Industry group voices ECDIS training 'concerns'

The issue of training in the use of ECDIS continues to cause consternation in the maritime industry, despite the first phase of the mandatory carriage requirement for the equipment coming into effect this summer – a number of leading industry groups have added their voice to the debate, issuing a joint statement highlighting their 'concerns'

A group of maritime industry organisations has issued a statement highlighting their concerns about levels of competence in ECDIS training.

The statement, issued by the Nautical Institute, is endorsed by Intertanko, IGP&I, OCIMF, The Nautical Institute, BIMCO, InterManager, IFSMA and IMPA.

The group notes that, at the IMO's 43rd meeting of the STW Sub Committee in May 2012, the initial Model Course 1.27 (2000 Edition) 'The Operational use of Electronic Chart Display and Information Systems (ECDIS)' was revised and updated in order to ensure that such courses prepare students adequately for the generic use of ECDIS.

Following this revision, any generic ECDIS courses of less than 40 hours including robust evaluation will not meet STCW requirements.

However, the industry group says that it is concerned that there are Administrations that are accepting courses that do not meet this IMO Guidance, which could cause ECDIS training compliance issues for seafarers and owners.

To highlight the point, the group references the conclusions of a report

ECDIS training has been changed, with revisions made to the IMO Model Course. Photo: Transas

by the UK P&I Club (ECDIS – Navigational and Claims issues) which suggests that ECDIS-related incidents could lead to new insurance claims.

That report said that: "With traditional damage defences of navigational error, heavy weather and crew negligence now being subjected to additional scrutiny, the ECDIS revolution may be the catalyst which sparks a new cycle in the claims sector and one which may be even more costly than the introduction of the technology itself."

Model course changes

According to the industry group, the primary change to the model course is a more detailed account of the time needed to address each element of training and assessment.
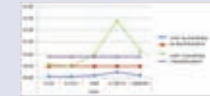
Other issues from the revision to the Model course highlighted in the

IN THIS ISSUE

satcoms

Thrane & Thrane brand removed in Cobham SATCOM reshuffle – 2

VoIP for maritime – the hidden cost of data – 8

Strategic issues involved in satcom pricing – 12

software

Mastermind introduces Engine Management Concept – 17

EU statement commits to emissions monitoring system – 22

Investing in IT – a way out of the crisis? Interview with Claus-Petter Offen – 24

electronics and navigation

Mixed news for space-based AIS providers – 28

Technology not enough to prevent accidents – 32

When is an ECDIS not an ECDIS? – Dr Andy Norris – 38

statement include:

Part A. Course framework – instructor-trainee ratio limited to 1:12. If more, an assistant instructor is required – minimum qualifications for instructors are included.

Part B. Course outline and timetable are divided into 5 areas with 37 topics totalling 40.0 hours. More prescriptive design (required). Last afternoon includes evaluation – written and simulator.

Part C. Detailed teaching syllabus – Each of the 37 topics are divided into sub-sections, with each prescribing the learning objectives required under that topic; the learning objectives are described more explicitly.

Part D. Instructor manual – guidance for instructors – learning objectives in Parts A, B and C given in better detail so that every topic is covered. Simulator exercises – guidance functions and task groups and expected outcomes.

The statement offers three recommendations for those in the industry that will be affected by these changes.

Flag Administrations are recommended to review their endorsement of training centres delivering generic ECDIS training in accordance with the IMO Model Course.

Shipowners and operators are asked to ensure that any future ECDIS training meets the criteria of the updated model course (1.27 2012 Edition), while mariners are similarly recommended to ensure that any future ECDIS generic courses meet or exceed the new requirements.

A copy of the new Model Course 1.27 (2012 Edition) can be purchased from the IMO website (www.imo.org), or from authorised IMO Publication distributors. **DS**

Thrane brand removed in Cobham reshuffle

www.cobham.com

The Thrane & Thrane brand is no more, with parent company Cobham announcing that the Danish satcom operation will form part of its new Cobham SATCOM strategic business unit (SBU) as of November 2012.

The move combines all of the Cobham Group's satellite communications businesses, such as Sea Tel, into one organisation following the acquisition and integration of Thrane & Thrane earlier this year.

Cobham says that the old Thrane & Thrane will form the core of the new SBU, which will be headquartered in Denmark and led by Thrane & Thrane CEO Walther Thygesen with assistance from a multinational management team.

The SBU will also include Cobham's satcom facilities in Cape Town, South Africa, Concord, California and Orlando, Florida, and is now twice the size of what either Thrane & Thrane or Cobham's legacy satcom businesses were prior to this combination.

In addition to adopting the Cobham SATCOM name and Cobham's brand, the SATCOM SBU will be rebranding its products throughout 2013.

Some of Cobham's satcom product lines will be adopting Thrane & Thrane's product names, though the SAILOR and Sea Tel maritime product names will continue to be used.

"Cobham SATCOM has a great future," said Richard Tyson, president of the Cobham Aerospace and Security Division that includes the SATCOM SBU.

"The integration of the businesses is going well, with teams focused on how best to bring together complementary product lines and routes to market so that we can grow the business further."

"As the demand for airborne, land-mobile and maritime satellite communications continues to increase, we're working hard to make it easier for customers to buy from us a wider range of satcom equipment and integrated solutions."

The rebranding of the company followed soon after the news emerged that Lars Thrane, the founder of the Danish satellite communications company, had decided to leave the business after its acquisition by Cobham plc.

Mr Thrane, who started Thrane & Thrane with his brother Per in 1981, had originally opposed the takeover, having been quoted in the Danish press as saying that he would not sell his 24 per cent share of the company to Cobham. He has since decided to leave the firm following the completion of the deal.

"Lars has informed the Board that he will leave at the end of November. We respect his decision to leave the business, and we wish him all the very best for the future," said Mr Thygesen.

"We're very appreciative of the support he has given us throughout this initial, critical period of the integration process, which is progressing well. He has built a great company, which we intend to grow further under Cobham's ownership and the leadership of the Denmark-based management team."

Lars Thrane (right) founded Thrane & Thrane with his brother Per (left) in 1981

Globalstar has appointed Frank J Bell II as president of global sales and marketing. Mr Bell was previously president and COO of **PR Wireless** and president of **Wireless Consulting Services.**

Globalstar has also signed a new authorised distribution agreement with **Applied Satellite Technology Ltd (AST),** whereby AST will return as a national distributor for Globalstar products within the UK, via its established dealer channel.

Global Satellite USA has hired Hassen Ben Khalifa as technical engineer, having previously spent six years with **Radio Holland USA.**

Imtech Marine has agreed a strategic partnership with **SRH Marine Electronics** of Athens, which will see SRH promote the Imtech portfolio of solutions and services to Greek shipowners and their chosen shipyards. In turn, SRH will have access to Imtech's worldwide service network, currently consisting of more than 90 offices based along the major shipping lanes and in shipbuilding centres.

Navarino has announced the opening of a new office in Singapore, which will offer the company's full range of products and services to customers in the region, and also provide support. Live demonstrations of the Infinity system can be arranged out of the office, as well as coordination for Infinity installations on board ships in the area.

www.globalstar.com
www.satcomms.com
www.globalsatellite.us
www.imtech.eu/marine
www.srhmar.com
www.navarinotelecom.com

Intellian adds to TVRO range

www.intelliantech.com

Intellian has launched its i6D 60cm Ku-band TVRO antenna for inland commercial shipping vessels, which will form part of its i-Series TVRO antenna range.

The new antenna features an integrated dual feed horn, to enable vessels to change channel without manually switching between the Astra 1 and Astra 3 satellites, providing reception in Europe.

The i6D watches the Astra 1 and Astra 3 satellites simultaneously and has multiple receivers that can monitor different channels, so the user can switch and immediately view the programme selected without delay. The system is compatible with both SD and HD TV.

This new 60cm, 22kg antenna is the latest development in the company's two-axis i6 range and has been developed especially for commercial vessels travelling on inland waterways, wishing to subscribe to services from CanalDigitaal in the Netherlands, Kabel Deutschland / Sky in Germany, and both TéléSAT and TV Vlaanderen Digitaal in Belgium.

An Intellian-developed Wide Range Search (WRS) algorithm is used to lock onto a signal and Dynamic Beam Tilting technology is used to maintain the signal when the vessel is moving. Automatic Skew Control and an in-built GPS system are also included to assist in maintaining the signal across an elevation range of +5° to +90°.

A single cable connects the antenna with the ACU, and when configured the status of the antenna can be checked and controlled via a PC.

Intellian has added to its i-Series TVRO antenna range

Livewire supplies VSAT to RV Odyssey Explorer

www.livewire-connections.com

Livewire Connections reports that it has supplied and installed a new Sea Tel 4010-91 VSAT system on the RV Odyssey Explorer.

The RV Odyssey Explorer is a specialist under water recovery vessel, and will be provided with a 2048/512 kbps Global IP airtime package by Livewire.

This package also includes the provision of local USA and UK telephone numbering to enable local calls between the head office and ship.

Due to the short turnaround time for the vessel, Livewire arranged for the equipment for the installation to be delivered directly to the vessel as soon as she arrived alongside in Portland.

The antenna was mounted and cabling run in by the ship's crew whilst Livewire's engineering team connected and commissioned the system and pre-assembled the below decks rack equipment and modem, enabling the ship to leave port on schedule to start her recovery operations.

"With the significance of the projects we work on, it was apparent that the RV Odyssey Explorer would require a high capacity/quality communications system," said Odyssey project manager Aaron Rogerson.

"Livewire Connections provided a very competitive quote and had our system mobilised with extremely short notice. The Livewire support team has also been superb and addressed any issues promptly and in a most professional manner."

RV Odyssey Explorer will be supplied with a 2048/512 kbps service

Cisco to build GX service applications platform

www.inmarsat.com
www.cisco.com

Inmarsat has announced a deal with technology giant Cisco that will see the companies work together in delivering services on the Ka-band Global Xpress (GX) platform after launch.

Inmarsat describes the deal as a "long-term alliance" to deliver services such as video and multimedia content over GX, whereby Cisco will provide Inmarsat with a satellite applications service delivery platform and access network.

Cisco will also develop a router for end-users that give them access to both the BGAN network (used to run FleetBroadband) and Global Xpress.

Cisco will build and operate the network on a fully managed basis before transferring it to Inmarsat.

In addition, Inmarsat will become a Global Partner for Cisco and both companies say they will offer their combined service capabilities to Inmarsat's value-added resellers around the globe.

"Through these agreements with Cisco we are providing world-class infrastructure as a platform for our partners and us to offer services beyond pure satellite connectivity, and this is a key aspect of our strategy for the future," commented Rupert Pearce, Inmarsat's CEO.

"We are going to foster a new satellite applications development environment that should provide great opportunities for our distributors, our customers and our companies."

'This is a key aspect of our strategy for the future' – Rupert Pearce, Inmarsat

Tankers to benefit from military technology

www.finmeccanica.co.uk/businesses/
selex_elsag.aspx

SELEX Elsag, a Finmeccanica company, has been contracted by Korean shipbuilder Daewoo Shipbuilding & Marine Engineering (DSME) to supply a package of communication systems to tankers being constructed as part of the UK Royal Navy's Military Afloat Reach & Sustainability (MARS) programme.

The systems will be installed on four new logistic support vessels to be built in South Korea by DSME and operated by the Royal Fleet Auxiliary.

The MARS communications system has been designed to make use of commercial and military systems that have already been proven in other defence programmes.

For instance, SELEX says that a number of systems deployed on the Navy's Type 45 Destroyer will be adapted to meet the needs of the MARS tankers, including the company's Communications Management System, which provides for central configuration and control of communications assets.

IP communications will form the backbone of the system, developed from the company's Sentinel technology, which is now deployed on the UK Ministry of Defence's Falcon land communications system.

The messaging system also uses the company's MPS2000 technology, deployed on most Royal Navy naval vessels.

In addition, SELEX Elsag will provide topside electromagnetic modelling to optimise the placement of antennas, as well as other key elements like the HF, VHF and UHF radio systems, and tactical data links.

In related news, Rix Shipping Company has completed the installation of the SELEX Elsag OceanLINK 60 Mini VSAT service on two vessels.

SELEX has supplied its OceanLINK 60 service to Rix under a new contract between the companies.

The service has been implemented on the Rix Panther, a crew transfer vessel serving the offshore wind farm industry, and the Lerrix, a steel marine bunkering vessel used to refuel larger ships along the Humber estuary and the east coast of the UK.

Service and support will be offered by SELEX Elsag's network of 15 UK regional offices.

Connecting Oceans

A world leading satellite operator

With 29 satellites, Eutelsat has pionnered the development of today's maritime telecommunications and continues to build its success on the reability of its in-orbit resources, its expertise and continuing commitment to innovation. Our VSAT technology provides corporate class networking services, interconnectivity and real-time data applications for all business, leisure and crew welfare needs.

eutelsat

communications via satellite

www.eutelsat.com   maritime@eutelsat.fr

Japan approves Beam range

www.beamcommunications.com

Beam Communications has announced that its entire range of Inmarsat products has now been approved for sale in Japan.

