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The SUBSEA newsletter

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7 - 11 May 2007
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Important Navy contract for KM



Ole Refsahl Program director MCM KDA (Bid Manager Finland), Geir Haug Hanssen Project Mng. KDA, Rolf Engvig Iversen Project Manager KM, Svein Otto Schjervén Product Sales Manager (Bid Manager Finland)

Kongsberg Maritime and Kongsberg Defence and Aerospace signed the contract for the Finnish Navy Mine Hunting Vessels on 9th of May 07. The contract has a value of 114, 8 mil. NOK and includes HUGIN 1000 MR, EM 710 and HIPAP 500, three of each. There is also an In Service Support (ISS) contract between FN and KM supporting all KM products through their life cycle.

KDA will act as an integrator of all hydro acoustic products into the tactical system (C2) delivered by Atlas Electronics, Germany. Intermarine, Italy is the shipbuilder and the prime contractor. The first ship is planned to be handed over to the FN in May 2010.

This is the first delivery from KM Subsea, Horten, where all product lines are represented in the same project, and fully integrated in a common system.



The FN is the first navy in the world operating a complex mine hunting system like this. The Finnish and the Norwegian Navies have started cooperation to establish a future mine hunting concept where AUVs are a prime element in operations. This contract is also the first AUV contract in the naval market outside Norway, and as such, is of major importance.

Rolf Engvig Iversen is appointed as the project manager in KM and we wish him and his team good luck and great success.

FEMME-conference 2007 in Amsterdam



From left: Fernando Artilheiro – Inst. of Hidrográfico, Lt Cdr Aldino Campos – EMEPC, Raul Pita – 3P Consultores, Jan Rasch - KM

This year's FEMME conference (Forum for EM Mutual Experience) was held in Amsterdam, The Netherlands, in March. It was the 11th FEMME Conference and it gathered 198 participants from 30 countries.

The participants came from a wide range of institutions and companies that use the Kongsberg Maritime multibeam systems, and the conference program was a mix of Kongsberg tutorials, customer presentations and an

exhibition area with Kongsberg equipment and 3rd party software stands.

“Our goal is that our customers share their experience about Kongsberg echo sounders, thus increasing their knowledge and providing us with information to improve the performance of our multibeam systems,” says Nina Hovland, coordinating the event.

The social gatherings are also important, and this year's conference dinner was

held at The Saint Olofskapel ('chapel of St. Olof'), built in the 15th century to honor the people that work at sea. It was a wonderful end to yet another FEMME conference, and we want to say thank you to all the participants for their contribution to a successful FEMME conference.

A special thanks to Kongsberg Maritime BV, who have provided excellent support for us from the day that Amsterdam was chosen for the FEMME 2007 event.

FUGRO CHANCE INC, Purchases HiPAP 350 Portable



FUGRO CHANCE INC, Houston Texas has purchased the HiPAP 350 Portable system to be used in the demanding SSBL market in the Gulf of Mexico.

The HiPAP 350P is a High accuracy SSBL/LBL and MULBL system with a range capacity down to 3000 m (32,800ft). The HiPAP 350P is a compact transducer containing the transceiver and a High accuracy Motion Reference Unit. The Transducer can be tilted without extra calibration as the MRU automatically compensates for the tilt. It is designed to be mounted on

a shaft over the side or through a moon pool.

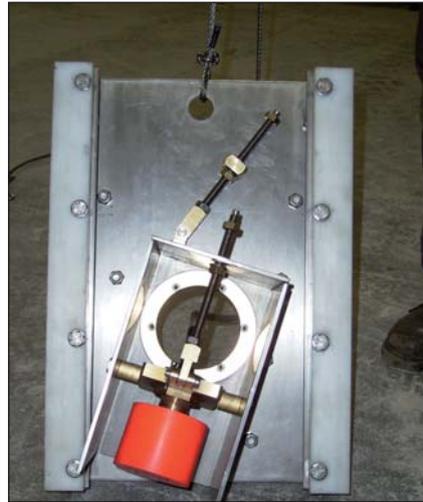
Fugro Chance Inc. is among the world's most trusted and innovative survey companies. A wealth of experience, first-class performance, superior technology and service make Fugro Chance Inc the standard of excellence for survey quality. Fugro Chance Inc is headquartered in Lafayette, Louisiana with a divisional office in Houston, Texas. Fugro Chance Inc. has been part of the Fugro Group since 1991 with 10,000 employees in more than 50 countries.

