AUGUST 2008

NEWSLETTER



Welcome...

...to this edition of the Kongsberg Norcontrol IT newsletter – a special edition for the IALA VTS 2008 symposium, which we are extremely proud to be sponsoring. This event is particularly special to KONGSBERG as it is taking place in Norway, so we are looking forward to extending our famous Norwegian hospitality!

Kongsberg Norcontrol IT is a key exhibitor with a whole range of new, exciting products and demonstrations that will take place everyday at the KONGSBERG booth. Daily demonstrations will be based on our activities within the EU's research project – MarNIS (Maritime Navigation and Information Service). Funded at approx EURO18 million, MarNIS is a 4-year project concluding in 2008, with goals to improve everything from maritime safety and security, through to operational efficiency and economic and legal aspects. Our next generation VTS system, C-Scope, has played an important part in the MarNIS project.

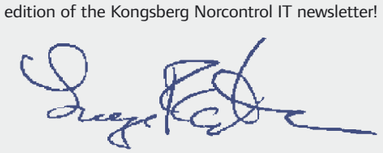
C-Scope is the world's first VTS system to use a Geographical Information System and boasts many other unique features such as:

- High quality shore-based radar video that can be viewed onboard ships
- Satellite service as an aid to VTS and to detect oil spills
- Underwater surveillance for increased port security
- New AIS features including base station, encryption and network management.

Many of these technological advances have been made thanks to our collaboration with other KONGSBERG companies, which you can read more about on page 4 of this newsletter.

As part of VTS 2008, on 7th August KONGSBERG will host the technical visit to the Fedje VTS Centre, which plays an important role in North Sea oil transportation operations. The boat cruise to Fedje is a spectacular sea journey and visitors will quickly appreciate the importance of protecting this unique coastline while optimising efficiency of maritime transportation.

If you happen to be reading this after the 7th August, we hope you enjoyed the visit and if you didn't make it to Fedje, we go into detail in a special VTS focus on the next page. Feel free to contact us for more information about Fedje, or indeed any of our other VTS projects in Norway and around the world. We hope you enjoy this special edition of the Kongsberg Norcontrol IT newsletter!



Inge Flaten, President, Kongsberg Norcontrol IT

Vardø VTS Area Becomes One of the Largest Single Maritime Domains in the World

The new, cutting-edge Kongsberg Norcontrol IT VTMIS at Vardø, in northern Norway has been extended to provide coverage of southern Norway, the North Sea and Svalbard. Run by the Norwegian Coastal Administration, the new Vardø VTMIS, which is called 'C-Scope', was initially designed to provide a VTS Information Service (INS) and Traffic Organisation Service (TOS) covering the northern areas in the Arctic, from the Barents Sea to Rørvik in the south, but the recent extension makes it responsible for one of the largest single maritime domains in the world.

Utilising advanced vessel tracking and management systems, Vardø demonstrates the latest in VTMIS technology and how it can be implemented on a very large scale – not dissimilar to that envisioned by the EU's research project Maritime Navigation Information Service. The Vardø VTMIS installation in addition to being a large scale operation is also one of the most technologically advanced C-Scope systems, which is Kongsberg Norcontrol IT's 7th generation VTMIS.

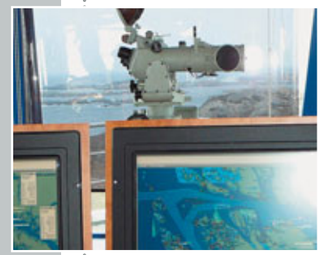
C-Scope has been designed to not only provide an accurate picture of the maritime domain using traditional sensors such as radar and AIS, MetHyd, CCTV, SCADA and VHF/DF, but to combine this with a Geographic Information System (GIS) to ensure operators have relevant information presented to them in a timely and efficient manner.

The C-Scope Operator Client provides a coherent Traffic Image with critical information easily accessible at all times including radar video, tracks, weather, oceanographic and satellite imagery. C-Scope has also been designed to ensure that information from both internal and external databases can be collected, correlated and exchanged with other stakeholders such as vessels and authorities.

