



The SUBSEA newsletter

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The Wisdom of an Excellent Job Done



One of the most traditional hydrographic services is the Naval Hydrographic Institute in Cádiz (the oldest city in Europe). This institute is a modest organisation that in past years has been known to equip its vessels with the most modern technology available. The institute's current director Commander Mr. Francisco Perez Carrillo is an example of perseverance in the search for excellence.

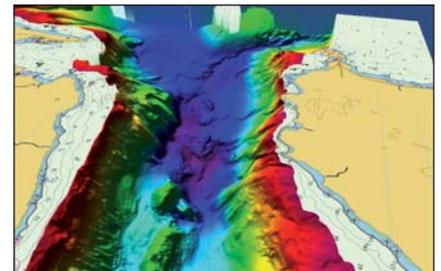
The first installation of a multibeam for shallow water took place in 2000 when the EM 3000D was installed on board a transportable hydrographic launch, the 12.5 meter long 'Astrolabio' (A91). The Institute has since been able to develop higher performance, optimise its human resources, and increase the charting and quality of results.

Due to this success, the Navy decided to build a second launch, 'Escandallo' (A92), which was equipped with an EM 3002D. Both launches were fitted with retractable transducer arrangements, which enable the best hydrodynamic behaviour for signal reception.

The next project was to extend the depth range, so both the H.V. 'Tofiño' (A32) and 'Malaspina' (A31) at 57 meters in length, were equipped with EM 300 1°x2° and EM 302 1°x2°,

respectively. Meanwhile several single beam echo sounders – EA 600 (7 units) and EA 400 (5 units) – with motion sensors and sound velocity probes have been installed on board the institute's small hydrographic boats.

In addition to all these vessels, the Navy also uses the Kongsberg Maritime equipped R/V 'Hespérides' for EEZ mapping purposes.



The advanced hydroacoustic equipment throughout the fleet and the dedication of the crew onboard all of the vessels makes the Institute one of the most productive in producing multibeam data for electronic charts. Additionally, this productivity is increased because seabed data acquisition and data processing is carried out using Caris, HIPS and SIPS. This goes towards reducing the challenge of data processing to the personnel from the Institute and to improve the chart production process. The data cleaning is done manually and the results achieved seem like work of art, as you can see...

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Two new multibeam systems accepted by US Navy



Caption: Kongsberg equipment in the Sumner lab.

- SBP 120 (3° x 3°) - Deep-water Sub-Bottom Profiler (DSBP) 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

Additionally, Kongsberg's new Sonar Synchronizing Unit (SSU) was tested and delivered during the FAT in December 2007. The SSU will be used to eliminate acoustic interference between the many sonars located onboard, allowing for more efficient surveying.

Kongsberg Underwater Technology, Inc. was contracted by NAVOCEANO in March 2006 to provide systems including deep water multibeam echo sounders, multi-frequency single beam echo sounders, deep water sub-bottom profilers and acoustic doppler current profilers for the T-AGS vessels over a five year period.

The T-AGS upgrade contract includes design, manufacture, test, integration, installation and overall support of the new systems. The project is managed and the systems supported by Kongsberg Maritime's technical team in Lynnwood, Washington.

USNS Sumner in drydock, July 2007.

Kongsberg Maritime's USA subsidiary, Kongsberg Underwater Technology, Inc. reports the acceptance by the US Navy in December 2007 of two further multibeam upgrades for its fleet of oceanographic vessels. The two systems are part of the US \$42 million contract for upgrades to the six existing and one future T-AGS 60 class survey vessels operated by the US Naval Oceanographic Office (NAVOCEANO).

The two new multibeam systems passed the FAT with flying colors. One is scheduled to be installed on the USNS Pathfinder (TAGS-60) in 2009 and the second system will be installed on the newest vessel, T-AGS 66, which is yet to be constructed. These installations will follow the successful installation of the first multibeam upgrade on the USNS Sumner (T-AGS 61) in 2007 and the upcoming installation of the USNS Bowditch (T-AGS 62) in 2008.