Under the Japanese regulatory environment, all equipment sold in Japan that emits Radio Frequency energy must be tested and granted Japanese Type Approval, commonly referred to as a 'Giteki' or 'Ninsho' certification.

In addition, before sale, equipment must be certified for electrical safety and carry a 'PSE' mark.

Beam has completed the testing of all of its Inmarsat IsatDock Docking Stations for the IsatPhone Pro satellite handset, along with the four Terra 400/800 and Oceana 400/800 terminals supporting the Inmarsat FleetPhone and LinkPhone services.

With the recent launch of Inmarsat IsatPhone Pro and GSPS services in Japan, Beam will now have license to sell and promote these products into the Japanese market.

"There is an ever increasing need for emergency communications in Japan, the approval of these Beam Inmarsat products will extend the use and coverage of the Inmarsat services across fixed site, mobile and maritime applications," said Eiichi Yoda, president and CEO of JSAT MOBILE Communications, Beam's partner in Japan.

The terminals will also be sold through other Inmarsat partners such as Japan Digital Corporation and SatCom Global.

February launch agreed for Globalstar

www.globalstar.com

Globalstar has announced that it has agreed an early February 2013 launch date with its launch services provider, Arianespace, for the deployment of its second-generation constellation.

The launch, from the Baikonur Cosmodrome in Kazakhstan, will be the fourth launch for this constellation, with three second-generation satellite launches already completed.

Satellite manufacturer Thales Alenia Space has confirmed that the review and shipment of the six spacecraft to be launched will be completed by the end of October, allowing pre-launch preparations to begin at the Cosmodrome for an early February launch.

Globalstar says that a launch during the first week of February would allow it to place two of the new satellites into service almost immediately after launch.

All but one of the previously launched satellites had been placed into service by the end of September. The company notes that the one remaining satellite is already in its operational plane and is awaiting the upload of a software upgrade to remedy a previously reported momentum wheel issue.

Globalstar says it expects to receive the software upgrade from Thales in mid-October, upload it into the satellite and then place it back into operation. This upgrade will also be made available for Globalstar's other second generation satellites, if necessary.

"Since Globalstar embarked on a mission to be the first MSS provider to launch a second-generation LEO constellation, nothing about this process has been quick or easy," said Jay Monroe, chairman and CEO of Globalstar.

"After six long years, we are proud to report that the finish line is within reach. Although the deployment of our new constellation with its improved design and capabilities has had its challenges, we can finally look forward to the long-term reliable service the new constellation will provide to our customers."

"We thank all of our partners for their tireless effort and our customers and distributors for their patience and support throughout the project."

Setel to launch Cisco-powered SmartBox-V

www.setel-group.com

After two years of development, Setel Hellas has announced that it is set to launch its SmartBox-V system.

SmartBox-V, developed in association with Cisco, will be officially launched at the *Digital Ship Athens* conference and exhibition on 27th and 28th of November 2012.

This solution will combine Setel's value added services and systems integration experience with technology from Cisco Systems, to allow vessel operators to improve management of their ship shore communications.

The product will be globally available from Setel and through the 'Cisco Partners Chanel' from the beginning of December.

Crew internet roll-out for Bernhard Schulte

Bernhard Schulte has announced that it is to provide new crew internet cafe facilities to the seafarers serving on all of its vessels.

The crew internet project will be delivered by Inmarsat, as service provider, Telaccount Overseas as the project manager and World Link Communications as the Internet Service Provider.

Speaking at the *Digital Ship Hong Kong* conference, Adonis Violaris, director marketing and corporate communications at Bernhard Schulte Ship Management and director of Telaccount Overseas, said that the implementation of the internet cafe project is now ready to begin onboard the company's fleet, and is expected to take approximately three to six months through to completion.

Mr Violaris also said that the company took the decision to use an Inmarsat 6GB SCAP (shared corporate allowance package) to provide the bandwidth to run the internet service after conducting an evaluation of a number of different systems and platforms over a one-year period.

Joint venture targets German satcoms market

www.celestial-communications.com

Satellite communications providers Navarino and One Net have launched a new joint venture called Celestial Communications, to be based in Hamburg.

The new company has been established to target the German market, and was officially launched at the SMM exhibition in September.

Celestial will leverage its parent companies' existing sales network already providing airtime and value added solutions to 4,000 vessels across other markets in Scandinavia, East Asia, the Middle East, and elsewhere in Europe.

The new venture will also be a certified distributor of both the Infinity and Zwana communications management solutions, offered by Navarino and One Net respectively.

"The two unique solutions that we are offering take Celestial over and above a traditional product portfolio, and this greatly enhances Celestial's potential in the German market," said new Celestial managing director, Achim Tober.

"We believe success lies ahead in our strong added value solutions, together with a well trained IT sales engineering team. In this regard, Celestial already has an especially solid foundation upon which to build its German business."

Otesat expands into safety services

www.otesat-maritel.com

Otesat-Maritel has expanded its portfolio through the addition of GMDSS (Global Maritime Distress and Safety System) annual radio survey and VDR / SVDR performance testing services.

These surveys are mandatory according to IMO (International Maritime Organization) rules and the rules of various countries' national authorities.

The company will provide its customers with GMDSS annual radio survey services including AIS (Automatic Identification System), SSAS (Ship Security Alert System), EPIRB (Emergency Position Indicating Radio) as well as VDR / SVDR (voyage data recorder) Annual Performance Tests (APT).

Otesat-Maritel says that the services will be provided in all major shipping centres, on ships registered to the international recognised leading classification societies with VDR / SVDR terminal equipment from major manufacturers.

The February launch will be the fourth for Globalstar's second-gen constellation. Photo: Arianespace

High throughput satellite remote introduced by iDirect

www.idirect.net

Key performance statistics for the Evolution X7 remote, the first in a family of next-generation remotes that have been optimised for Adaptive TDMA throughput performance and operate with high throughput satellites, have been released by iDirect.

Built on a new multi-core hardware system, iDirect says that the X7 can reach up to 100 Mbps of combined inbound and outbound throughput, with more than 20 Mbps on the return channel.

The Evolution X7 uses dual DVB-S2 demodulators with fully independent RF chains, supporting voice and data services while simultaneously receiving up to 12 shared, high-definition multicast channels over the same or a second transponder or satellite.

The X7 also features an embedded 8-port switch for physically segregating multiple end user traffic groups based on VLAN tags. The new remote also comes with multiple embedded PSU configurations to power higher wattage BUCs.

The company says that the X7 will enable service providers to deliver high-bandwidth data rates while utilizing the platform's Adaptive TDMA shared return. For example, service providers in maritime would be able to deliver basic voice and data traffic, while also managing bandwidth-heavy business applications and multicast services like IP TV.

"With the X7 iDirect has achieved a breakthrough in packets-per-second performance," said Dave Bettinger, chief technology officer, iDirect.

"Our partners can now deliver data speeds on a TDMA platform that until now have only been possible on an SCPC dedicated link. This is just the first step in our ambitious plan to equip our partners to meet escalating customer demands for satellite bandwidth, while capturing the market opportunities that high throughput satellites will bring."

Onboard Online

s@tGate
Satellite internet services

- Crew pre-paid internet access and B2B post-paid
- Data compression and caching
- Remote and onboard management via a user friendly web interface
- One rate plan for business and crew
- No hub is required at customers' premises
- 24/7 Customer Support

otesat_maritel
MEMBER OF OTE GROUP

Keeping you in touch. Globally

VoIP for maritime – the hidden cost of data

VoIP technology may seem like an attractive alternative to shipping companies looking to reduce the costs of making voice calls between vessel and shore – but it is important to understand the actual data requirements of these systems to accurately judge the potential benefits, *writes Daniel Nygate, Gentay*

Vessel communication costs continue to rise. Charterers, regulators and operators are all seeking more and more information from the vessels.

To mitigate these costs and to obtain a degree of clarity and predictability, many companies have migrated from metred data and voice plans to unmetered data plans.

However, even with unmetred plans calls are charged on top of rental on a per-minute basis, and incoming calls can be billed at the same rate, meaning whether you are making or receiving a call you are still charged.

With the recent announcements regarding higher bandwidth services such as XpressLink and future Ka-Band Services, VoIP has been gaining traction in the maritime industry as the new standard for making and receiving voice calls.

Voice over IP (VoIP) is the ability to transmit audio over a private or public network utilising an array of specialist protocols.

VoIP has consistently proven to be a cheap alternative to the PSTN or Public Switched Telephone Network, an alternative that cuts cost because it leverages the existing IP structure (e.g. the internet) to channel 'packets of voice', as compared to the PSTN where a line has to be dedicated.

We are all familiar with Skype, for example, and the ability it provides to make free calls between Skype subscribers and low cost calls to other terrestrial destinations via the Skype Out Service.

Part of the reason that VoIP is so popular is its flexibility, the flexibility of being able to control the amount of data sent for voice packets, utilising Codecs. Codecs allow the user to encapsulate and manipulate the voice data sent through a VoIP Platform or IP-PBX (Internet Protocol-Private Brand Exchange).

When using a codec your voice is converted into digital signals. This conversion is technically called encoding, and is achieved by a codec. When the digitised voice reaches its destination, it has to be decoded back to its original analogue state so that the other correspondent can hear

and understand it.

However, VoIP applications still require bandwidth and consume data allocations to transmit the voice digital signal.

VoIP data consumption

In conjunction with City University London, a study has been conducted to analyse the true cost of maritime VoIP applications.

This study takes into account bandwidth consumption, data usage and cost to determine the 'breakeven point' where data consumption costs offer a practical alternative to conventional voice communications.

These investigations highlighted the difficulties in applying VoIP technology in the maritime industry, where the satellite communication systems that deliver internet connectivity are comparatively slow and expensive when compared to terrestrial standards.

During our studies we found that currently available services, when utilised in conjunction with VoIP, can often end up costing more than using the satellite providers' offered voice service.

For this article, we have chosen to show our findings when utilising the G.729a codec, as this is the most widely used codec in the industry.

As each codec operates at a different bit-rate, it was necessary to compare the cost of 1 minute worth of data (VoIP), with the cost of 1 Standard voice minute from two of the largest maritime satellite service providers world-wide.

The figures shown below are based on the implied rates of a metered airtime contract.

The graph below (figure 1) illustrates the difference in price for VoIP and the cost of Estimated Bandwidth Usage, utilising data plans offered by the compared companies, with the Standard voice plans of both a Ku-Band and L-Band operator.

The cost of each codec per minute, when using the respective data plans, is shown against the voice costs of the respective companies.
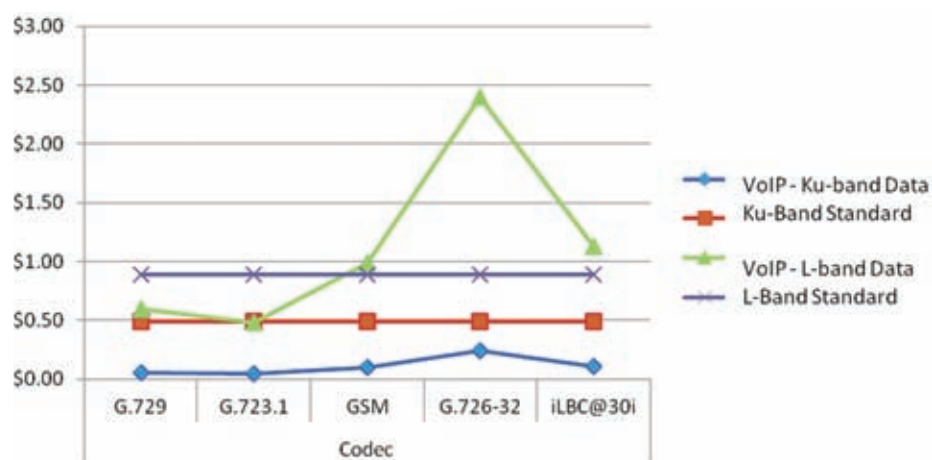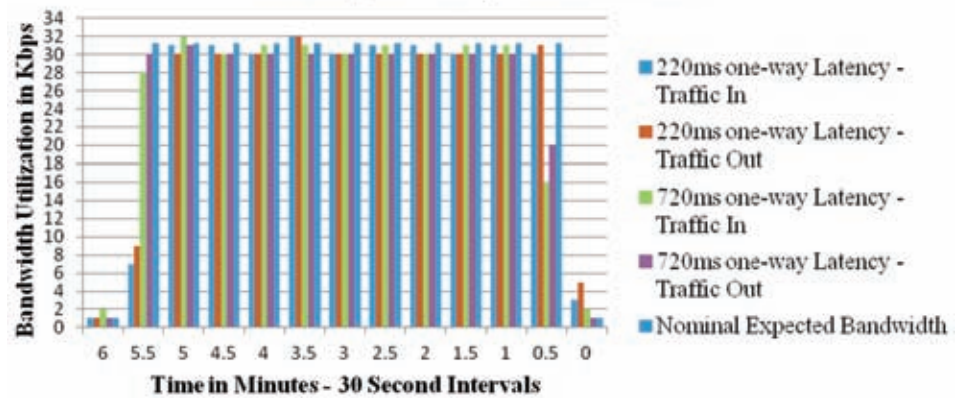
With regard to the L-Band provider, as

Figure 2 – Bandwidth utilization analysis of the G.729a Codec

shown in the graph below, it is clear that codecs that have relatively small bandwidth utilisation (under 10 kbps) did not incur any additional costs when compared to their respective standard voice services.

