCP (supplied from Teledyne RD Instruments) - Multi-frequency Doppler Current Profiler for shallow and deep current profiling

The new sonar systems will replace current equipment, including the Kongsberg EM 121A, 12 kHz multi-beam originally installed when the vessels were constructed in the early 1990's. One of the Navy's key requirements is for compatibility with the existing Integrated Survey System (ISS-60, supplied by SAIC), which is the primary acquisition system onboard all of the T-AGS 60 platforms. The wet-side components will be installed using a flat array configuration on an

externally mounted underwater gondola supplied by the Navy.

Kongsberg Maritime's proposal was determined to offer the best value to the Navy, based on price and other factors including "corporate experience" and "past performance". Kongsberg Maritime's track record, prior to this award, includes contracts for supply of twelve (12) deep-water 1° x 1° multi-beam echo sounder systems to various customers world-wide. Kongsberg Maritime's past experience working with NAVOCEANO onboard the T-AGS 60 class and T-AGS 50 class ships, assures a thorough understanding of all of the requirements and technical challenges inherent in the delivery and long term support of these systems.

This project will be managed and systems supported by Kongsberg Maritime's technical team in Lynnwood, Washington. Since 1990 Kongsberg Underwater Technology Inc. has been established in Lynnwood (approximately 15 miles north of Seattle) as the North American center for hydrographic survey systems engineering, production, integration and customer support. Kongsberg Underwater Technology Inc. is a leading supplier to the U.S. Navy, academic institutions and commercial markets for underwater systems and solutions.



### EM 710 contract with OSAE

Kongsberg Germany has received several multibeam contracts recently.

The German survey company OSAE (Offshore Survey and Engineering), located in Bremen, has recently ordered a 0,5x1° EM 710 multibeam system for its continental shelf survey

activities. The system will be delivered and installed during summer 2006.

OSAE is the largest and most experienced provider of hydrographic services from deep to shallow water in Germany. The company is already operating Kongsberg multibeams such as EM 120, 1002, 3000 and 3002.

## Very high HUGIN AUV activity

Activity has been very high in the HUGIN AUV department so far in 2006.

At present the new 4500 meter dept rated HUGIN 4500 is under final assembly and testing. HUGIN 4500 has extended depth rating to 4500 meter, increased battery capacity and a higher performance payload sensor package. The payload sensor package is in whole supplied by the end customer C&C Technology, Lafayette, Lousiana which is also the end customer for the first HUGIN 4500.

HUGIN 4500 included, C&C Technology has taken orders for three deepwater HUGIN AUVs so far. A team of C&C specialists are just now joining the HUGIN team during final assembly and testing.

The HUGIN AUV department has successfully involved the customers in the final assembly and testing of their own vehicles for all HUGIN AUV deliveries. This has proven to be very beneficial to all partners, providing efficient training and building personal relations that prove very useful when field operations start.

Another HUGIN 3000 is scheduled for delivery to Fugro NV, at the end of this year. This will be the second HUGIN 3000 to Fugro NV, with the first

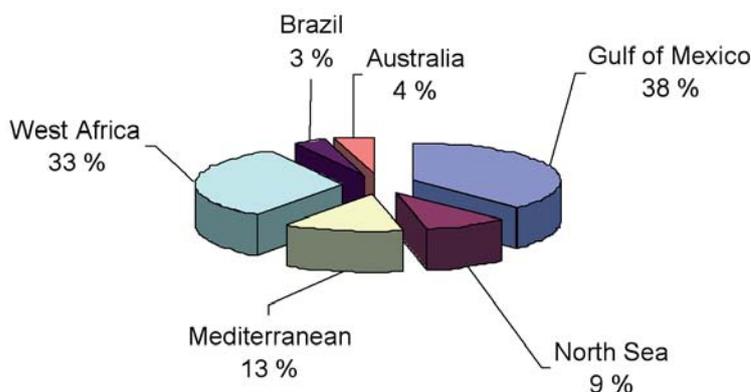
delivery taking place late 2004.