The new sonar systems are a replacement for the current equipment, including the Kongsberg EM 121A, 12 kHz multibeam originally installed

when the vessels were constructed in the early 1990s. Five fully integrated sonar systems were tested as part of the two FATs:

- EM 122 (1° x 1°) - Deep-water Multi-beam echo Sounder (DMS) for mapping to full ocean depth
- EM 710 (0.5° x 1°) - Shallow to Intermediate depth Multibeam echo sounder
- EA 600 (200, 38, 12 kHz) - Multi-frequency Single Beam echo (MSB) sounder for surveying in all depths



Unique Systems FZE appointed as agent for Kongsberg Diver Detection Sonar



Mark Fourie (left) and Phil Andrew.

Kongsberg Mesotech Ltd (part of Kongsberg Maritime’s Subsea division) has announced the appointment of Unique Systems FZE as its agent for Bahrain, Qatar, United Arab Emirates and the Republic of South Africa for Kongsberg Diver Detection Systems. The Kongsberg Group, made up of

Kongsberg Maritime and Kongsberg Defence & Aerospace is the leading supplier of these systems to military, government and industrial security customers, worldwide.

Mark Fourie, Maritime Marketing Manager for Unique said: “All at Unique are very pleased to represent Kongsberg for this product group in addition to other Kongsberg lines we currently manage, and are looking forward to assisting our clients in meeting their challenges in waterside security applications.”

Phil Andrew, Manager of Underwater Security for Kongsberg Mesotech Ltd. noted that: “Unique brings valuable strengths to our efforts in the Middle East and South Africa in terms of their strong reputation, technical support

and training ability in addition to their market knowledge.”

Unique Systems FZE, a Unique Maritime Group Company, was established in the early 1990’s in Sharjah, UAE to service the maritime, commercial diving and offshore petroleum production sectors in the Middle East through equipment sales, rentals, technical support and technical training. Unique’s operations have recently expanded to include the Republic of South Africa.

Kongsberg Mesotech Ltd. (KML) is part of Kongsberg Maritime Subsea. KML supplies a worldwide customer base with a range of products for defence, fisheries, oilfield, scientific, and other underwater acoustic applications. Products are manufactured in Port Coquitlam, British Columbia.

APOS courses in Brazil get on the road

Kongsberg can now offer APOS courses where the customer wants and needs them. This can either be at the customer’s premises, on board or in conjunction with crew-changes.

The ‘mobile classroom’ consists of notebook computers with APOS trainer installed and printed manuals and CD-ROMs.

The first course with this setup was held at the Fugro OceanSatPEG offices in Macaé with 5 offshore surveyors.

The courses offered in Brazil are APOS surveyor course and APOS course for drilling units.

Special courses can also be prepared on request. Not to forget: We do of course, also run courses at our training center in Macaé as before.



New President for Sales & Marketing



Arnt Helge Olsen has been appointed to the new position of Vice President for Sales & Marketing of Kongsberg Maritime subsea products, starting from 1st of April 2008.

Arnt Helge has a background in Electronics, Computer Science, Economics and Business Management. In the period from 1992 until 2001 he worked offshore world wide with Towed Streamer Seismic in the seismic navigation department.

From 1995 he worked as a Chief Navigator with responsibility for all navigation sensors, navigation post processing, Integrated Navigation System and satellite communication systems.

In 2001 he joined Kongsberg Maritime as a Subsea Sales Manager for the Americas. Here he has been working with underwater instrumentation/Navigation systems and the Autonomous underwater vehicle HUGIN towards the Oil industry.

From 2005 until 2008 he has been stationed at the Houston Texas, sister office as an Area Sales Manager for Subsea products.

Kongsberg Maritime AS signs contract with ASMAR shipyard



On the picture from the left:

- J. del Campo, Logistic Mgr. ASMAR
- Captain R. Nunez, DIPRIDA
- B. Robinson, General Manager, Robinson Marine Electronics
- Captain G. Stagno, General Manager ASMAR
- J. H. Kristensen, KM AS
- R. Quezada, Shipbuilding Mgr., ASMAR

On the 12th February 2008 Kongsberg Maritime AS proudly signed a contract with ASMAR shipyard in Talcahuano in Chile for the supply of a complete acoustic equipment package for the new Chilean research vessel, the MEDUSA project.