Kongsberg echo sounder to monitor river Po



A Kongsberg EA echo sounder MCU32 Sweep System (based on EA 400 hw/sw) is at the heart of a new echographic system to monitor the river wash for the detection of the exact level variation of the river bed surrounding the pile no.3 of the railway bridge crossing the river Po located at km 47+859 on the railway line Modena – Verona. The company carrying out the project is 'Enterprise Silvio Pierobon' of the Eng. Silvio Pierobon with head office in Belluno, Italy.

The Kongsberg survey echo sounder uses 4 sensors, which allows the recording of the depth variation of the river bed in the river Po with samples variable in time between 1 second and 4 hours. The system allows the graphical visualization of the depth profiles and the recording of



the data in a proprietary format (raw).

The collected data is saved as large files to be used as an historic record, and stored every 6 months and includes depth variation, date, time e sensor no. The data can be viewed by the customer in real time by the means of the proper software.

In order to avoid damages to the sensors, they will only be powered when the water level is at least 50 cm over the position of the sensors. To do so a pressure sensor to measure the level of the river Po is installed and integrated in an acquisition system that controls the power supply to the transducers according to the water level.

Equipment delivered to 'Vozrozhdenie'



In the middle of May the delivery of survey system from Kongsberg Maritime, consisting of EM 3002S, EA 400 38/200 + SSS + 15kHz as profiler, MS 1000 scanning sonar, Seapath 20 as Gyro, Valeport mini svcs, Valeport current meter, QINSy survey, and mapping Qcloud software to the Siberian company "Vozrozhdenie" was finalised. This company specialises in underwater inspection of pipes crossing Siberian Rivers. This is the first multibeam system ever delivered to Siberia!

Specialisation:

- Supervising of underwater pipe Laying
- Underwater pipe inspection
- Hydrographic survey
- Hydrology
- Underwater pipe repairing
- Underwater inspection and repair of intake systems
- Diving inspection of underwater constructions
- Land survey.

Institute of Marine Research - Bergen



The Institute of Marine Research has recently signed a contract for an EM 710 1x2° to be installed onboard the vessel

'Dr. Fridtjof Nansen'. The contract was won after a public tender. The system will be installed in Cape Town at the end of August followed by calibrations and sea trials.

The vessel Dr. Fridtjof Nansen is owned by the Norwegian Directorate for Foreign Aid (NORAD), but is manned and operated by IMR. The vessel mainly operates along the west and south east coast of Africa, supporting a number of science programmes managed by the

UN organisation FAO. and is in operation approx 300 days a year.

The vessel is named after Fridtjof Nansen (1861 -1930) from Norway, who is most famous for his crossing of Greenland and the 'Fram' expeditions, but he was an oceanographer and his doctoral thesis was in zoology. He was also one of the founders of ICES (International Committee for the Exploration of the Seas).

New AUV Product Sales Manager



Svein Otto Schjerven has been appointed Product Sales Manager for KM AUV products, (HUGIN family), starting from 1st May 2007.

Svein Otto started in KM (Norcontrol AS) in 1994 as a product manager, and his last job was as Product Sales Manager, Naval Sonar. He is educated as a navy engineer and naval architect and has a long and varied service in The Royal Norwegian Navy. He spent ten years 'under water' as a submarine officer.

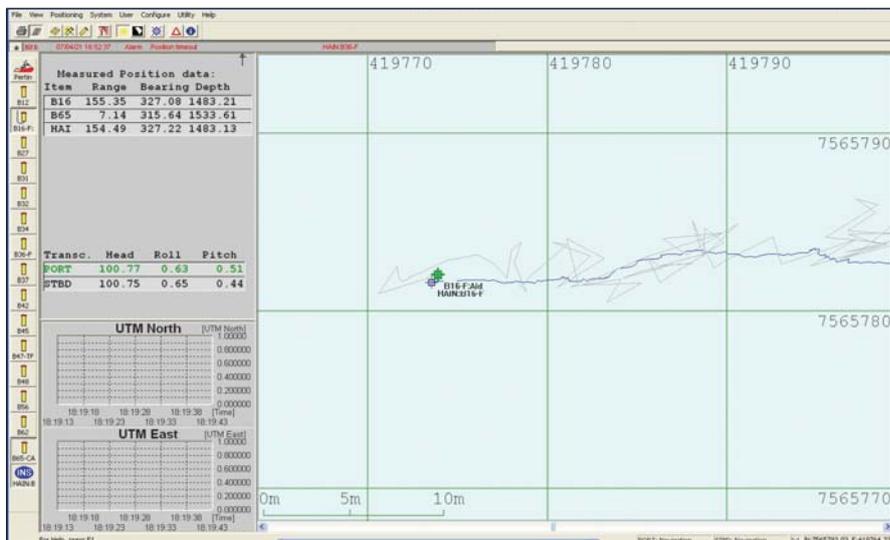
New Area Sales Manager appointed



Torbjørn Kjær has been appointed as Area Sales Manager for Hydrographic Products. He will be supporting the sales team in Germany and will take over responsibility for clients in the Nordic Countries.