In fact, a small saving can be made, and this can further be increased with additional compression techniques (this relates specifically to the G.729a and G.723.1 codecs).

This saving is made with the following calculations:

For G.729a: 8 kbps = 1 KB/s = 60 KB/Minute = US$0.60 per minute at US$9.99 Per MB
For G.723.1: 6.4 kbps = 0.8 KB/s = 48 KB/Minute = US$0.48 per minute at US$9.99 Per MB

This is compared to L-Band voice services at US$0.89 per minute

Our Ku-Band provider on the other hand shows large savings across the board, due to the low data costs of the Ku-Band service, at just US$0.99 Per MB.

This leads to per minute costs for the codecs as follows:

For G.729a: 8 kbps = 1 KB/s = 60 KB/Minute = US$0.06 per minute at US$0.99 Per MB
For G.723.1: 6.4 kbps = 0.8 KB/s = 48 KB/Minute = US$0.05 per minute at US$0.99 Per MB
For GSM: 13.2 kbps = 1.65 KB/s = 99 KB/Minute = US$0.10 per minute at US$0.99 Per MB
For G.726-32: 32 kbps = 4 KB/s = 240 KB/Minute = US$0.24 per minute at US$0.99 Per MB
For iLBC: 15 kbps = 1.875 KB/s = 112.5 KB/Minute = US$0.11 per minute at US$0.99 Per MB

This is compared to Ku-Band Voice Services at US$0.49 per minute.

Please also note that all codec calculations are made on the basis that header compression and Voice Activity Detection is used.

Latency analysis

In order to create a fair cost-benefit-analysis when comparing with traditional mar-

itime satellite voice communication services, an analysis was made of the Expected and Actual Bandwidth utilisation in both low latency and maritime simulated latency environments.

For testing, the Session Border Controller was located in Singapore, whilst the Media Gateway and Voice Breakout was located in London (at a distance of approximately 7,000km).

The average latency, round-trip, is 220ms, whilst the simulated maritime environment has a round-trip latency of 720ms. This test was replicated for all codecs.

The structure of the above bar chart shows that, although latency of 500ms was input into the path of the VoIP traffic, both internally and externally, the actual bandwidth use was completely stable and almost identical, with only minor differences of 1-2 kbps.

We can see bandwidth use of between 30 kbps and 32 kbps including IP and UDP overheads (which were expected) compared to a Nominal Expected Bandwidth (NEB) of 31.2 kbps, which shows that actual bandwidth utilization is slightly lower than NEB.

The graph also shows that the Actual Bandwidth utilisation of 30 kbps is 22 kbps higher than that of the Rated Bandwidth Utilisation of 8 kbps, as mentioned; multiple compression techniques can be used to bring this down to a more manageable level.

L-Band Services

To observe the relationship between actual bandwidth utilisation and Standard voice services from L-Band service providers for the G.729a codec, an evaluation of the actual bandwidth cost in both high and low latency environments was conducted. This test was replicated for all Codecs

Based on the graph on page 10 (figure 3), the price for VoIP in relation to the cost of Actual Bandwidth Usage for the G.729a codec is far greater than the cost of L-Band Standard voice services.

Figure 1 – Line chart cost analysis of data cost vs Standard voice cost on entry plans

Your input is the most important piece of the puzzle.
You ask, INFINITY delivers.

Everything drops into place.
Ask for more, get more.

∞ INFINITY

Figure 3 – Cost analysis of Actual Bandwidth usage vs Standard voice cost in multiple call usage scenarios utilizing G.729a (L-band)
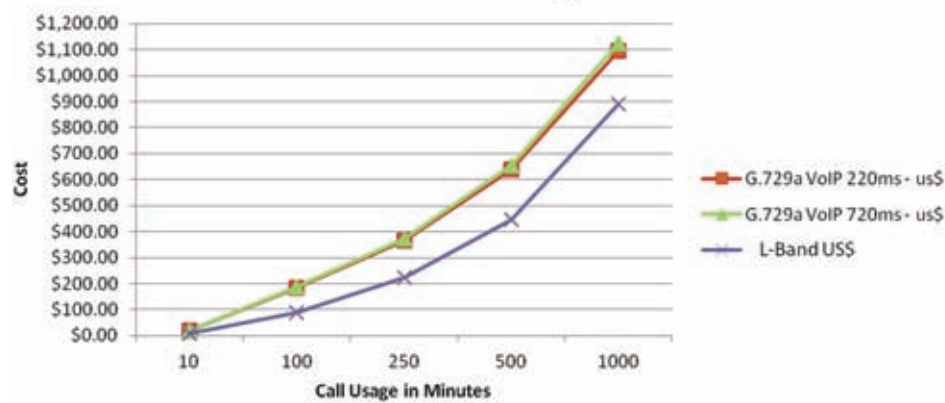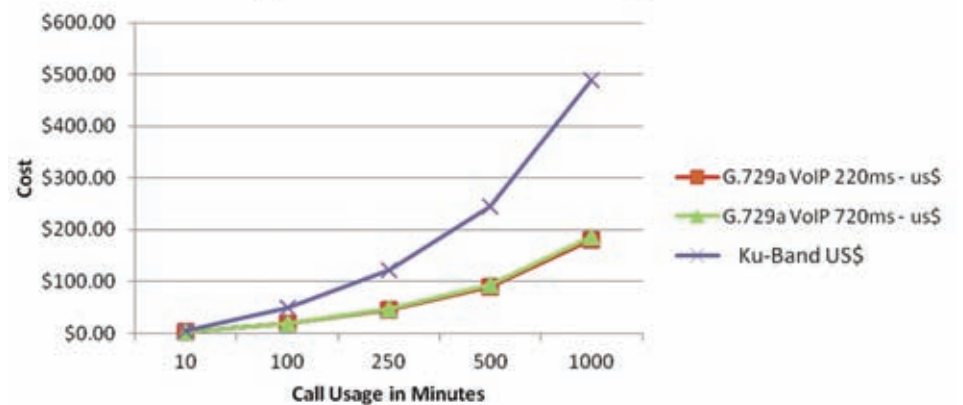

Figure 4 – Cost analysis of Actual Bandwidth usage vs Standard voice cost in multiple call usage scenarios utilizing G.729a (Ku-band)

This is clearly explained through the high cost of L-Band data services, with data for the first 10 minutes of calls charged at $9.99 Per MB, decreasing to $5.99 Per MB when over 500 Minutes are used.

This graph shows that, due to the great difference between the previously shown Rated Bandwidth usage and the Actual Bandwidth usage, the cost of using VoIP is far higher than the standard voice service (without the use of additional compression techniques, which would reduce the cost of VoIP by 50 per cent).

Data usage for this experiment was as follows:

Low latency: 24.46 kbps = 3.05 KB/s = 183 KB/Minute

10 Minutes = 1.83 MB, 100 Minutes = 18.3 MB, 250 Minutes = 45.75 MB, 500 Minutes = 91.5 MB, 1000 Minutes = 183 MB

High Latency: 25 kbps = 3.125KB/s = 187.5KB/Minute

10 Minutes = 1.875 MB, 100 Minutes = 18.75 MB, 250 Minutes = 46.875 MB, 500 Minutes = 93.75 MB, 1000 Minutes = 187.5 MB

Ku-Band services
To observe the relationship between actual Bandwidth utilisation and Standard voice services from Ku-Band services for the G.729a codec, an evaluation of the actual bandwidth cost in both high and low latency environments was completed. This test was replicated for all Codecs.

Based on the graph above right (figure 4), the price for VoIP in relation to the cost of Actual Bandwidth Usage for the G.729a codec, when compared to the Ku-Band standard voice offering, is far lower, with a potential saving of over 50 per cent at the higher call usage rates.

This is clearly explained through the lower cost of Ku-Band data services, with data costing only $0.99 Per MB. Data usage for this experiment was identical to that of Figure 3 (above).

All costs associated with experiment 3 and 4 include the 30 seconds either side of the initiated call, as this time-frame, even at lower bandwidth usage, would still be chargeable.

Conclusion
In summary, a Skype call uses very high bandwidth as it was designed to work in a terrestrial environment where bandwidth availability and data transmission speeds are less critical.

Consequently, a 1 minute Skype VoIP call would require approximately 1 MB of data. Considering a nominal figure of $5 per MB for metered satellite data, a 1 minute seemingly free maritime Skype VoIP call would in practice cost US$5.00 per minute.

Conventional maritime specific VoIP applications use lower bandwidth codecs, such as the widely used G729a Standard codec.

These applications can deliver up to 3 minutes of VoIP calls for 1 MB of data. Considering a nominal figure of $5 per MB for metered satellite data, a 1 minute seemingly free VoIP call using G729aa Standard codecs would in practise cost $1.66 per minute (calculated as $5/3 minutes).

Ultra-low bandwidth codecs for voice data compression combined with compression technology can deliver 6 minutes of voice calls per 1 MB of data and, with technical advances, this could potentially rise to 12-20 minutes per 1 MB.

As a result, and considering a nominal figure of $5 per MB for metered satellite data, a 1 minute seemingly free VoIP call would in practice cost $0.83 per minute (calculated as $5/6 minutes). This is expected to be reduced to $0.33 per minute (calculated as $5/15 minutes).

When making these calculations, it is important to note that satellite service providers offer various contracts for metered data with different rates. Equally, VoIP service providers offer different types of codecs with different levels of call clarity and call latency.

Accordingly, the accurate way to calculate the true cost of a VoIP call for a specific user would be to use the following equation:

X= The price per MB charged by the Satellite Provider

Y= The accurate number of minutes including all overheads such as the call header per MB transmitted by the VoIP service provider.

Z = Metred call charges per call/per destination charged by the VoIP service provider (if any).

(X/Y) + Z = True cost of VoIP ship/shore phone call. DS

About the Author
Daniel Nygate is senior technical manager at Gentay, a provider of IT and communications services to the maritime industry, including VoIP and iPoP-Network Solutions for vessels (www.gentay.co.uk). Mr Nygate holds a Bsc (Hons) in Business Computing Systems from City University London.

New modem for UltraVSAT

www.linkscape.net

LinkScape is to launch its next generation UltraVSAT platform, powered by a new modem – the Eagle Ultra.

The company says that the new modem contains an intelligent platform that controls the antenna system using only the self-contained 1U appliance, with integrated power supplies, modem, and antenna controller (ACU/DAC).

The Eagle Ultra can also manage other secondary internet connections, such as a FleetBroadband or Wi-Fi, through the same interface with no additional hardware.

A complete installation requires just two cables from the modem to the antenna. UltraVSAT antenna systems are available from 75cm in size, though the Eagle Ultra also provides compatibility with existing legacy SeaTel and Intellian antenna installations.

"Linkscape's UltraVSAT technology was designed and built specifically for the maritime market," said David Horacek, sales director at LinkScape.

"Eagle Ultra's industry exclusive intuitive user interfaces make it easy to use, switch satellites, and manage traffic. Transitioning between coverage is 'hands off' and, if ever blocked, it is a simple 'point and click' interface to switch to another satellite."

"With other providers, you have to contact their support centre and then change the configuration and settings yourself if the vessel has gone beyond the satellite. It's a time consuming and difficult technical process that can leave you without any connection for long periods of time."

Marlink commits to one-day VSAT implementation

www.marlink.com

Marlink has made a new commitment to VSAT customers under which it promises to have new installations up and running within 24 hours.

The satcom provider says it has developed an antenna installation and commissioning system that will support engineers and crews in getting vessels fully connected to Marlink's WaveCall standardised VSAT service in a single day.

The VSAT is installed during scheduled port calls, without affecting a vessel's operational schedule, as long as the operator and owner agree to support the process by preparing certain aspects in advance.

A customer installation document is used to provide confirmation that all equipment has been delivered, in addition to checking off that preparation of the antenna pedestal, rack mounting, cabling, power and gyro connections has been completed.

An online portal allows customers to track the installation status at all stages.

"Through our centrally managed global network of field engineers and service partners, Marlink can have a vessel fully connected on VSAT for voice and data traffic in 24 hours or less," said Tore Morten Olsen, CEO of Astrium Services Business Communication, Maritime.

"The perceived complexity of VSAT procurement and installation may have been a barrier to some customers in the past, so we have optimised our processes to ensure installation to high standards in a very short timeframe."

Station711
MSS by RRsat

2012 Christmas Promotion
This year give it to someone special

Dedicated satellite terminal for crew. Make it even easier for your crew to stay in touch with family and friends.

FleetPhone for Crew Calling

Maritime satellite phone service for only :

$99⁹⁰

One time charge with a minimum commitment for Voice Prepaid Calling Cards

FleetPhone for Crew Calling Promotions are limited in number and will be awarded on a first-come, first-serve basis.

Contact sales@station711.com or your Station711 representative for an Order Form.