Thanks to a very close co-operation between the departments within Kongsberg Maritime AS in Horten and our representative in Chile, Robinson Marine Electronics, it was possible to achieve this very important contract. The scope of supply contains Fishery/Fishery Research equipment, HiPAP 500 and a complete Hydrogra-

phy package, system integration, services, etc.

The equipment is, EK 60 five frequencies, SX 90 and SH 80 sonars, PI 44 and FS 70, HiPAP 500, EM 122 1x1, SBP 120 3x3, EM 710 1x1, EA 600, SSU (acoustic synchronisation), MDM 400 for system integration, spare parts and services.

The design of the vessel is done by Skipsteknisk in Ålesund.

The building period for the vessel is 2008 – 2010 at ASMAR Shipyard Talcahuano, Chile.

From the 'Oden' ship's diary

2007-08-31 - Pirouette surveys of the Morris Jesup Rise

We continued moving towards the northern steep slope of the Morris Jesup Rise, where the Danish project has as a goal to map the foot of it.

When 'Oden' is breaking heavy ice using all her 25,000 hp we do not get much depth information from the multi-beam, only some pings here and there pass through the noise and crushed up ice, so a new style of multibeam mapping was invented, which proved to be very efficient in these tough ice conditions.

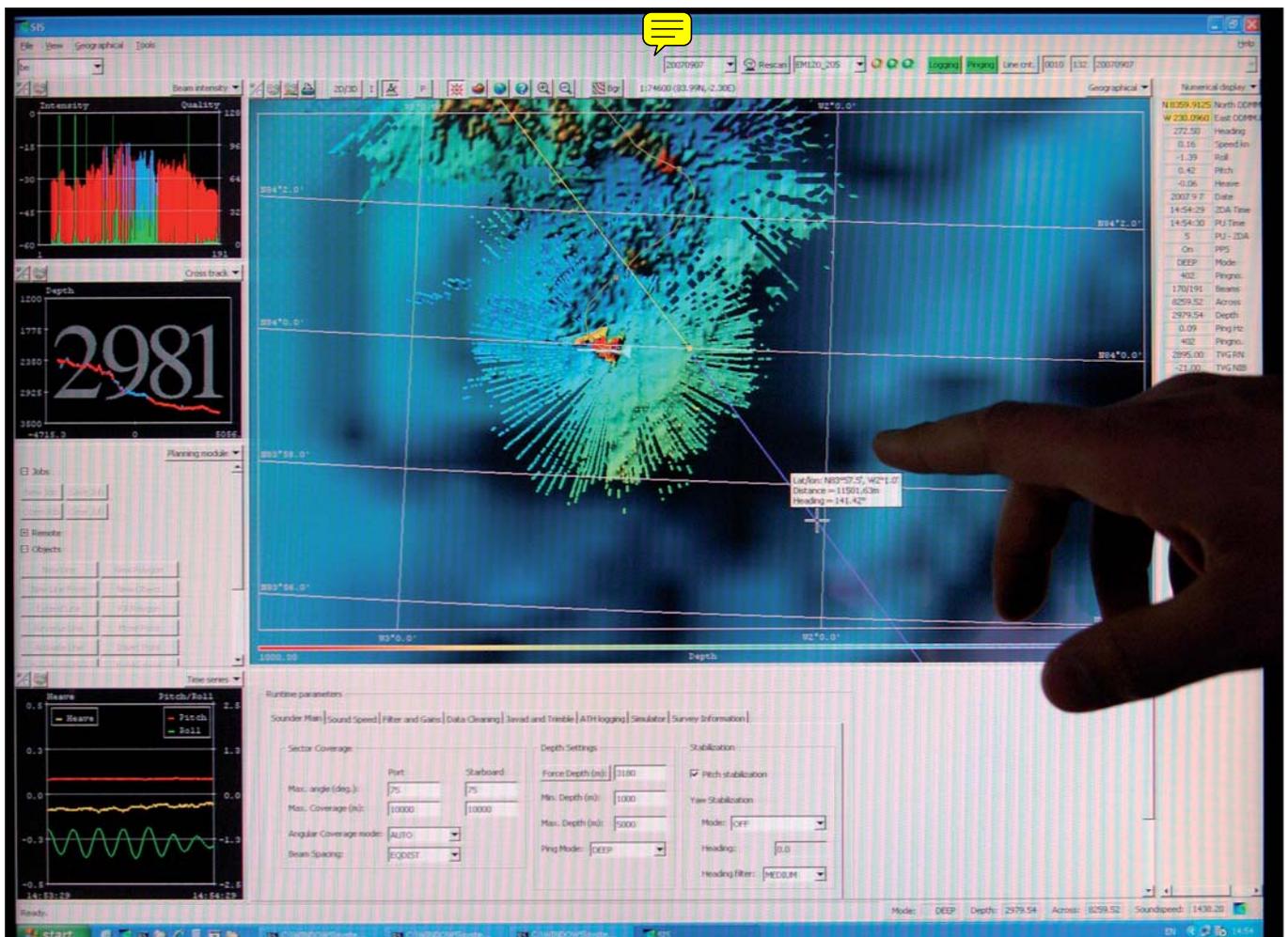
To get good depth data we need either to break the ice as gently as possible or break a ship's length of ice, then back up while measuring the seafloor with multi-beam. This is very time consuming.