Torbjørn has been working as EA Single Beam Product Manager. With this background he knows Kongsberg Maritime products well, so will become a valuable member of our Sales & Marketing team.

HAIN subsea in Brazil



In April the first Hydroacoustic Aided Inertial Navigation (HAIN) subsea system in Brazil was installed on board the ship 'Pertinacia', which is operating for Acergy. The vessel has been converted from a cable ship to a flexible pipe lay and subsea construction ship for work down to 2000m, and is currently on a long-term contract with Petrobras. The vessel is equipped with two High Precision Acoustic Positioning (HiPAP 500) systems.



The HAIN subsea system is installed on a Perry Triton XL work-class ROV. It consists of the IMU (inertial measurement unit) and interface to an accurate depth sensor. The signals are transferred through the ROV communication system to the vessel where the HAIN computer receives the data. The HiPAP 500/APOS system onboard exchanges information with the HAIN computer, and APOS presents the real-time data on the APOS screen and e.g. to the survey system.

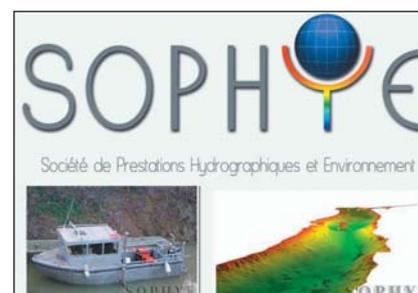
Acceptance trials were done in 800m to 1900m water depth, and the improvement when using HAIN was noticeable! On the APOS screen dump the blue line is HAIN real-time positions, while the gray is HiPAP 500 measured positions (the water depth is 1480m). Further enhancements can be done by using the NavLab post-processing software.

HAIN subsea increases the accuracy of the acoustic system (stretching the SSBL limit) and makes it easier for ROV pilots to navigate, saving vessel time.

A new company in France

SOPHYE (Société de Prestations Hydrographique et Environnement) is a new French company dedicated to bathymetric survey in rivers, harbors, coastal area, dredging quality control, dam control.

The company has just purchased a Kongsberg Multibeam EM 3002 for accurate survey, which can be installed on either of their two platforms. SOPHYE is able to operate from very shallow wa-



ters (40cm of water) and the system has been made to be portable worldwide.

The third and last...



'Miguel Oliver' has been delivered, by Astilleros M. Cies in Vigo to Secretaria General de Pesca Marítima belonging to Fishery Ministry during, the first week of May.

Miguel Oliver is the third and last of the research vessels for Secretaria, which have been built in the last few years. Secretaria now has the most modern vessels with state-of-the-art equipment installed on board.

This 70 meter vessel completes the Secretaria's fleet. Previous research vessels 'Vizconde de Eza' and 'Emma Bardan' are 53 and 29 meters respectively. Miguel Oliver improves the operational and research capability and for Kongsberg, is an example of the integration that we make reality. The latest version for each equipment has been supplied. The most important aspects to take into consideration are: The high technology level achieved customized designed configuration, the high integration level, fulfillment of the navigational, communication and noise and vibrations rules. Miguel Oliver meets ICES 209 recommendations.

We have realized on board Emma Bardan how to improve a silent platform for the acoustics equipment, extending the range capability and performing of some of them by up to 40%.

All the electronics equipment installed on board have been supplied and commissioned by Simrad Spain, S.L., who is the Kongsberg representative for the

in Spain. The systems involved have been classified by application: Navigation, Communications, Fishery Research and Geology.

- Navigation - Data Central Box with spread the navigation data (position, heading, speed, depth, wind) for systems that require this information.
- Kongsberg SDP10 - Dynamic Positioning System
- Radars DB10 X & S-Band
- Voyage Data Recorder-MMB
- Heading sensors - CG80 and Seapath 20
- Chart System - OLEX



- Other equipments: Doppler Log DL850, GDS101, Meteorological Weather Station, AP50 Autopilot, AIS AI80, GMDSS console, dGPS GN33 and Fugro 8200HP.
- EK60 scientific Echo sounder. Net Sonar FS20/25, Net sounder ITI, Echo sounder ES60 and Net Monitoring PI44 are also installed and able to work simultaneously.
- Geology Lab.
- EM 302 1°x2° Multibeam Echo Sounder
- Parametric Sounder TOPAS PS18
- EA 600 Single beam echo sounder
- Seapath 200
- In order to manage store and replay the data onboard a Marine Data Management MDM 400 has been installed.