"C-Scope is an ideal solution for Vardø, especially following the extension of our VTS Area, as it is fast and provides our operators with decision support tools to highlight vessels at potential risk, which is often a problem when dealing with such a vast sea area. Environmental protection is also a core requirement for the Vardø C-Scope VTMIS. C-Scope provides our operators with optimum situational awareness by ensuring an uncluttered and logical interface that identifies risk, enabling them to provide a safe and efficient maritime domain," said Jarle Hauge, Engineer in Chief, Norwegian Coastal Administration.



Focus on the Fedje VTS in Norway



The Fedje VTS, which has been in operation since 1992, is situated close to Bergen on the west coast of Norway and is responsible for monitoring traffic from Sture in Hjeltefjorden in the south to Sognesjøen in the north. Its priority is to monitor oil transport from StatoilHydro's Sture and Mongstad refineries that are close by.

Sture is an important export facility for crude oil, with two jetties able to berth tankers up to 300,000 deadweight tonnes, whilst the Mongstad refinery, located north of Bergen, is the largest in Norway and has an annual capacity of 10 million tonnes of crude oil. The crude oil terminal plays an important role in Norwegian exports to customers in North America, Europe and Asia and provides intermediate storage for more than a third of all crude produced by StatoilHydro on the Norwegian continental shelf, including the government's share. With traffic from both refineries, the Fedje VTS has to monitor a massive amount of hazardous cargo carrying traffic.

Fedje VTS is run by the Norwegian Coastal Administration (NCA), the organisation responsible for coastal management, marine safety and communication along some 90,000 km of Norwegian coastline (including islands and fjords). Kongsberg Norcontrol IT has worked with the NCA on several VTS installations – the latest being the cutting-edge Vardø VTS just opened in northern Norway – and Fedje has played a key role in the development of the company's maritime surveillance solutions and indeed the implementation of the IMO's Performance Standard on AIS.

Fedje was a test-bed for an early version of AIS that Kongsberg Norcontrol IT was developing with transponders and GPS, which was first implemented at the Port of London. In the early days the transponder data was not integrated with the radar tracks, but in 1995 Kongsberg Norcontrol IT's development of the system lead to this being a possibility, and alongside a test on the Horten-Moss ferry in the Oslofjord, Fedje became the first VTS to have this functionality. So you could say that Fedje was the basis of the national AIS infrastructures that are now commonplace.

Today, the Fedje VTS runs a sophisticated Kongsberg Norcontrol IT VTMIS5060, which provides reliable and detailed cover for the busy waterways it is responsible for. However, the NCA has chosen to upgrade the system's radars by implementing the new C-Scope Radar Extractor & Tracker, which like the transponder system installed in 1995 is another groundbreaking solution designed to improve the clarity and detail of information provided to the VTS operator.

One of the NCA's key responsibilities is to ensure a good national preparedness against acute pollution and by implementing new functionality into its maritime surveillance systems, such as the forerunner to AIS in 1995 and the most advanced radar software in the form of C-Scope Extractor & Tracker in 2008, the organisation is ensuring that Fedje is at the forefront of the safety of shipping and protection of the environment off the Norwegian coast.

Bilbao and Gijon VTS for SASEMAR

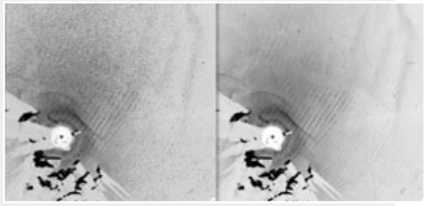
Sociedad Estatal de Salvamento y Seguridad Marítima (SASEMAR), the organisation responsible for VTS operation along Spain's coastline is a long term customer of Kongsberg Norcontrol IT. Having installed the first VTS for SASEMAR in Spain in the early '80s, a close relationship based on support and new installations has been forged, with the latest activity being upgrades to the Bilbao/Gijon VTS.

The new VTS system will consist of one VTS Centre in Bilbao with one remote sensor station, and a VTS Centre in Gijon with 2 remote stations for sensors. Both have been running Kongsberg Norcontrol IT VOC5060 systems successfully for over ten years. However, as part of SASEMAR's continuing program to ensure that all of its VTS Centres are utilising the latest technology, the new Kongsberg Norcontrol IT VTMIS5060 and C-Scope Extractor and Tracker will now be installed in both control centres.