The delivery of the next HUGIN 1000 to the Royal Norwegian Navy (RNoN) is also scheduled for delivery at the end of 2006. HUGIN 1000 is mainly directed towards military applications but also has potential towards marine research, etc. This HUGIN 1000 will include an advanced, very high resolution Synthetic Aperture Sonar (SAS), which is undergoing sea trials now.

The HUGIN AUVs have been established as the industry standard for AUV based offshore oil and gas surveying. Last year (2005) the number of accumulated survey hours passed 80.000 km or approximate 12.000 hours of survey. The HUGIN survey operations take

place from shallower down to 3000 meter water depth and in most significant offshore oil and gas areas world wide as shown in the above figure. In addition comes the operation hours performed with the HUGIN AUVs in military operations. Another milestone will be added to the HUGIN AUVs with the delivery of the HUGIN 4500 this year, a vehicle with 4500 meter dept capability, extended battery capacity and payload sensor performance.

**HUGIN Survey KM by Area (1997 - 2005)**  
80 000 KM



## Kongsberg EM 3002D multibeam purchased by GSE Rentals

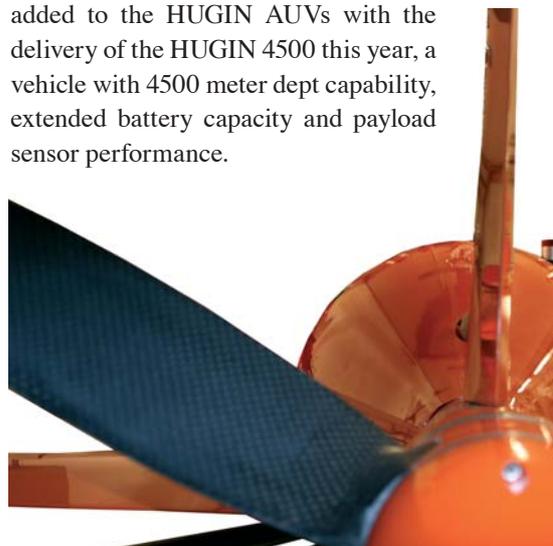


GSE Rentals (Geophysical Survey Equipment) a leading rental specialist of high quality Geophysical, Hydrographic and Oceanographic equipment

has recently purchased and taken delivery of an EM 3002D dual head multibeam system.

This system will be available for rental in either a dual head or single head form and may be supplied with a QPS QIN-Sy real-time topside operator station or the Kongsberg Maritime SIS real-time software. Mounting flange assemblies have been produced to allow easy deployment on vessels of opportunity.

The EM 3002D is a well established



field proven multibeam system used by many of the worlds leading hydrographic organisations. The current version offers many advanced features seen for the first time in the market on a shallow water multibeam system. Features such as stabilisation for pitch and roll, high density beam processing, and equidistant beam spacing, allow the system to operate through an increased weather window while maintaining stable seabed coverage and data quality.

## Second EM 120 deep water multibeam echo sounder to Portugal



Estrutura de Missão para a Extensão da Plataforma Continental (EMEPC)/Ministry of National Defence and Kongsberg Maritime AS signed on the 16th May 2006 a contract for the supply of the following equipment, EM 120 2x2, EM 710 1x2, Seapath 200 RTH, EK60 38/120, Sync. Unit and SVP Plus. The contract also included installation, sea trials and training.

The equipment will be installed onboard R/V Almirante Gago Coutinho (ex. T-AGOS 5), of the Portuguese Navy during 2006.

EMEPC is responsible for the mapping and handling of the extension of the Portuguese Continental Shelf, and they work in close collaboration with Instituto Hidrografico of Portugal (IHPT). IHPT has been a user of Kongsberg Maritime multibeam echo sounder systems since 1995, and has 4 EM systems in operation.

The first EM 120 in Portugal was installed in 2001/2002 onboard R/V Don Carlos (ex. T-AGOS 11).