The main success of this installation has been the team work developing by all Kongsberg Departments involved in the project.

10th anniversary

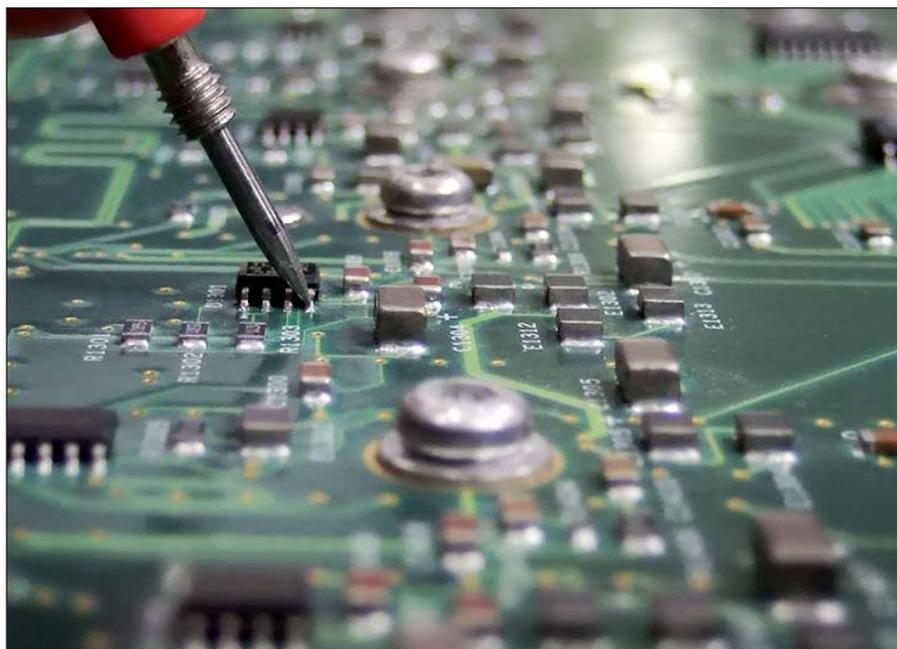


Aleksey Shusharin chief hydrographer, Jury Byinkov deputy of director hydrography, Sergey Dolgov sailor, Ivan Meshkov captain, Sergey Sologub surveyor, Alexander Kuleshov surveyor

19th of June 1997 – the Aphrodite boat arrives at the port of Kaliningrad. The hydrographic survey boat was delivered by Kongsberg Maritime to the port authority. The Boat was equipped with complete EM 3000S system, including Gyro, motion sensor, sound velocity probe and Neptune/Irap software. Last summer the system was updated to EM 3002.

This demonstrates ten years of success; the equipment never failed in use and it assisted in the safety of navigation, dredging support etc. Aphrodite works every day and the very enthusiastic team keep it in excellent condition.

Product maintenance stop for selected products



We now have to stop general maintenance of the following products, since it is difficult or impossible to purchase or produce certain components. These products are:

Single beam hydrographic echo sounder:

- EA 500/502/501P

Multibeam hydrographic echo sounders:

- EM 12
- EM 1000
- EM 950

EA 500 was introduced to the market in June 1989, and has been an extremely reliable system throughout its lifetime. A total of 400 systems, including EA 502 (two frequencies system) and EA 501P (portable unit), were produced until the system was taken out of production in end 2000, and replaced by the more modern EA 600.

EM 12 was our first full ocean depth multibeam echo sounder, introduced to the market in 1989. EM 1000 and EM 950 were higher frequency systems

based upon the same technology, but with a curved transducer. EM 12 was taken out of production and replaced by EM 120 in 2000. Likewise, EM 1000 and EM 950 were replaced by EM 1002 (which is now out of production and replaced by EM 710).

The current hydrographic instrument range comprise:

Single beam echo sounders:

- EA 400, EA 400 SP
shallow water
- EA 600
deep water

Multibeam echo sounders:

EM 3001, EM 3002
300 kHz/shallow water
- also for ROV/AUV

EM 2000
200 kHz/shallow water
- also for ROV/AUV

EM 710 (S) (RD)
70-100kHz /shallow/medium depth

EM 302
30 kHz/ max 7000m depth

EM 122
12 kHz/full ocean depth

Royal Norwegian Navy

The Royal Norwegian Navy has recently signed a contract for an EM 710 1x2 to be installed onboard the vessel 'KNM TYR'. The system will be installed in July with sea trials just after installation.