"We have extensive experience in Spain and working with SASEMAR so we're delighted to have been chosen for these latest upgrades to this important VTS. The innovation of our latest systems, such as the C-Scope Extractor and Tracker, and our dedication to long term support means we are the obvious choice to meet SASEMAR's demands for upgrading of its VTS centres," said Roberto Gonzalez Alvarez, Business Development Manager, Kongsberg Norcontrol IT.

Radar Extractor and Tracker Developments

The International Association of Lighthouse Authorities (IALA) V-128 v2 Recommendations for Advanced Radars are aimed at improving the clarity of the radar image and track data for Vessel Traffic Service (VTS) operators, to ensure that an accurate, high-resolution representation of the maritime domain and all targets within it, irrespective of size and speed, is available at all times.



The radar picture on the right has had the clutter removed by the Extractor & Tracker, revealing a much better definition and cleaner image.

In order to improve detection of normally difficult targets, such as vessels in congestion, small high speed craft or boats moving slowly through radar clutter, and to enable high-resolution real-time vessel tracking for the VTS, Kongsberg Norcontrol IT employs Radar Extractor and Tracker technology within its VTS systems. This is essentially the use of advanced software techniques to extrapolate an even clearer image from the raw radar signal.

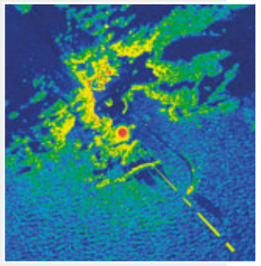
Radar Extractor and Tracker technology is already in use today but Kongsberg Norcontrol IT has recently developed the system even further in order to enable performance improvements by magnitudes. The result is a new system integrated into Kongsberg Norcontrol IT's C-Scope Operator Client that offers nearly four times the sampling resolution available by current generation systems. These improvements enable the difficult targets to be displayed on an operators screen through little investment in hardware – it uses a high end computer and one COTS acquisition card, in addition to a generic radar interface card.

The Radar Extractor and Tracker's role is to extract and track the radar returns most likely to originate from vessels and other objects of interest. The main function of the extractor is to filter out all signals that represent noise, interference and clutter originating from the sea, rain, fog and reflections, leaving only signals that may be of potential interest. The tracker isolates from these detected signals those that are consistent with its tracking model and outputs a list of tracks. Each track represents a moving or stationary object and comes with a position and velocity in addition to other dynamical data.

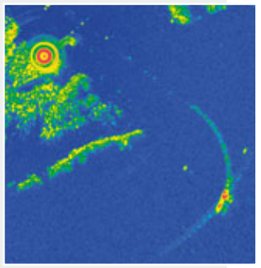
The tracker must be able to initiate and correctly update tracks even when they are intermittent due to a low probability of detection, not lose them when they temporarily disappear due to shadowing, not confuse them when they are close to or overlapping with other echoes, and finally properly handle multiplicity when there is coverage overlap between nearby radars. Essentially, the main challenge for the extractor is to detect small objects in the presence of clutter, which is usually expressed as maximizing the probability of detection while minimizing the false alarm rate.

The C-Scope Extractor and Tracker contains a completely redesigned extractor that significantly improves some of the performance aspects of the existing and competing technology. In particular the sampling resolution and rate have been increased to four channels of 14 bits at 100 MHz, from one single channel of 8 bits at 50 MHz. The main benefits of this improved sampling include much higher amplitude resolution that can be carried all the way to the operator for visualization, much more detailed amplitude structure of tracked objects that results in better and more robust tracking and the possibility to do frequency diversity in the extractor instead of requiring an expensive transceiver to do it.

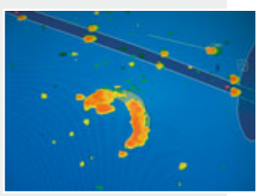
The new C-Scope Extractor and Tracker can provide more control of performance given the specific clutter and noise challenges for the site whilst at the same time improving probability of detection and reduced false alarm rate. It also enhances the vessel tracking robustness of the VTS and reduced track swap and provides better object delineation resulting in additional information for the operators. Essentially, the much improved video presentation can be likened to the jump in quality from analogue terrestrial television to the digital HD era and for ports, authorities and vessels this translates to safer and more secure operation.



It is important to process amplitudes correctly in order to maximize the signal to clutter ratio.



The C-Scope Extractor and Tracker uses improved amplitude resolution to locate properly the centre of mass of the track, which leads to reduced track swap and loss. Here the ferry and the wake are well defined.