Oceana400

Separate Oceana400 terminal for crew calling with a **180** Voice Prepaid Calling Cards purchasing commitment.

Minimum 15 Prepaid Calling Cards to be purchased on a monthly basis for use within 2 months from activation.

Oceana800

Separate Oceana800 terminal for crew calling with a **240** Voice Prepaid Calling Cards purchasing commitment.

Minimum 20 Prepaid Calling Cards to be purchased on a monthly basis for use within 2 months from activation.

* The hardware kit includes the Oceana unit, ISD710 antenna, 10m cable, and a phone for crew calls (for the Oceana400 option only).

FleetBroadband Free Plan

An active FB simcard with $0 monthly subscription charge for Prepaid Calling Cards commitment

Minimum commitment of 30 FB Voice Prepaid Calling Cards to be purchased on a monthly basis (at least 360 cards per year). Monthly fee charge will be waived for the 12 months from activation.

FleetBroadband Free Plan Promotions are limited in number and will be awarded on a first-come, first-serve basis.

Contact sales@station711.com or your Station711 representative for an Order Form.

Free Iridium Pilot

Free Iridium Pilot terminal with a Monthly Prepaid Calling Cards minimum commitment

Subject to the commitment of a minimum 12 month period to any of the Iridium Pilot Data plans.

Free Iridium Pilot Promotions are limited in number and will be awarded on a first-come, first-serve basis.

Contact sales@station711.com or your Station711 representative for an Order Form.

Wishing you a Happy Holiday Season.
Station711 - Mobile Satellite Services by RRsat

Tel:+972-2-9904555 | sales@station711.com
www.station711.com | www.rrsat.com

Strategic issues in maritime satcom service pricing

The next few years will see a number of new technologies make an impact on the market for maritime satellite communications. Understanding the costs that are involved requires consideration of the strategy and infrastructure behind these services, *writes Wei Li, Euroconsult*

The maritime satellite communications market has been active in the last few months.

The announcement of the Intelsat Epic service and the pricing changes of Inmarsat Existing and Evolved (E&E) services have become the key topics for maritime and the Satcom sector in general.

Industry wide, in conferences and publications, we hear people discussing similar subjects, with commonly asked questions such as: Is Ku-band or Ka-band more advantageous? Is Epic or Global Xpress more cost effective? Will MSS vessels all migrate to VSAT? Is Epic or Global Xpress a game-changer? What will be the pricing for Epic? Is the new pricing for Inmarsat fair? And so forth.

Indeed, each technology or business has its own foundations which help decide its strategy. In consequence, each service or business model draws different benefits and disadvantages to the end-user and service providers.

Instead of comparing Epic and Global Xpress, or Inmarsat's new pricing plan, I will focus on high-level considerations related to the cost components of maritime Satcom services.

Satellite infrastructure

Satellite capacity is and will continue to be the most important cost component for maritime satellite communication services. It is largely determined by the nature of the satellite industry business model and high-level of capital investment for satellite operators.

The business models for maritime VSAT (Very Small Aperture Terminal) and MSS (Mobile Satellite Services) are significantly different for both satellite operators and satellite service providers.

In the MSS model, satellite operators devote themselves to developing and investing in end-to-end solutions, meaning that the operator designs both the satellite network architecture and standard of end-user equipment. In other words, the MSS model is pretty much a closed system, and end-user terminals from one operator are incompatible with networks from other operators.

The VSAT sector is an open platform model where FSS (Fixed Satellite Services) satellite operators (such as Intelsat) design and operate satellites which can work with hardware from third parties.

FSS satellite operators lease wholesale capacity in the form of dedicated transponder capacity in specific maritime beams, and service providers lease this dedicated capacity over a timeframe. This time period is estimated at between one to three years or longer, even lasting throughout the satellites' lifespan.

In order to provide VSAT service globally, capacity from multiple transponders and possibly from several different FSS operators may be required.

The amount of leased capacity varies between two or three megahertz for leasing several whole transponders. One of the more recent significant lease agreements was from MTN who will lease more than two gigabits of capacity from Intelsat Epic for the Caribbean region.

Transponder prices can vary significantly from one region to another and are dependent on several factors, such as the frequency, signal power, capacity, lease and volume to name a few. In general, current regular satellite transponder prices (excluding Epic and Global Xpress) observed by Euroconsult range from $650 per megahertz per month to $10,000 per megahertz per month, depending on satellite orbital positions, power levels, frequencies, spectral coordination, and the like.

Euroconsult estimates that the current (2011-2012) transponder price averages approximately $1.6 million per year for C-band and $2.0 million per year for Ku-band capacities globally.

Over the next few years, multi-beam or HTS (High Throughput Satellite) capacities such as those from Global Xpress and Epic are expected to be the main drivers of the maritime satellite communications market.

For the moment, the price of such capacity remains unclear, as neither Inmarsat nor Intelsat have publicly announced the pricing for their new generation services. Theoretically, it is expected to be on a per MB / GB basis; the price of such services should be unchallengeable by L-, or regular C- and Ku-band systems due to HTS's superior frequency reuse and spectral efficiency.

On the operators' costs side, Intelsat is devoting between $775 million and $850 million in 2012, a maximum of $625 million in 2013 and no more than $600 million in 2014 to support the construction and launch of two Epic satellites. Inmarsat announced that it will invest $1.2 billion for its Global Xpress system.

Service providers – adding value and cost

In most cases, satellite operators, especially FSS operators, do not provide service directly to end users. Maritime service providers buy satellite capacity or airtime and end-user terminals in bulk and then create services for the end-user community.

Instead of the long-standing per usage payment for MSS services, recently both MSS and VSAT providers have begun to offer monthly flat fee services. The VSAT services normally include all-you-can-eat connections, technical support, value added services, and increasingly, the equipment lease.

The price generally depends upon such factors as maximum data rates for upload and download, guaranteed throughput, quality of service options, length of con-
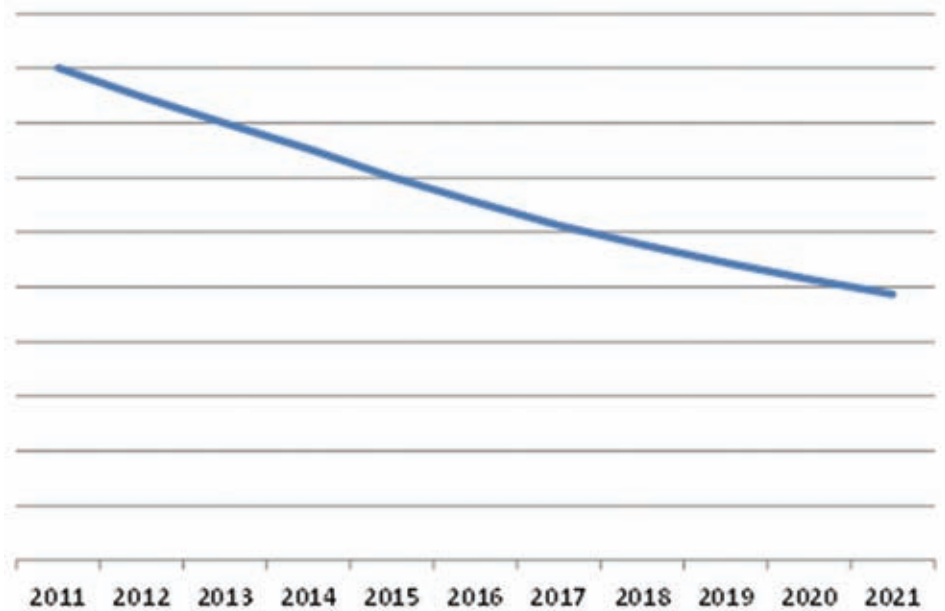
Anticipated Evolution of ARPU for the maritime satcom sector

tract, and so on, providing the end-user with unlimited capacity and an 'always on' connection. Some service providers apply a fair usage policy, preventing the use of inappropriate amounts of satellite bandwidth.

The contention ratio is an important factor for VSAT end-user performance and for the service provider's business model. This ratio describes the number of users sharing the same network. The higher the contention ratio, the more business the service provider can make on a given amount of bandwidth; however, the quality of service for a single user can significantly deteriorate with high simultaneous user figures (such as during peak usage times).

The CIR (Committed Information Rate) is generally included in VSAT service contracts and is often a decisive factor for both the price and the end user's decision making processes.

Euroconsult has observed that the majority of CIRs are within the 64kbps to 256 kbps range, with the most commonly applied CIR at 128 kbps. Of course, certain specific vertical segments, such as cruise ships and offshore rigs, have much higher requirements, ranging from 512 kbps to several Mbps.

Service providers increasingly follow a service-agnostic approach, acting as one-stop-shop integrators and service providers. They offer large portfolios of communication solutions, often combin-

ing MSS, maritime VSAT, and even terrestrial communications (such as VHF, GSM).

On top of the cost of satellite bandwidth, the cost of service determined by the above-mentioned factors is added to the total cost of service.

An increasing number of service contracts also include equipment leasing. With the leasing, the upfront cost is split into monthly fees, therefore in some cases it is also a part of the service cost.

With all the costs, service providers decide their margins for the service provision. The final price that end-users bear is always a trade-off between cost, service quality and profitability for the service providers. The majority of monthly fees observed by Euroconsult fall between $2,500 and $3,500.

Prices are softening

Without quoting all the upcoming new generation maritime satellite communications offers, we see a clear trend: the end-user community will have a wide choice of offers which previously did not exist.

Considering the total satellite capacity which will be available in the next 36 months, we see the possibility of oversupply in the market; potentially a variety of applications could drive demand growth.

For the next 10 years, Euroconsult anticipates the average revenue per user (ARPU) of the maritime satellite communication market to evolve with a compound annual growth rate (CAGR) of -6%. **DS**

About the Author

Wei Li is senior consultant at Euroconsult and editor of Maritime Telecom Solutions by Satellite - Global Market Analysis & Forecasts, Aeronautical Telecom Solutions by Satellite - Global Market Analysis & Forecasts, Mobile Satellite Communications Markets Survey – Prospects to 2020, and Company Profiles – Analysis of FSS Operators. He is also the leading analyst on Satellite Communications & Broadcasting Markets Survey – Forecasts to 2021. Mr Li can be reached at li@euroconsult-ec.com

KVH INDUSTRIES
MINI-VSAT
B R O A D B A N D

How did KVH become No. 1 in maritime VSAT?*

*Euroconsult Report, March 2012 and NSR, May 2012

Fast
Data rates up to 4 Mbps

Global
Unified C/Ku-band network covers 95% of Earth

Affordable
Offering versatile airtime options with metered rate plans at 1/10th the cost

Reliable
One manufacturer, one network, one end-to-end solution with 99.5% uptime

Small
Antennas 85% smaller than other maritime VSATs

If you're tired of rising SATCOM costs, come on over to the mini-VSAT Broadband world!

Introducing KVH TracPhone V11 & V7ɪᴘ – the latest evolution in maritime SATCOM

Get the details in the *new* guide:
"Connectivity at Sea: Advances in Maritime VSAT"

www.minivsat.com/one

NEW Products!

antenna dish diameter
60 cm (24")   1.1 m (43")   37 cm (14.5")

Versatile one-dome hardware solutions for any vessel or application

Cooperation leads to new training programmes

www.seagull.no
www.videotel.com

Seagull has entered into a cooperation agreement with Danish maritime training provider Marstal Navigationsskole (MARNAV) for the development of a range of new courses, while Videotel has also worked with the North of England P&I Association in launching its latest training programme.

MARNAV's cooperation with Seagull begins with the launch of three computer based training modules on Tank Cleaning.

These modules cover Introduction and Safety; The Principles of Tank Cleaning; and The Planning of Tank

Cleaning Operations.

The course participants are taken through all the general procedures in connection with the task of cleaning tanks on board oil and chemical tankers. Safety requirements, procedures, planning, risks and hazards as well as the potential environmental and financial impact are all dealt with.

The aim of the modules is to enable the participants to describe the need for safety in tank cleaning operations as well as identifying the common safety hazards. They should also be able to state the safety precautions that should be taken to avoid special hazards and to recognise the best practices and guide-

lines for tank cleaning.

To assist in achieving this aim a number of quizzes have been included in the modules as well as pictures, illustrations and video clips.

Søren Vest, general manager, head of marine QA, at Nordic Tankers Marine of Denmark was actively involved in the development of the Tank Cleaning eCourse.

He says that: "The Tank Cleaning e-Course offers a unique possibility to enhance the skills and qualifications of everyone involved in the tank cleaning process, from the commercial staff at the office closing the deal for a specific cargo to the AB on board the vessel performing the physical tasks necessary to get the desired result."

"Based on our experience so far, this course is worth every cent and then some in saved expenses since we now, even more than before, avoid excessive cleaning and at the same time have had fewer cases where tanks have been rejected. And we fully expect this positive development to continue with more and more of our crew and staff taking the course."

Videotel meanwhile has launched The Mariner's Role in Collecting Evidence, a new training programme produced in association with the North of England P&I Association Limited and focusing on the importance of collecting and preserving good factual evidence in the event of incidents on board.