Instead we found that we could break through the ice along our intended track until we found some smaller cracks or openings in the ice where we could spin the icebreaker 360 degrees while collecting data. In this way we efficiently covered the seafloor around us with a radius equal to the multibeam swath.

For example in 4000 m we could, during the most favorable conditions, measure with a radius of more than 10,000 m around the ship.

Our mapping soon showed that the northern slope of Morris Jesup Rise was wrongly placed on available bathymetric maps and also incredibly steep.

For more information:
http://www.geo.su.se/forsk-maringeologi-projects/follow-the-expedition-online-3_en



Success for Hydrographic products in South America



The configuration is an EM 302 2°x2°, Seapath 200, SVP sensor, software and services.

The system will be operated by the Hydrographic Office of the Brazilian Navy (DHN) onboard its research vessel R/V 'Sirius'.

Delivery and installation is planned for summer 2008.

The contract was secured with very good support from our representative in Brazil, DEMO Offshore.

Kongsberg Maritime has had a long term relationship with the Hydrographic Office of the Brazilian Navy (DHN). DHN operates a large number of our single beam echo sounders (EA 200, EA 300, EA 500, EA 400, EA 600) as well as EM 3000 and EM 1002 multi-beam echo sounders.

For more information:
<http://www.mar.mil.br/dhn/gnho/navios/htm/nhotau.htm>

New Area Sales manager



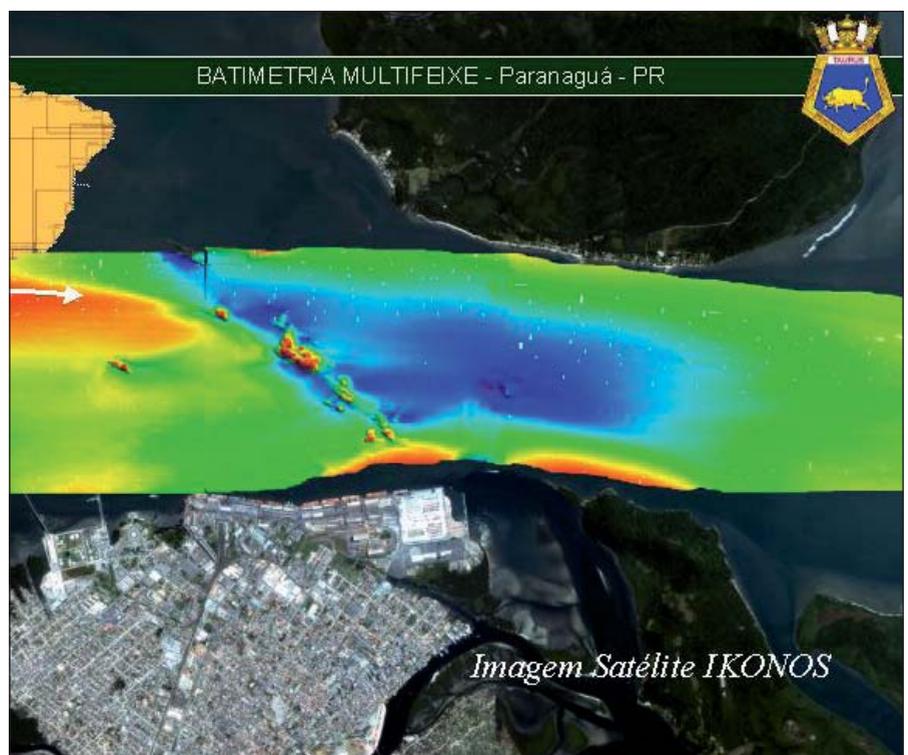
Geir F. Skogen has been appointed as Area sales manager for hydrographic products. He will be supporting the sales teams in the Far East.