High resolution fragments from the C-Scope Extractor and Tracker allow for detailed representations of radar video at the operator console while conserving bandwidth from the remote radar site.

SHORT NEWS

- We have been contracted to provide our VTMIS5060 for the new **Bintuni VTS** in a remote part of Indonesia by **PT Gratia Jaya Mulya/BP**...

- The SAT for **Las Palmas & Tenerife** VTS happened early in July with Kongsberg Norcontrol IT engineers working with **Tecosa** for the customer **SASEMAR**...

- We have signed a new maintenance agreement including upgrades with **Pemex, Mexico**...

- Kongsberg Norcontrol IT was in Lisbon in July to demonstrate how information from a VTS system (VTMIS5060 in this case) can be shared with external parties such as pilots, as part of our involvement in the **MarNIS** project...

- Customer **PDVSA** has chosen C-Scope for the **Puerto La Cruz VTS**. Kongsberg Norcontrol IT will be the main contractor.

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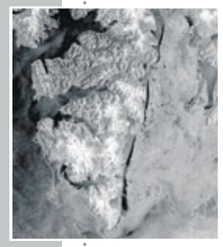
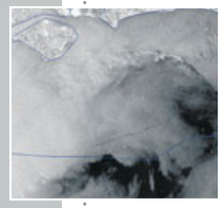
KONGSBERG NORCONTROL IT

Committed to Collaboration

Kongsberg Maritime's HUGIN AUV



KSAT images can help vessels with ice navigation.



Satellite image from KSAT showing oil spill

In today's ever demanding security and environmentally conscious climate, Kongsberg Norcontrol IT is a firm believer that collaboration is vital to harnessing the power of technology to meet the operational and regulatory needs of maritime surveillance. As part of the KONGSBERG Group, there are a wealth of solutions available, from underwater sensors and satellite data to integrated operations that are helping to widen the possibilities for VTMIS for ports and coastal and offshore domains.

Through collaboration with the various departments in Kongsberg Defence & Aerospace's Naval Systems and Surveillance Division and other KONGSBERG Group companies, the data available for maritime surveillance operations expands greatly. For instance, collaboration with Kongsberg Satellite Services (KSAT), a world leading commercial satellite centre situated in Tromsø, Norway with ground stations in Tromsø, Svalbard, Grimstad and the Antarctic, has enabled C-Scope to present satellite imagery to the VTS operator for the detection of oil spills and arctic ice.

The ability of C-Scope to integrate satellite data enhances the system's ability to provide full situational awareness and crisis management functionality that will be pivotal in enabling further arctic oil & gas development. By providing a combination of radar and optical data, with accurate information derived from it, stakeholders at all levels, from crisis management teams and SAR through to political and environmental organisations can act accordingly. It is also possible to provide the data to ship's ECDIS and Pilot Portable Units using C-Scope Web Map Service for greater sharing of VTS and GIS data.

Kongsberg Norcontrol IT is also collaborating with various KONGSBERG companies to provide underwater surveillance as part of a C-Scope system. Products from Kongsberg Maritime such as the cutting edge HUGIN autonomous underwater vehicle (AUV) and Kongsberg Mesotech's SM2000 diver detection system can be integrated into C-Scope to provide the underwater picture integrated with the above water picture for everything from VTS, structure inspection, chemical analysis through to complete underwater security.

From satellites in space to radar on the surface and to sensors underwater, the possibilities of maritime surveillance are increasing dramatically through collaboration and working together with other technology leaders. C-Scope is Kongsberg Norcontrol IT's 7th generation VTMIS solution and considering the data, and data sharing capabilities it possesses it is light-years ahead of current generation systems and able to meet the ever growing demands for secure maritime surveillance.

Events & Exhibitions

Kongsberg Norcontrol IT will be attending the following events in 2008. Please drop by our booths to find out about the latest products and services in our portfolio…

- Port Security, Barcelona, Oct 1-2, with KDA Naval Systems & Surveillance
- Port and Maritime Security 2008, Sydney, Oct 2-3
- 3rd Indian Ocean Ports and Logistics, Mauritius, Oct 30-31, with Marine Data Solutions
- 4th TRANS Middle East, Dubai, Nov 25-26

If you would like to organize a meeting to discuss specific issues, please contact your local Kongsberg Norcontrol IT office or KONGSBERG company prior to the event.

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