The International Safety Management (ISM) code requires companies to have in place a comprehensive safety manage-

ment system. However, Videotel says that it is all too easy during times of pressure, such as during an incident, for seafarers to become distracted and rely upon memory and instinct.

This new programme aims to make clear that properly recorded notes become factual evidence, making investigations by surveyors, lawyers and others faster and more accurate. It also aims to create an increased awareness of potential problems, preventing subsequent injury and making life safer for everyone on board.

"Good evidence is not subject to debate," said Nigel Cleave, CEO of Videotel.

"No one wants to hear that improper procedures have led to a situation being left open to question, or that common errors have been made. The ISM code is very clear – and as well as protecting a business from maritime claims it also provides the individual seafarer with a proper defence to the threat of criminal prosecution."

"The professional seafarer needs to understand that properly recorded information becomes evidence, that collecting and documenting evidence must be part of shipboard routine. Should an incident unexpectedly turn out to be a reportable injury, and proper systems and procedures have been seen to be carried out, then the actions and professionalism of all involved are not open to question."

The Mariner's Role in Collecting Evidence is available in DVD format with supporting workbook, as interactive CD-ROM and through Videotel's Videotel on Demand (VOD) system.
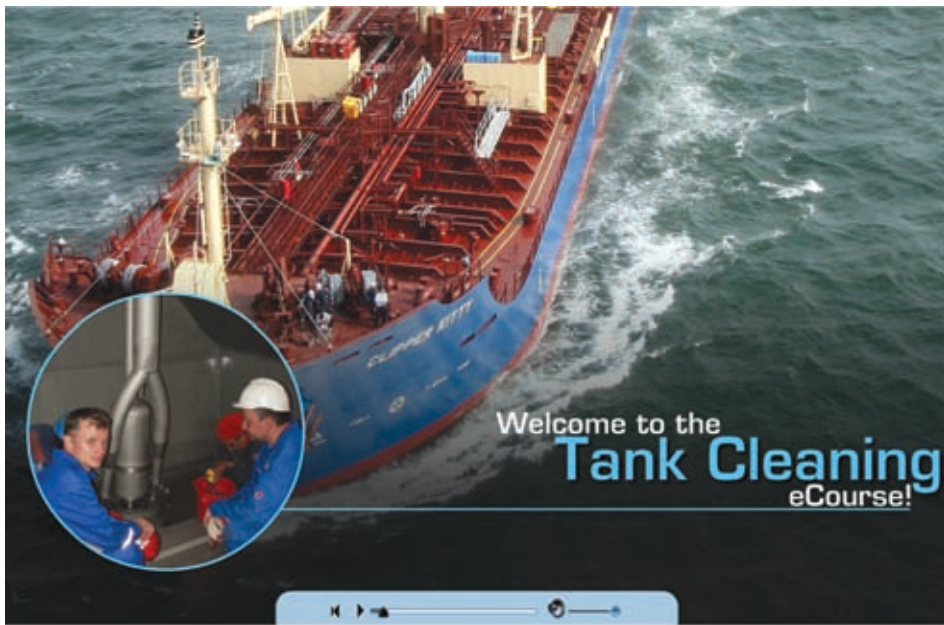
The first MARNAV/Seagull CBT will cover Tank Cleaning

Inatech to enter bunker management

www.inatech.com

Inatech is to launch a new Marine Solutions Unit that will offer real-time management systems for bunker operations.

Among the company's new products are its BunkerTECH Shipping Solution, developed to help shipping companies manage procurement, risk and fuel costs, and its BunkerTECH Bunkering Solution, developed to support bunker fuel suppliers and traders.

Both solutions will be offered 'in the cloud' on a software as a service basis, hosted on a customer's own network or on premise at the customer's site, and can be integrated with other standard shipping and bunkering technology management systems.

The BunkerTECH Shipping Solution provides analytical tools and processes for functions such as bunker procurement, claims management, risk management and accounting.

The company says that the data provided can help companies to save on fuel by not having vessels bunkering in ports where fuel prices are high when alternative ports are holding lower prices, or by avoiding under-utilisation

of vessel capacity.

The BunkerTECH Bunkering Solution meanwhile has the capabilities to perform 'what-if?' analysis with different market scenarios to improve hedge effectiveness, and includes an integrated inventory management module to provide a real-time view of the cost of in-tank and in-transit inventory.

A trading and risk management module uses the real-time inventory information to provide a view of the market, risk exposures and the profit and loss implications of decisions.

"Bunkering costs are easily the largest single big-ticket item in shipping operations. So anything that can improve operational efficiency and reduce the cost of bunkering has major game-changing potential at a time when the shipping industry is under severe price competition," says Jean-Herve Jenn, CEO of Inatech.

"Our fully integrated end to end solutions are tried and tested and are already producing significant benefits for major customers. Now, with the launch of Inatech's Marine Solutions Unit, we are able to roll out these solutions across the global shipping and bunkering industries."

Star software implemented offshore

www.mirtac.nl

Dutch company MirTac has agreed new deals with the Fugro Marine Services BV business unit in Brazil and Holland Offshore for the use of Star Information Systems' fleet management software.

Fugro Marine Services is an existing MirTac customer, and has chosen to implement Star at its new office in Brazil and on the newbuild survey vessel Fugro Brasilis.

Fugro Marine Services primarily uses the software for maintenance and safety

management, documentation, purchasing and spare parts management.

Holland Offshore meanwhile has recently entered the new anchor handling towage supply vessel (AHTS) Dutch Blue into service, which will be supported by Star software.

Holland Offshore, part of the Holland Shipyards Group, will deploy Dutch Blue worldwide and will use Star Maintenance, Documents, Crew and Vessel Administration to optimally manage the vessel according to internal, ISM and customer regulations.

Varada implements BASSnet

www.bassnet.no

Singapore-based Varada Ship Management is to implement the BASSnet Maintenance and Procurement software modules for two of its vessels.

The shipping and offshore support company aims to use the BASS system to increase efficiency in managing its ships.

"It is an exciting time for us at Varada. We are embracing change, and we have sought a globally respected partner," Varada Ship Management technical director, Santha Kumar said.

"Our criterion was very specific. We engaged BASS after surveying the field and confirming their good reputation with their other customers. We are glad that our choice has proven to be correct. BASS' reputation for excellence is well deserved, and I foresee a long and fruitful relationship ahead."

Mr Kumar notes that, should the system prove to be effective, he is confident that it will be extended to more of the company's vessels.

"It is actually a foregone conclusion. We shall continue with BASS for the rest of our offshore fleet," he said.

From ship to shore,

Simplicity is the key to Success.

20 years experience. 1 simple solution.

- Type Approved PMS
- Minimal Training Required
- Rapid Technical Support Service
- No 'Per Seat' or any Annual License Fees
- Global Customer Base from VLCC's to Workboats
- Complete Package or Single Modular Components available
- PMS, Stock, Procurement, Dry Dock, Safety & Document Management Solutions

Visit **www.marinesoftware.co.uk**
or email **info@marinesoftware.co.uk**

MARINE SOFTWARE

'Simplicity is the key to Success'

Maritime internet usage increasing

www.shipserv.com

ShipServ has released the findings of its 2012 Internet and Social Media Use in Shipping Survey, showing a growth in the use of internet technologies among maritime companies.

This third annual survey looks at digital use in the shipping industry amongst leading shipowners, shipmanagers and major suppliers with the aim of building an understanding of how trends in business-to-business e-commerce and social media are impacting the maritime sector.

The survey collected responses from executives at leading shipowners, managers and suppliers and included online and offline versions that were distributed at recent industry events such as SMM and IMPA.

The results of this year's survey show a continued general trend to increased internet activity through e-commerce with over 25 per cent of companies surveyed now completing all their purchasing activity - both sourcing and buying - over the internet. This represents an increase of 10 per cent from 2011.

However, ShipServ says that the results suggest that a lack of understanding still exists about the use of the internet in the shipping industry and that over 40 per cent of companies are not measuring the success of their activity in either an online or offline capacity.

The key findings highlighted by ShipServ include the following:
- Many more maritime buyers and suppliers are using the internet to both source and transact, with a significant (15 per cent) increase in usage between 2011 and 2012;
- More than 40 per cent of respondents said that they currently didn't measure the success or otherwise of their internet activity;
- Respondents still think faster transaction speed was the greatest benefit of doing business over the internet and 80 per cent think e-commerce use will grow over the next 12 months;
- The use of social media platforms continues to grow, with over 70 per cent of respondents increasing their level of use in the last 12 months, but a quarter of respondents surveyed said they currently didn't use social media in a business capacity;
- LinkedIn is the most popular social media platform for shipping companies and suppliers, with 65 per cent of respondents having a company profile
- 45 per cent of respondents said senior management had little or no interest in social media

"The use of the internet as a business tool to either advertise, source or buy maritime products and services has continued to grow as more companies become more familiar with using online as a purchasing medium," noted Mark Warner, business development director, ShipServ.

"However, it is noticeable from the survey that not all companies are actually measuring this activity, which seems bizarre given that analytical tools such as web analytics and purpose built dashboards such as ShipServ's Supplier Insight Report can provide real insight into actual return on investment."
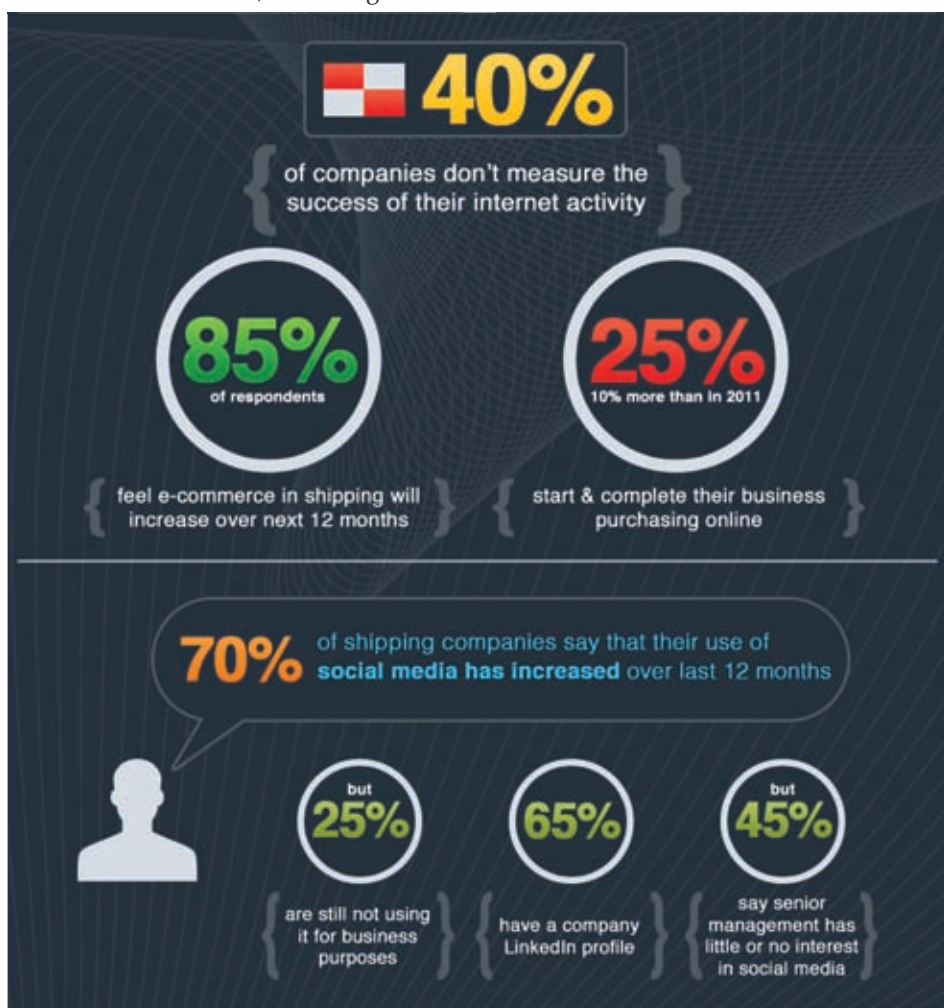
The survey has shown an increasing use of internet technologies, though the success of this activity is not being measured

Growth for seafarer social media site

www.crewtoo.com

The Crewtoo.com social media site for seafarers reports that it has now reached 6,000 members, a 300 per cent increase in two months.

Crewtoo is operated by Headland Media, which aims to use the website to improve the quality of seafarers' lives.

The platform is currently welcoming an average of 100 new seafarers to its site each day, to find other seafarer friends, make new ones and read maritime news.

Members of the site also receive a weekly 'Your Crewtoo' newspaper, which is free of charge to all ships subscribing to NewsLink's international news service, and access to a related Facebook page.