Geir has been working as a service engineer and a training instructor for all Kongsberg Maritime hydrographic products and has a Bachelor's Degree in electronics and computer science.

With this background he knows Kongsberg Maritime products very well, and will become a valuable member of our Sales & Marketing team.

Kongsberg Maritime has signed a contract with the Brazilian Navy for the supply of an EM 302 multibeam echo sounder system.

The contract was signed with the Brazilian Naval Commission in Europe (BNCE) in London. BNCE acts on behalf of the Brazilian Navy for the purchasing of equipment.



Upgrade of Ifremer's 'L. Atalante' research vessel



Kongsberg Maritime has been awarded the contract for the midlife upgrade of the vessel 'L. Atalante'. The owner, Ifremer (France) has decided to install Kongsberg Maritime multibeam echo sounders, the EM 710, 0.5x1 degree and the EM 122 1x2. Installation will start in September 2008 and sea trials are set to take place during

the 1st quarter of 2009.

'L. Atalante' Commissioned in October 1990 (first scientific cruise in March 1991), this multi-purpose research vessel is dedicated to research in marine geosciences, physical oceanography and marine biology.

Market Success for EM 710

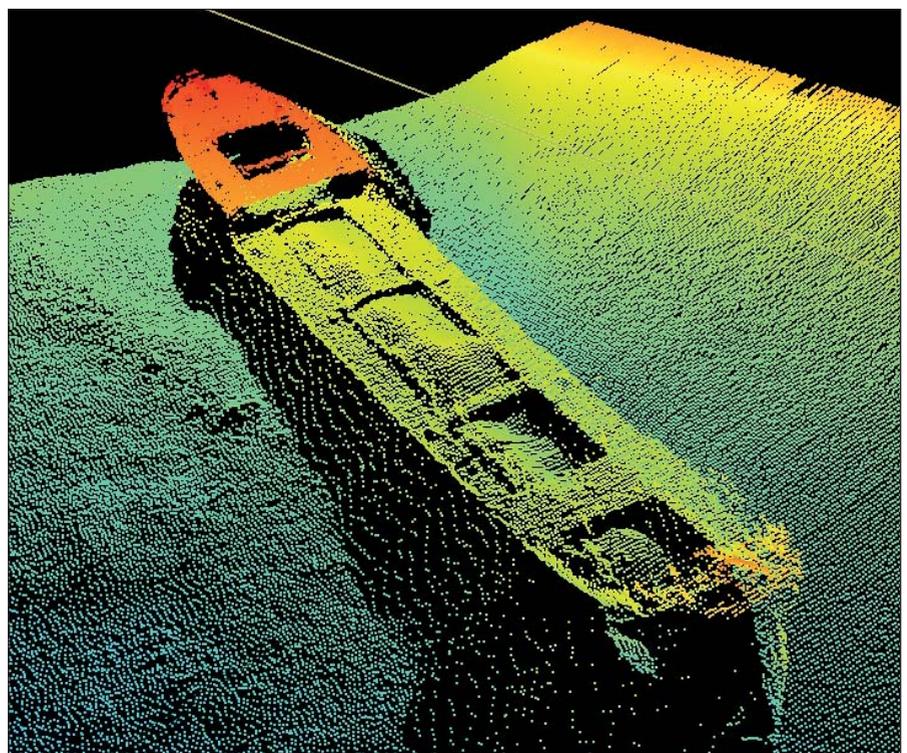
Since its introduction, the new wide-band and versatile EM 710 multibeam echo sounder has gained considerable popularity among many different user categories. Up until now, approximately 40 systems have been sold.