## Gardline orders latest generation Kongsberg multibeam technology



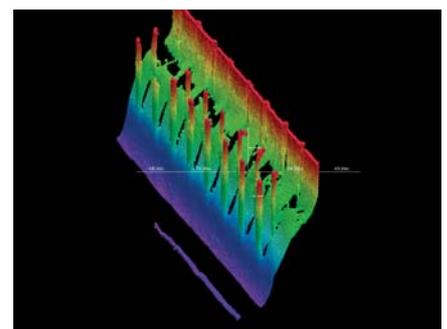
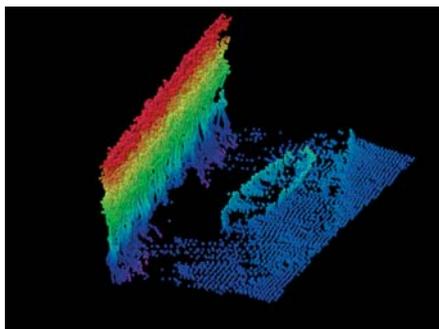
Gardline, the seabed mapping specialist based in Great Yarmouth has recently taken delivery of the latest generation EM 710 and EM 3002 multibeam systems from Kongsberg Maritime.

The EM 710 1 by 1 degree multibeam will be installed on the RV Triton, Gardline's unique triple hull hydrographic survey ship and the EM 3002 dual head multibeam will be installed on the MV Confidante, Gardline's special-

ist shallow draft coastal survey vessel.

The latest generation multibeam systems from Kongsberg Maritime offer advanced features such as dual swath per ping options and water column visualisation and logging. Features such as these and the more standard motion stabilisation and high density beam processing will allow Gardline to maximise the data gathering capability of the vessels whilst maintaining data density and data quality.

## Below the Surface of OI06



During Oceanology International 2006 visitors had the opportunity to experience first hand the Kongsberg Maritime EM 3002 multibeam system being demonstrated live in the docks alongside the exhibition centre. A dual head EM 3002 multibeam system along with a Kongsberg Seatex MRU 5 mounted in a subsea bottle were installed on the survey vessel "Remote Sensor", from Aspect Land and Hydrographic Surveys.

The vessel was in constant demand throughout the exhibition with

visitors keen to see the quality of the real-time data produced by the system. The real-time software utilised was the Kongsberg Maritime SIS (Seafloor Information System) with post processing performed using Kongsberg Maritime Neptune software and IVS 3D Fledermaus software.

The images show some of the features revealed below the surface, some old sunken steps by the dock wall, a small dinghy resting upright on the bottom and the double piling for the quay side with the new wall structure behind.

## Acergy buys Kongsberg HAIN systems

Acergy NEC Survey Division has purchased two Kongsberg Maritime HAIN Subsea systems. The systems were delivered in late March for use on the Norsk Hydro Ormen Lange project. They are installed on the MSV Seaway Falcon work-class ROVs.

The HAIN (Hydro-acoustic Aided Inertial Navigation) system, a combination of Kongsberg Maritime's HiPAP precise acoustic positioning and INS (Inertial Navigation System) technologies, is a proven valuable tool in the fight to reduce cost & operation risk in deepwater field developments and construction projects.

In HAIN Subsea operation with HiPAP, the overall subsea positioning accuracy can be improved by up to 300% in USBL mode. Subsequently, more subsea work

can be completed using this positioning mode, without the time consuming need to deploy (and retrieve) large numbers of LBL transponders and frames. This means less subsea assets to be capitalised, maintained and managed, while further reducing the unit failure risk.

"ROV pilots have found the HAIN USBL position plots much more reliable, so aiding navigation and speeding up the vehicle's work rate. Less time in the water means a lower risk of vehicle failure, thus allowing more time on deck for operational maintenance, minimising the chance of future costly downtime," comments, Kongsberg Maritime.