Groups such as the IMO, the Nautical Institute, ITF Seafarers Trust and Nautilus have all declared their support for the Crewtoo project and commended its efforts to connect seafarers to each other and to relevant information and services.
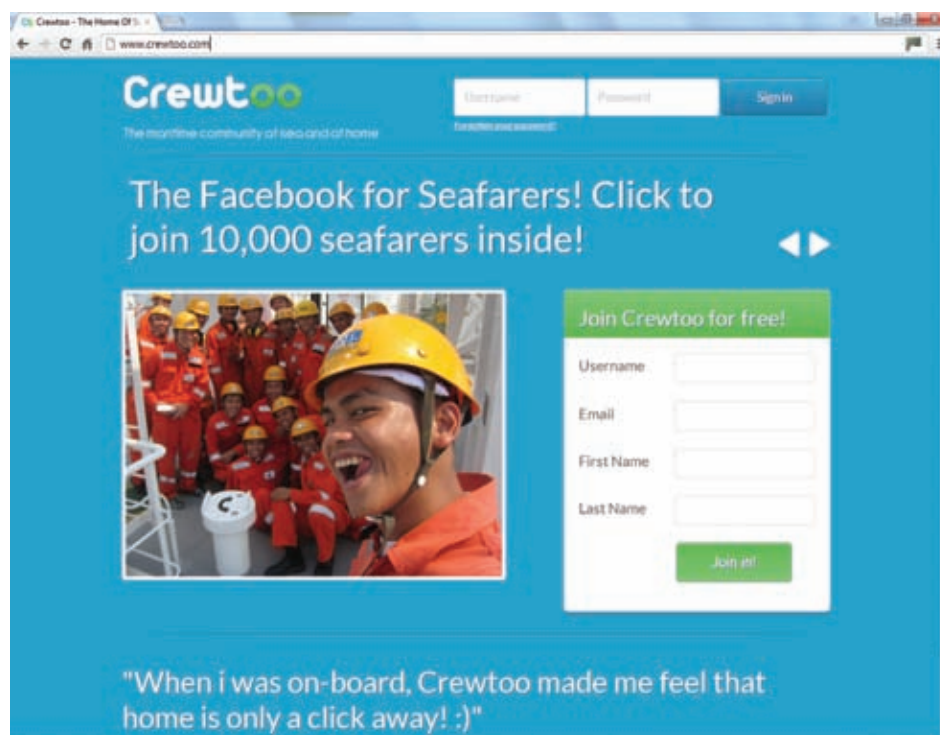
Crewtoo has passed 6,000 members

CBT modules aim at compliance

www.seagull.no

Seagull reports that it has introduced a number of new computer based training (CBT) modules, covering the requirements of SEEMP and the Maritime Labour Convention, as well as safe operation in High Voltage situations.

CBT number 0258 relates to the Ship Energy Efficiency Management Plan (SEEMP).

As part of MARPOL 73/78 Annex VI (as amended), it will be mandatory for all existing vessels to have a SEEMP in place at their first renewal or intermediate survey after 1st January 2013, and Seagull's new module is released to coincide with this requirement.

This module explains how such a plan originates, what it contains, how it is implemented and how the outcomes are used. It is available from the end of November.

With regard to MLC, Seagull has now added to its programs through an extension of a Distance training package for its related training modules, in anticipation of the entry into force of the Maritime Labour Convention (MLC, 2006) in August 2013.

The package is divided into three target groups: Shore based personnel; Senior Officers and Masters; and Junior Officers and Ratings.

The latest module for MLC, CBT number 193 (MLC 2006 – Shipowner's Responsibilities), is aimed at owners, ship managers and operators and offers details of the requirements to achieve, manage and maintain compliance with the Convention.

It addresses the areas of responsibility for shipping company office staff dealing with seafarers' employment conditions and crew facilities onboard ship. It also covers flag state inspection and certification issues and the consequences of non-ratification.

A pre-requisite for this module is completion of Seagull's CBT number 191 (MLC 2006 – Introduction) or other familiarisation with MLC 2006. Each of the modules lasts approximately one hour.

Two other new Seagull courses, CBT number 0232 and CBT number 0233, address revisions to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW 2010) on electrical system management which are now force.

They cover theoretical knowledge of HV (high voltage) systems, practical skills and safety awareness.

The revised STCW requires seafarers working with, or around, HV systems are trained. While this only fully comes into force on January 1, 2017, it has applied to the revalidation of Engineering Certificates of Competency (CoC) since 1 January 2012.

Eniram in China partnership

www.eniram.fi

Vessel optimisation company Eniram has initiated a partnership with Headway Technology of Qingdao, China, a company involved in R&D, manufacturing and sales of marine technology.

The companies say that they intend to leverage their complementary expertise to improve Eniram's service offerings in real-time data management and analytics solutions, to better manage vessel performance and reduce fuel consumption and CO2 emissions.

The partners will target the Asian shipping market in particular in their work together.

"Increasing fuel prices and environmental legislation mean shipping companies are under constant pressure to reduce costs and become more environmentally responsible in their operations," said Philip Padfield, CEO of Eniram.

"In addressing these shipping challenges in Asia, we are delighted be able to partner with Headway Technology Co. Ltd, a respected provider of maritime equipment and solutions in the region."

"Their commitment to high quality service delivery and customer satisfaction mirrors our own. This new collaboration presents an exciting opportunity to further assist our clients looking to introduce energy saving solutions to make their shipping operations more efficient and cost effective."

Mastermind introduces Engine Management Concept

www.spectec.net

Cyprus based Mastermind Shipmanagement Ltd, with assistance from software provider SpecTec, is to create a direct interactive link between the Mastermind and MAN Diesel & Turbo AMOS databases.

Mastermind's use of SpecTec's AMOS system in the maintenance of its assets has already been facilitated through the provision of Shipdex data provided by MAN Diesel (MDT), but the new Engine Management Concept (EMC) agreement signed between Mastermind and MAN Diesel aims to further optimise the running condition of the ship engines.

SpecTec will provide the technical backbone for the project, which it is hoped will help to reduce maintenance and spare parts costs, as well as helping to run the engines as efficiently as possible and reduce emissions.

The vessels participating in this project have been delivered from the shipyard with their engine and turbo charger documentation in Shipdex format. SpecTec has supported MAN Diesel in the production and configuration of the Shipdex dataset and has merged the data into the existing Mastermind database.

MAN Diesel technical experts will now be able to view the maintenance logs and history of the engines as well as spare parts consumption in the AMOS database, in order to monitor and assess their operating parameters and running condition.

To achieve this, SpecTec has created access control for Man Diesel users into the Mastermind AMOS database, though the flow of data exchange is controlled by Mastermind's headquarters as data is collected from the vessels into the central office database and sent from there to the AMOS installation at MAN Diesel premises.

AMOS replication rules have been created that only allow for the exchange of those records related to the MAN B&W engines.

"In Mastermind we want to run our engines at all times in the best possible operational range and condition. After a long study we are convinced that the maker is the best to judge what needs to be done on his equipment," said Capt Eugen Adami, managing director, Mastermind Shipmanagement Ltd.

"Having the full trust in MDT we decided to let them have all our maintenance and operational data. But the data is so complex that neither MDT nor Mastermind could ever succeed to develop a proper data exchange and management. SpecTec, AMOS and Shipdex came to rescue this project."

"I have to express my sincere thanks to SpecTec, AMOS, Shipdex and the EMC framework who made it possible to complete our most pioneering project. Throughout the implementation process it was wonderful to see such professionalism in all involved companies (with many different nationalities), and to see them dedicate so much effort to making our project a success."

'The maker is the best to judge what needs to be done on his equipment' – Capt Eugen Adami, Mastermind

Environmental manager from ABS

www.eagle.org

ABS has announced the release of a new Energy & Environmental Manager module for its NS5 Enterprise asset management software system.

The Energy & Environmental Manager aims to help owners and operators to manage voyages in an environmentally sound fashion by tracking and recording voyage-related events such as fuel and

'One of the biggest challenges is how to successfully meet changing environmental regulatory requirements' – Christopher Wiernicki, ABS

lube oil consumption, fuel oil switching, cargo information and ballast activities.

Centralising this real-time environmental and energy data collection should provide operators with an improved ability to perform tracking, trending, and reporting of the information required for various regulation requirements, including Ship Energy Efficiency Management Plans, ballast water management and MARPOL VI (fuel switching).

The module also trends performance data at a ship and fleet level, to maximise identified operational efficiencies.

A Trim Optimization tool has additionally been added, which adds trim and draft optimisation through the performance of multiple analyses to obtain the best ballast configuration to achieve minimum hull resistance.

"One of the biggest challenges facing the marine and offshore industries is how to successfully meet changing environmental regulatory requirements," says ABS president and CEO Christopher Wiernicki.

"ABS is systematically combining traditional class services with innovative products and services to support compliance efforts and improve vessel performance."

"Our objective at ABS is to provide a complete approach to shipowners and operators in meeting their operational and regulatory goals."

All systems go on Adonis at ASC

www.adonis.no

American Steamship Company (ASC) of Buffalo, New York, is now in full production with the Adonis Human Resources software package, the companies report.

The software will be used to manage vessel human resources information, crew scheduling and crew payroll in the office and aboard ASC vessels.

Shore side, the system will be used for crew management, training management, crew payroll, and government reporting in compliance with all applicable laws and regulations. Adonis says the software is assisting ASC in managing crew schedules to ensure correct manning on its vessels as well as full replication between vessels and office for visibility in all locations.

In addition, the payroll module is being integrated with the shore side system to prevent errors caused by conflicting information in different locations.

"Adonis software has helped to bring efficiencies to our crewing and payroll processes with its user-friendly queries

and its ability to create custom views and reports," said ASC's HR manager, Kathy Elinski.

"Our crewing and payroll systems are now one integrated program with security features, Windows software compatibility and many automated tasks and efficiencies that make information easily accessible and our jobs both onboard and shore side easier."

Mark Pietrocarlo, VP & Controller at ASC, notes that the company introduced the software having outgrown its previous HR system.

"We utilised a home-grown payroll system since about 1985. Our crewing system and process was substantially manual and had little tie-in to payroll," he said.

"With our recent Adonis implementation, we have an integrated system and much less paperwork. Checks and balances are built-in to the system to assist with frequent personnel changes. Adonis also assists us with various vessel employee compliance items and meshes with existing platforms for assurance."

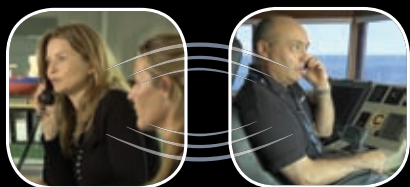Ché Geldard has been appointed as department manager for e-commerce company **MarineLink.** Mr Geldard has been with MarineLink/MTS for the past 9 years and most recently held the position of support manager.

www.evry.com/marinelink

A permanent window on an international fleet

EU commits to emissions monitoring system

www.international-marine.com
www.bmtargoss.com
www.napa.fi

The European Commission has signalled its intention to introduce a monitoring and reporting system to tackle emissions from shipping vessels in the EU.

Vice-President of the European Commission Siim Kallas and EU Commissioner for Climate Action Connie Hedegaard have issued a joint statement on the issue of greenhouse gas emissions from shipping, outlining their plans.

The statement says: "Shipping is a global industry and needs global solutions to address its environmental footprint. As a result, we are all working towards an internationally agreed global solution to decrease greenhouse gas emissions from ships."

"The International Maritime Organisation made a significant and highly welcome step forward in July 2011 with the Energy Efficiency Design Index. But this measure alone – which is applied only to new ships from 2015 – will not be enough to ensure shipping emissions are reduced fast enough."

"Discussions about further global measures are on-going at IMO level, but we need intermediary steps to quickly deliver emissions reductions, such as energy efficiency measures also for existing ships."

The statement continues to say that, at the EU level at least, a number of different options are being considered, including market-based mechanisms and a new monitoring system which is planned to be introduced early next year.

The statement says: "A simple, robust and globally-feasible approach towards setting a system for monitoring, reporting and verification of emissions based on fuel consumption is the necessary starting point. This will help make progress at global level and feed into the IMO process."

"It's therefore our joint intention to pursue such a monitoring, reporting and verification system in early 2013. At the same time, we will continue the debate with stakeholders on which measure can successfully address the EU's greenhouse gas reduction objectives."

"The shipping industry itself is best placed to take the lead in delivering fast and effective greenhouse gas emission reductions – thereby cutting cost and making the sector fit for the future. The Commission is ready to play its part, in the EU and at IMO level."

In related news, a group of maritime companies comprised of BMT ARGOSS, International Paint and NAPA, have themselves called on the International Maritime Organization to introduce standards to measure the effectiveness of energy-saving technologies.

The group wants IMO's Marine Environment Protection Committee (MEPC) to work with independent vessel performance monitoring organisations to develop a standard methodology to determine the energy saving and eco-efficiency impact of clean technologies fitted to new and existing vessels.

The companies say that there have been those in the maritime industry that have questioned the measurement and validation of fuel saving and efficiency claims made by technology companies and that, with high fuel prices and new lower sulphur regulations, ship owners, operators and charterers want to more accurately know the methods they can employ to reduce fuel consumption.

Until a transparent and, critically, independent standard methodology is agreed to determine the fuel savings claims of eco-efficient technologies and measures, the group believes that ship owners, operators and charterers will continue to lack the confidence in the information they need to make significant investment decisions.

"There needs to be more trust between clean technology manufacturers and the shipping community. If they don't have confidence in the fuel and emissions reduction figures that are claimed, take up will be stifled; the sustainable evolution of the industry will be slow to evolve and customers will spend more on fuel than they need to at a time when budgets are being significantly stretched," said Paul Robbins, marine marketing director at International Paint.