Quite surprisingly, the model with the highest specification of 0.5°x1° beam widths has become the most popular model, making up about 50% of the units sold.

The extremely narrow transmit beam of 0.5° is a feature that results in very high resolution of the survey results, and is required for detection of objects according to IHO S-44 special order. Many users are waiting for the dual swath functionality, in order to have the full system performance of their EM 710.

This functionality is expected to be distributed from May and will include

new and more powerful boards for signal processing.



Courses

Week 7

APOS Basic + LBL/MuLBL

Week 16

APOS Basic + LBL/MuLBL

Week 17

APOS Basic

Week 18

HiPAP Technical

Week 21

APOS Basic

Week 22

APOS Basic

Week 24

HiPAP Technical

Week 26

APOS Basic

Please also note that we can arrange courses specially designed for the customers as APOS Advanced and ACS courses.

Contact person: Frank Lian,
e-mail: frank.lian@kongsberg.com,
phone: +47 33 02 39 25

Acoustic Control System for Blow Out Prevention

The Acoustic Control System (ACS) for Blow Out Preventer (BOP) is one of Kongsberg Maritime's highly successful products for the drilling industry. Combined with the extremely versatile HiPAP system it provides an extremely important emergency shut down facility for drilling rigs in critical operations. The big increase in rig activities worldwide has given Kongsberg a formidable rise in sales of these systems, and soon we will have more than 100 systems in operation.

The ACS system is a redundant receiver/transmitter for communication with the rig through acoustics. It is interfaced to the BOP control pod so that different sets of emergency functions can be executed to shut down the well and avoid a pollution. If the regular umbilical is broken and normal communication with the BOP is not possible, the ACS is the last and only means to shut down the well. If a function is executed from the ACS, signal goes to a solenoid that activates a big valve on the BOP; the valve is then energized by air pressure bottles on the BOP.

Surface equipment

The surface equipment consists of a portable Acoustic Command and Control Unit, the ACC 401 - with internal rechargeable battery giving 10 hours normal operation - and a dunking transducer with hand operable cable winch. The dunking transducer may be lowered 70 m into the sea from a rig, a stand-by vessel, a lifeboat or a helicopter.

The ACC 401 is operated via an LCD display, using a cursor operated menu and dedicated push-buttons. The display has background lights for



operations at night. To secure safe operation of critical subsea functions, the operator has to use both hands during activation of armed functions.

Subsea equipment

The subsea equipment consists of the Subsea Control Unit (SCU), two transducers with cables and waterproof connectors, and an interface cable for BOP solenoid pack connection. The SCU holds the subsea electronics. It includes two transceivers with transducers, which makes it 100% redundant. The SCU is powered from internal lithium batteries - normal operational battery lifetime up to two years.

The last few year's technology progress in drilling has brought forward the Surface BOP concept, where acoustics has also been implemented as an important tool for controls. In this type of operation the BOP is hanging in the splash zone of the rig as a virtual seabed to drill on, and a smaller riser is connected to a SIM (Subsea Interface Module) on the seabed. The sea-

bed SIM then only has the acoustic system, which also in some cases can have a simplified umbilical with power and fiber communication. Kongsberg Maritime was the first company to make such a system - being used on the Sedco 601 for a SBOP drilling operation in Indonesia.

Environmental objectives and benefits.

The exploration and upstream industries are taking the environment increasingly serious, and are building new rigs and drillships with a very high environmental safety factor.

As an extra precaution against unwanted drift-off or disconnection from the well, almost every new rig being built now follows the strict legislations of the North Sea, Brazil and Canada, where the ACS system or similar is required for all drilling operations.

The ACS system is very robust, and the communication principles are designed with reliability as the most important criteria.



KONGSBERG

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