KNM TYR is operated as a mine inspection vessel, with main task being deployment and maintenance of the coastal artilleries mine fields.

The vessel is equipped with many different types of instruments to be able to



handle a variety of different tasks within the Royal Navy but also for the customs, police, pollution controls, marine

research and the Norwegian Defence Research Establishment (FFI). The vessels location is in Bergen.

XVIIth International Hydrographic Conference, Monaco 7 - 11 May 2007



Kongsberg Maritime, Hydrography was present at the main IH Conference that takes place every 2 years. This is the main meeting place for all IH members, i.e. all Hydrographic Offices of the

world that are members or observers to the IHB. Freddy Pøhner of Kongsberg Maritime explains to Prince Albert II of Monaco about KM Hydrography products including the HUGIN.

US HYDRO Conference, Norfolk, Virginia, 14 - 17 May 2007



Kongsberg Maritime was represented by Kongsberg Underwater Technology Inc. at the US HYDRO 2007. The

KUTI/KM booth, and on the 17th of May (Norway's Constitution Day) we had to fly the flag.

EM 3002 sonar head no. 500



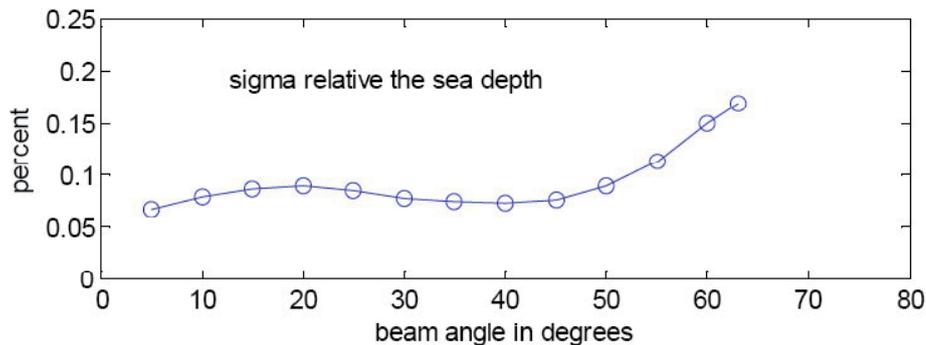
During April this year, sonar head no. 500 was produced, and the event was properly celebrated with a cake for the people involved. This sonar head, which has an operating frequency of 300 kHz, has been a reliable and popular product for several years.



Initially, it was introduced for the EM 3000 system, and slightly upgraded when EM 3002 was introduced, with improved signal processing for higher data density and improved resolution.

Since the casing is in solid titanium, it is not subject to corrosion problems and very rugged.

EM 710 sets a new accuracy record



From the 23rd to the 25th April the Norwegian Defence Research Establishment (FFI) with the research vessel HU SVERDRUP II conducted a Sea Acceptance Test survey for the newly installed EM 710, 0.5x1 degree system

The system is installed in a gondola arrangement at 5.50 metre below waterline (see pictures). The test was performed outside Harstad, Norway, with fairly calm sea conditions with depths varying from 200m to 250m.

In the first part of the survey, calibration of the system was performed with a performance analysis of the system. Several lines were run with 200% overlap to check the repeatability of the soundings from the EM 710.

The calibration of the system was done by using both the manual and automatic routines available in the topside software SIS (Seafloor Information System). Afterward the results from both were compared.

The automatic procedure is developed by FFI and implemented in SIS as an option. The user gets an overview after

the software has done an analysis of the recorded data. The results from both the manual and automatic method were the same, proving that auto-calibration is a cost effective solution.

From the data collected, the accuracy of the soundings was defined. The plot shows the standard deviation in percent of water depth re beam angle in degrees. On average the error is approximately 0.1% of the sea depth with a max to 0.16% of the sea depth.

The conclusion from the customer is that the performed test confirms that the EM 710 is the most accurate multibeam echo sounder ever produced.

The customer commented that they also had good data at 750m depth of water at sea state 5. The data density and the quality of the data was very good.

Sea trials successfully completed on second EM 120 in Portugal

Last week the sea trials for the EM 120, EM 710, EK 60 and SSU were successfully completed onboard the Portuguese research vessel R/V Gago Coutinho.

This is the second ex. T-AGOS vessel that the Portuguese Navy have equipped with EM 120. The other EM 120 vessel is the R/V Don Carlos.

The main mission of the R/V Gago Coutinho will be to carry out EEZ mapping on behalf of EMEPC (Estrutura de Missão para a Extensão da Plataforma Continental).

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