"Fundamentally, we can do this by taking a step back and letting independent, third party expert fuel and emissions monitoring organisations develop a standard model that can be applied to measure reduction levels. Ensuring independence is critical and the most responsible and effective way to generate credibility for clean technology manufacturers and build trust with customers."

"We believe the optimum system would be based on real-time, automated and high-frequency data collection and monitoring throughout the service life of the vessel allowing transparent and independent access by all stakeholders to hull performance data."

The EU's Siim Kallas and Connie Hedegaard have issued a joint statement outlining the Commission's intention to introduce an emissions monitoring and reporting system

CASPER hits 5000

www.propulsiondynamics.com

Propulsion Dynamics' Computerized Analysis of Ship PERformance (CASPER) hull and propeller performance monitoring service has reached the milestone of completing its 5,000th report.

CASPER compares ship performance from hull and propeller fouling with a clean, smooth hull and propeller from sea trials. This generates data for speed and fuel consumption due to basic roughness and fouling.

"In CASPER, we treat each ship in our program entirely individually, allowing our customers to fully rely on our work in ship performance analysis as well as benchmarking and recommendations to enhance fleet-wide optimisation," said Christian Brobeck, managing director, Propulsion Dynamics.

The company says that the IMO's impending Ship Energy Efficiency Management Plan (SEEMP) regulation should push further demand for the CASPER service, with 2012 having already seen active ships increase by 20 per cent.

Among the vessel operators using the CASPER system is chemical transport company Eitzen, which has been applying the technology since 2008 as the basis for its hull cleaning and propeller polishing programme.

Eitzen has also successfully implemented the CASPER+Trim system, used to improve efficiency in operations and reduce fuel requirements. This trim tool is based on the physical model of the vessel and provides advice on the ideal trim for any speed, weather and loading.

"CASPER+Trim is very straightforward; it provides a very good overview of optimum trim. With this tool we will achieve our new goals for fuel saving," said Rasmus Kjaer, general technical manager at Eitzen.

"The response from one of our captains after modifying the trim according to the new trim tool was that although the vessel was experiencing rough weather, the consumption reduced immediately and there was a positive response from the chief engineer that as soon as the recommended trim was achieved the load on the main engine decreased."

SCF gets Helm system

www.edocgroup.com

SCF Liquids (SCF) is to implement the Helm Marine Operations software from Edoc to run its operations.

SCF Liquids is part of SEACOR Holdings Inc.'s Inland River Services business segment and a sister company to SCF Marine Inc.

SCF will implement the entire Helm suite of modules, including Helm Dispatch Manager, Helm Maintenance Manager, Helm Personnel Manager, Helm Purchasing Manager, Helm HSQE Manager, and the on-vessel module Helm Onboard.

"We are thrilled to welcome SCF Liquids to the Helm family," said Ron deBruyne, CEO and founder of Edoc Systems Group, developers of Helm.

"Seabulk, another SEACOR company, has been using Helm for several years now, so we're very pleased to be working with SCF too."

We keep you connected
from **up there**

to ensure smooth passage
down here

By joining forces with Vizada, we have created the new Astrium Services. Now, as the world's number one communications provider across the major commercial satellite networks in the maritime sector, we offer you more. More choice thanks to our multi-satellite technology strategy. More productivity from our convenient solutions and efficient services. More engineering power as part of the world's leading aerospace company. Now more than ever, we support your smooth business operations at sea. Connect. Inform. Protect. **www.astriumservices.com**

VIZADA IS NOW PART OF THE NEW ASTRIUM SERVICES

ASTRIUM

AN **EADS** COMPANY

TBWA\CORPORATE - Aède Paris - © Astrium 2012, © Getty Images

Strategic investments in maritime IT – a way out of the crisis?

With the global financial and economic crisis, some shipping companies are turning to modern marine technology and electronics to save on costs and gain a competitive edge. *Digital Ship* spoke to Claus-Peter Offen, founder of German shipping company Reederei Claus-Peter Offen, about his management's investment strategy for maritime IT

The bankruptcy of Lehman Brothers in September 2008 marked the beginning of a severe global financial crisis. The international shipping industry, highly dependent on globalisation and world trade and consequently painfully exposed to its cycles, has since felt the full force of this slump.

Freight and charter rates have collapsed, jobs are being cut and many vessels are being parked for months at a time. With many shipping companies facing insolvency, restructuring or forced ship sales, the prospects for international shipping markets continue to look bleak.

"The global situation as we find it today has deteriorated from a substantial crisis to a downright catastrophe," says Claus-Peter Offen, founder and managing shareholder of the world's largest provider of charter tonnage, German shipping company Reederei Claus-Peter Offen.

Several factors have contributed to this crisis, the deepest and longest in the shipping industry since World War II. Although the sector is usually highly dependent on general economic trends and consequently exposed to strong cycles, notes Mr Offen, this downturn has expanded to unexpected dimensions.

A significant reduction of shipments, especially in Europe-Asia trade, has hit international shipping companies operating in these respective markets hard. Instead of the anticipated 6 per cent growth, current expectations are at -2 per cent.

The collapse of Asia-Europe trade is fuelled by the Euro crisis, as stringent economic measures have been forcibly implemented in some of the EU Member States. These developments have significantly reduced the import of Asian products into Europe.

In addition to the global downturn, the industry is reeling under the economic pressure of decreased charter rates. These have been caused both by significant overcapacity in world tonnage generated in recent years and an extraordinarily high oil price.

"At the beginning of 2008, more than 60 per cent of the existing tonnage had been ordered in new builds," explains Mr Offen.

"Nobody actually needs these. The discrepancy of supply and demand is increasing ever further as the tonnage volume is growing faster than the markets."

Mr Offen illustrates this point with examples of the market rates. "Charter rates for container vessels have collapsed more than 70 per cent between 2008 and today and have currently settled at a level that is at best sufficient to finance the running costs of a vessel," he says.

"The time charter rates for modern small container vessels have dropped from US$20,000 per day in September 2008 ($40,000 in 2005) to US$6,200 per day in

March 2009. And, although a short market recovery in summer 2010 led to a temporary increase in charter rates, the global recession once more hit the markets and charter rates currently range at around US$7,000 per day."

The continuously high oil price further aggravates this difficult situation – fuel oil costs account for a multiple of the charter rate per day, so it is therefore significantly cheaper to employ one large ship instead of two smaller vessels.

'The timing is right to invest into technology now' – Claus-Petter Offen, Reederei Claus-Petter Offen

The calculation, explains Mr Offen, is simple: if a 2,500 TEU vessel uses 50 tonnes of fuel oil per day at a speed of 18 knots and a 5,000 TEU vessel needs only 59 tonnes of fuel oil at the same speed, a shipping company deploying one large instead of two small vessels can save up to 41 per cent on fuel oil costs.

Shipping companies operating smaller container vessels (under 3,000 TEU) have consequently been hit hardest, whereas larger ships, especially post-panamax tonnage and above, are growing in demand and charter rates for 8,500 TEU vessels have reached solid levels.

"The current threshold of profitability is reached with around 5,000 TEU," explains Mr Offen.

"Currently, around 240 small container vessels are unemployed and the exorbitantly high fuel oil price entices liner shipping companies to increasingly hire larger vessels, as larger vessels need less fuel oil in proportion to the amount of TEU transported."

This economic depression has affected the entire deep sea commercial shipping industry, including container, tanker and bulker companies, and has led to tremendous difficulties in refinancing debt – resulting in an on-going consolidation in

the shipping industry.

In Germany, with its 1,600 Kommanditgesellschaften (KG) shipping funds, financial difficulties are also being experienced. Of approximately 3,000 vessels under German ownership, says Mr Offen, a good 30 per cent are currently not employed profitably.

However, other countries that have obtained ship financing on the capital market, such as the US with their IPO financed vessels or Singapore, face the same economic distress as the German KGs.

"This storm," says Mr Offen, "is the by far worst the industry has faced in the last 50 years. And after nearly four years of depression, we are still facing extraordinarily difficult times. Currently, there is no reliable evidence that markets are about to recover shortly."

"It is more likely that the market and its players are facing another two or more years of economic distress."

However, he also points out that "the shipping industry has known exceedingly quick recoveries in the past. During the short-dated recovery of early 2010, charter rates increased from US$4,000 in January to US$20,000 in May. Accordingly, the value of the respective vessels more than doubled within just 3 months from 16 Mio to 36 Mio."

With that in mind, many shipping companies are being forced to act now if they want to survive long enough to be in business if and when things turn around.

Timing your marine IT investments

With the ongoing gloom in the international shipping industry and the difficulties in obtaining debt from banks and investments from private investors alike, many shipping companies have been reluctant, or even unable, to make investments in marine technology and electronics.

Investing now, when survival is uncertain and funds scarce, can seem unreasonable to some. However, other shipping companies, such as Reederei Offen, follow a different strategy.

"When modern technology is deployed to make efficiency improvements and optimise ship operation, it can help bring the shipping industry back on course," says Mr Offen, noting the great number of new methods and equipment that have been developed over the last few years to reduce fuel oil consumption.

In addition to adapted hull designs, marine engines have been optimised to permanently run at lower speeds (slow steaming), special paints for the underwater part of the vessel have been developed, and nozzles that improve vessel movement during the voyage have been implemented.

In order to reduce the fuel oil consumption further, new equipment such as tow-

ing kites and air cavity systems are being deployed to offer propulsion support, while marine electronics and software providers have developed a series of systems designed to optimise ship operations and to lower the fuel oil consumption.

Many shipping companies have already implemented software to support energy efficient fleet management, while additional systems are available that provide weather routing, performance monitoring and trim optimisation.

"The timing is right to invest into technology now," says Mr Offen. "The reason behind this is that, with the sky-high prices for fuel oil, there is enormous pressure on ship builders and technology providers to make vessels more economical. And shipping companies are searching for ways of reducing the fuel oil consumption."

Reederei Offen has a cooperation agreement with GL's maritime specialist consulting service, FutureShip, under which Reederei Offen is assessing which of these measures, when implemented, will lead to notable reductions in fuel oil consumption.

"In addition to changes in the machinery, we are further intensively assessing other measures that can help to lower our fuel oil consumption," explains Mr Offen.

"We look at a great variety of systems and solutions, such as slow steaming, weather routing and trim optimisation. We have found that implementing such measures makes sense for us regardless of the economic downturn."

As an additional benefit, Mr Offen believes that shipping companies that invest in modern technology, electronics and communication systems are likely to gain a competitive edge when it comes to attracting and retaining qualified crew.

"We have always had the policy to employ highly qualified crew (300 German officers and engineers in the fleet)," he says.

"Offering a modern working environment helps us to retain this high standard."

All of these factors will influence technology investment decisions, but though things may look bleak shipping companies hoping to weather the storm may well have to look into solutions that can help them deal with current realities, Mr Offen says

"The outlook is far from being hopeful at present," he notes.

"However, the global economic distress at least keeps the oil price stable for the moment. If the oil price further increases – and this is to be expected once the global economy recovers substantially – shipping companies may well have to resort to more slow steaming to keep the costs at bay."

"Even, or especially, during times where cash is limited and costs exceedingly high, investing into marine electronics and software should be considered. This process should be an on-going one." **DS**

Digital Ship Athens 2012

27-28 NOVEMBER 2012
METROPOLITAN HOTEL, ATHENS

HAVE YOU REGISTERED? DON'T MISS OUT ON THE PREMIER SHIPPING AND MARITIME TECHNOLOGY EVENT IN THE REGION

For sponsorship and exhibition enquiries, please contact:
Ria Kontogeorgou
+44 20 7017 3401, ria@thedigitalship.com
Mobile: +44 781 548 1036

Digital Ship Limited, 2nd Floor, 8 Baltic Street East, London EC1Y 0UP, UK. Tel: +44 (0)20 7253 2700 Fax: +44 (0)20 7251 9179 www.thedigitalship.com

Inertial-aided GNSS for DP vessels

www.veripos.com

Veripos has introduced a new inertially-aided solution for dynamically positioned vessels combining GNSS positioning technology with inertial measurements, called Verify Axiom.

Developed in association with Sonardyne International and featuring integration of Veripos GNSS and Sonardyne inertial technologies, Verify Axiom combines the characteristics of GNSS positioning with the continuous availability and rapid update rates of inertial sensors.

This process aims to minimise the effects of any GNSS disruptions typically caused by ionospheric irregularities and physical obstructions while detecting position outliers due to common mode failures which can otherwise affect vessel systems.

The core component of Verify Axiom is Sonardyne's IMO-approved Lodestar Attitude and Heading Reference System (AHRS) and Inertial Navigation System (INS), which offers position, velocity and attitude in dynamic conditions without any need for external support inputs or vessel manoeuvres.

Veripos's GNSS positioning capabilities add to Lodestar's inertial sensor outputs, which are combined to compute position. Input of GNSS observation data should help to correct any potential degradation over time in the inertial position solution.