"Acergy is committed to using the latest technology combined with our existing assets to ensure efficient survey opera-

tions. Using HAIN, we are confident that the survey work we carry out at the Ormen Lange field will be more time and cost effective, due to the greater positioning accuracy of the HAIN system," says John Meaden, NEC Survey Manager.

HAIN is now established as the leading ROV positioning system. Over the last 18 months, Norsk Hydro, Geoconsult, Woodside Energy, Subsea7, BP & Geo Century have all been able to realise significant operational advantages using the HiPAP / HAIN combination. All these operators have been able to maximise the use of their existing assets while being able to reduce operational vessel time and subsea hardware while improving ROV positioning repeatability & accuracy.

## Kongsberg training centre in Macaé, Brazil



Recently Subsea7 do Brasil ordered 5 complete classes for their employees at the KM training centre in Macaé-RJ. The course ordered this time is the "HiPAP technical course", which will cover technical as well as operational aspects of HiPAP and APOS. The first class is already completed (see picture), and the remaining 4 courses will be held within the next month.

Not only technical courses are offered. Operator courses for DPOs on drilling units ("APOS Advanced course with LBL") and for surveyors ("APOS Surveyor course") are held at our training centre. Courses can also be held at the customer's premises or on board. For more information on courses and dates, please contact [km.training.horten@kongsberg.com](mailto:km.training.horten@kongsberg.com)

## Marin Mätteknik



Marin Mätteknik has ordered and installed a second EM 3002 dual system.

The first system was installed last year on the launch, "Ping", while the new system has just been installed on the vessel "M/S Triad". Both systems are currently in operation in the UK.

Marin Mätteknik is a Swedish company located in Gothenburg, specialized in delivering high resolution bathymetry data. They have three vessels operating Kongsberg Maritime multibeam: Ping, M/S Triad and M/S Franklin.

## Multibeam sales to ministry Vlaamse Gemeenschap Belgium

Under heavy competition from the main players of multibeam suppliers in the market, Kongsberg Maritime BV has been awarded the contract for delivery of two high-resolution shallow water EM 3002 dual head multibeam systems to the Ministry of de Vlaamse Gemeenschap.

The EM 3002 dual head multibeam systems will be installed on board the M/V "Ter Streep" and M/V "Veremans", together with other hydrographic equipment and software which is a part of the total scope of delivery. The high quality of equipment and skilled engineers were the key factors in the Ministry v.d.Vlaamse Gemeenschap decision to choose Kongsberg. Both EM 3002 dual head systems are used for in- and offshore bathymetric measurements. Installation and commissioning is scheduled for May and June 2006.



## EM 3002D selected by the German Waterway-Authority in Hamburg



'Biene' from WSA Hamburg with EM 300D mounted over the bow

German Waterway-Authority in Hamburg and Cux have signed a contract with Kongsberg Germany for two EM 3002D multibeam systems. The installation is for two NBs, which will operate in the north sea coastal area/ Elbe estuary and on the Elbe river itself. The 'WSA Hamburg' (one of the 2 NB's)

has used the EM 3000 already successfully for more than 7 years. The operating software for the new system will be QINSy software with special adoptions for the needs of the German Waterway Authority. The contract was won against strong competition from Atlas Hydrographic and Reson.

## Ormen Lange project

The Skandi Neptune was mobilised with two HAIN systems (one for each ROV) and is due to sail on the 10th of May.

The Seaway Falcon was mobilised and is now working with 2 HAIN systems and 2 x dual EM 3002s.

Both vessels are working on the Ormen Lange project.



The FEMME 2007 Multibeam User Conference will be take place in Amsterdam in Week 12, 19 – 23 March 2007. Invitations will be sent out in August 2006, and we will then establish a web page for information and online registration.

If questions should arise before that time please contact :  
nina.hovland@kongsberg.com



KONGSBERG

KONGSBERG MARITIME AS

P.O. Boks 111 N-3194 Horten Norway Telephone +47 33 03 41 00 E-mail subsea@kongsberg.com

www.km.kongsberg.com