Rutter buys OceanWaveS

www.rutter.ca

Rutter Inc has acquired OceanWaveS GmbH of Lüneburg, Germany, a company involved in the development and supply of radar-based wave and surface current measurement technology.

Rutter's sigma S6 and OceanWaveS' WaMoS are used for discrimination of ice, oil, small targets, waves, currents and bathymetry from conventional navigational X-band radar.

Rutter says that combining OceanWaveS' wave and current measuring capabilities with Rutter's sigma S6 Ice Navigator will give it "a competitive edge" in the offshore and coastal monitoring market.

"The acquisition aligns with Rutter's operational strategy of delivering best-in-class ocean surface monitoring and reporting products in key markets such as offshore oil development, cold oceans exploration, and coastal monitoring and protection," said Rutter's president and chief executive officer, Fraser Edison.

"WaMoS II is a mature product with demonstrated market demand. Acquiring this product and underlying technology both eliminates a significant development risk and creates new revenue generation opportunities."

"We are also pleased to have a German-based operation which provides Rutter with a technical centre and physical presence closer to European customers."

Alphatron completes Polaris delivery

www.alphatronmarine.com

Alphatron Marine reports that it has completed the delivery of a full package of ship electronics to the new pilot station vessel Polaris.

The package included navigation/communication systems and wheelhouse consoles, as well as satellite television, the IT network, IP streaming systems, entertainment systems and CCTV.

Alphatron was responsible for the design, installation and commissioning of the system, working in cooperation with Fysergo, a Dutch company specialised in ergonomic workspace design, to deliver an Alphabridge wheelhouse concept designed in order to comply with the demands of the Dutch pilots association with regard to sitting and standing vessel operations.

A special workspace for the pilots was also included in the total bridge concept.

The Polaris wheelhouse was designed using common style panels, monitors and controls from the company's Alphaline design concept, a standard design concept allowing for systems supplied by different vendors but based upon a common equipment mounting technique.

In other news, Alphatron Marine has also introduced a new generation of its maritime Public Address and General Alarm (PAGA) system, the AlphaAnnounce Digital.

The system includes an 8-channel digital amplifier with a separated A and B section with built-in matrix and Digital Sound Processor, offering 2x320W continuous power for the 100V speaker lines.

The standard system is mounted in a 15U 19-inch swing frame cabinet. Inside the cabinet, a back up unit for controlling the alarms and a back up microphone are available.

Up to 64 AlphaAnnounce Digital Amplifiers can be combined to create PAGA systems up to 40kW and up to 512 zones with numerous control panels.

The company notes that the system conforms with SOLAS/IMO/IEC and all major Classification Authorities' rules and regulations, and that it has started the type approval certification process for the product.

The latest generation of AlphaAnnounce Digital has now been launched

LR invests in Singapore R&D centre

www.lr.org

Lloyd's Register has established a Group Technology Centre (GTC) in Singapore to perform R&D on technologies for the energy and maritime sectors, and has also reached an agreement with the country's Agency for Science, Technology and Research (A*STAR) to collaborate on its projects.

Lloyd's Register says that it intends to establish a Joint Lab facility with A*STAR's Institute for High Performance Computing (IHPC) to co-develop applications and solutions, and that this arrangement should promote R&D activities in modelling and simulation.

To encourage the development of technical expertise and young engineers, PhD students will be trained at the GTC during the programme's initial five-year period.

These students will be working on R&D projects between the technology centre and Singapore's institutes of higher learning such as the National University of Singapore and Nanyang Technological University.

"Our investment in the new Lloyd's Register Group Technology Centre in Singapore, coupled with the agreement with A*STAR, represents a shared vision to create a long-term centre of excellence for technology, innovation and research that will benefit Singapore, industry and society at large," said Richard Sadler, chief executive officer of Lloyd's Register.

"It underlines our global commitment to understanding the sciences and technologies that help to ensure that people are safe and that essential assets perform as required."

"Promoting innovation through research and development is absolutely fundamental to Lloyd's Register's public-benefit mandate. Along with our Group Technology Centre at the University of Southampton in the UK, the Singapore GTC will serve as a cornerstone for our global research-and-development network, which currently includes 48 academic and technical institutions sponsored by The Lloyd's Register Educational Trust."

The capabilities and resources of the new centre will be scaled up over five years, with investment in the new centre expected to reach US$35 million.

By year five, up to 150 full-time engineers, researchers and doctoral students are expected to be jointly employed and working together with industry on projects of mutual interest, Lloyd's Register said.

Kongsberg launches K-Master course

www.kongsberg.com

Kongsberg Maritime reports that it has completed development and the pilot course for a specialised training programme for offshore support vessel crews using its K-Master aft- and forward-bridge workstation.

The course will now form part of Kongsberg Maritime's global training portfolio, after the company completed the K-Master training pilot course at its training centre in its headquarters in Kongsberg, Norway.

The aim of the training is to teach operators how to use the two touch control panels (TCP) that are integrated with the K-Master chair. From these screens, the operator has access to a wide variety of functions, for DP manoeuvring and operation of a number of main vessel sub-systems.

A prerequisite for operating K-Master and taking part in the training course is having basic Dynamic Positioning operation knowledge in addition to familiarity with Kongsberg Maritime's K-Chief automation system.

"Training for K-Master lends itself to the portable training course approach, as we are able to mimic its touch screen control system using tablet computers, which are small and very easy to transport," said Arnstein Bugge, instructor and course designer, Kongsberg Maritime.

"We have developed a portable classroom that can accommodate a full session with eight participants, all while being compact enough to be carried in a small suitcase. This helps us to be flexible as the course can literally be carried out anywhere in the world at quite short notice."

Ship Shape

Iridium **Pilot**™

All your maritime communications reporting for duty

Iridium Pilot delivers reliable, high-performance global voice and data communications, backed by an industry leading five-year warranty for peace of mind — no matter where you are.
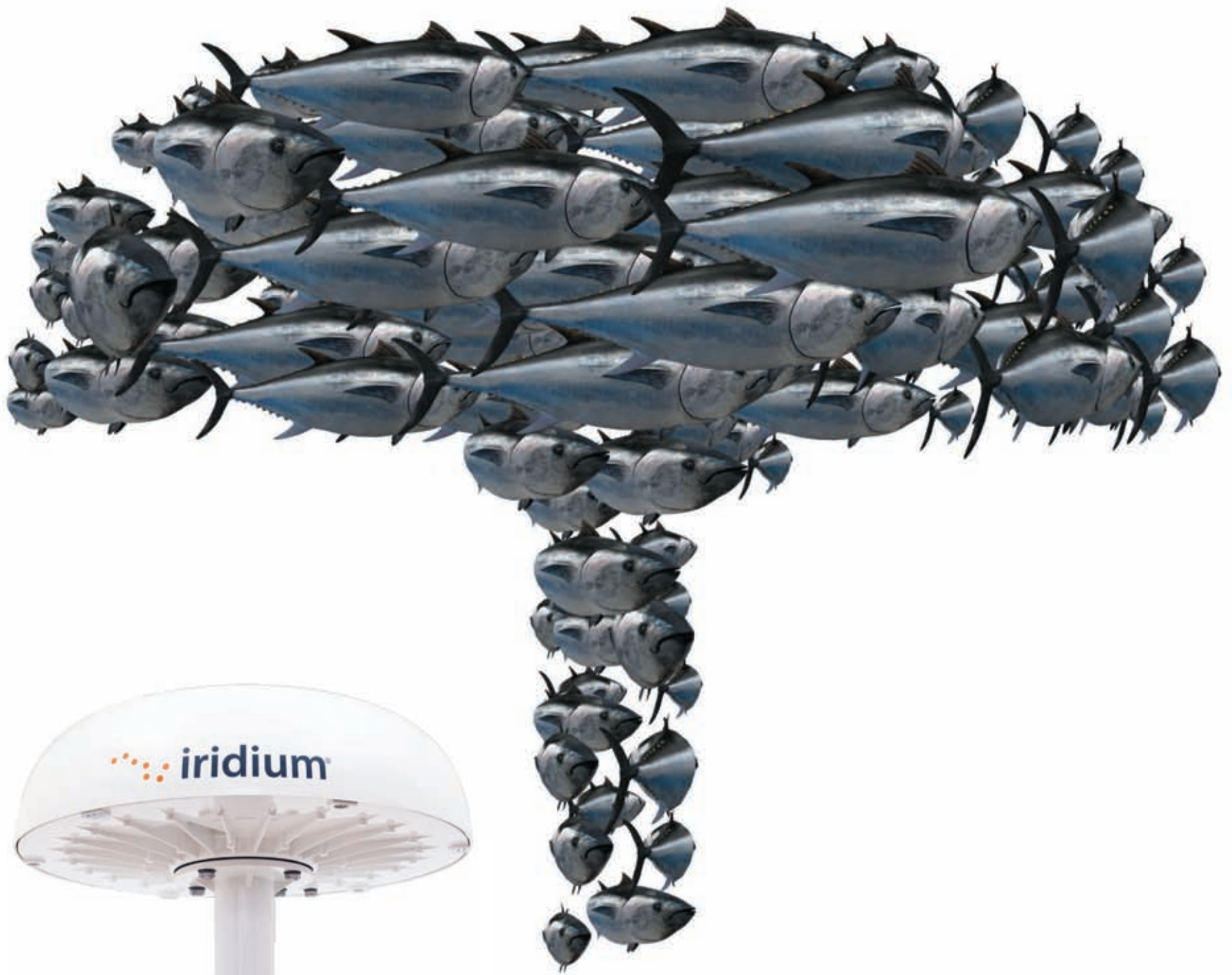
- Reliable pole-to-pole global coverage
- Delivering email, weather, crew calling and more
- Best value installation and airtime

iridium®
Everywhere

www.iridiumpilot.com

Mixed news for satellite AIS providers

www.orbcomm.com
www.exactearth.com

There has been mixed news from satellite AIS providers exactEarth and ORB-COMM, with the former successfully completing performance testing on its latest satellite while the latter's attempt to launch the first of its second generation OG2 satellites was thwarted when a problem with the operation of the launch vehicle led to the satellite being deployed in the wrong orbit.

ORBCOMM's first prototype OG2 satellite, carrying technology that will support its space-based AIS service,was launched as a secondary payload on a Cargo Re-Supply Services (CRS-1) mission aboard the SpaceX Falcon 9 launch vehicle from Cape Canaveral on October 7.

The OG2 was successfully separated from the Falcon 9 launch vehicle, however, due to an anomaly on one of the Falcon 9's first stage engines, the rocket did not comply with a pre-planned International Space Station (ISS) safety gate to allow it to execute the second burn.

For this reason, the OG2 prototype satellite was therefore deployed into an orbit that was lower than intended.

Despite initial hopes that it may still be possible to move the satellite to a viable position, ORBCOMM has since conceded that the mission was a total loss has filed a notice of claim under its launch insurance policy.

The maximum amount covered by the policy is $10 million, which ORBCOMM says would largely offset the expected cost of the OG2 prototype and associated launch services and launch insurance.

On the positive side, notwithstanding the shortened life of the OG2 prototype, the company notes that the OG2 programme engineering teams were able to make "significant strides" in testing various hardware components during the mission.

ORBCOMM says that, after telemetry and command capability was established, several critical system verifications were performed and that the solar array and communications payload antenna deployments were successful.

Verification of the performance of various components of both the OG2 satellite bus and the communications payload was also concluded satisfactorily, while the OG2 satellite bus systems including power, attitude control, thermal and data handling were similarly tested to verify proper operation.

With this verification data, ORBCOMM says it can now focus on completing and launching the OG2 satellites as the primary mission payloads on two planned Falcon 9 launches, the first in mid-2013 and the second in 2014, directly into their operational orbit.

The company notes that had ORB-COMM been the primary payload on this failed mission, as planned for the upcoming launches, it believes that the OG2 prototype would have reached the desired orbit.

Fellow satellite AIS provider exactEarth meanwhile has successfully completed the payload performance testing of its latest AIS satellite, exactView-1 (EV-1), which was launched into orbit in July 2012.

The company says that it will complete the remaining satellite commissioning activities during the rest of October and bring EV-1 into full commercial operation in November, as planned.

The polar-orbiting spacecraft was built under contract for exactEarth by SSTL in the UK and is the fifth deployed satellite in the exactView vessel monitoring satellite constellation. COM DEV Canada acted as prime contractor and COM DEV Europe (UK) supplied the AIS transceiver payload for this mission.

EV-1 uses S-band and C-band communications to downlink information to a number of ground stations around the world.

"We are delighted to announce that EV-1 has passed through the payload performance testing phase with flying colours, exceeding all our expectations in the process," said Peter Mabson, president of exactEarth.

"EV-1 was designed to be the most advanced AIS satellite built to date and during the testing phase it has lived up to that billing as we have witnessed a doubling of detection rates compared to any of our previous satellite AIS sensors. We are excited with the prospect of making these data available to our customers in the very near future and providing a big step forward in maritime vessel detections from space."

"EV-1 is the product of exactEarth technology and investment – we see this as setting the gold standard for performance which we will continue with planned launches next year of the Canadian M3M satellite and an exactEarth AIS payload on the Spanish PAZ radar satellite."
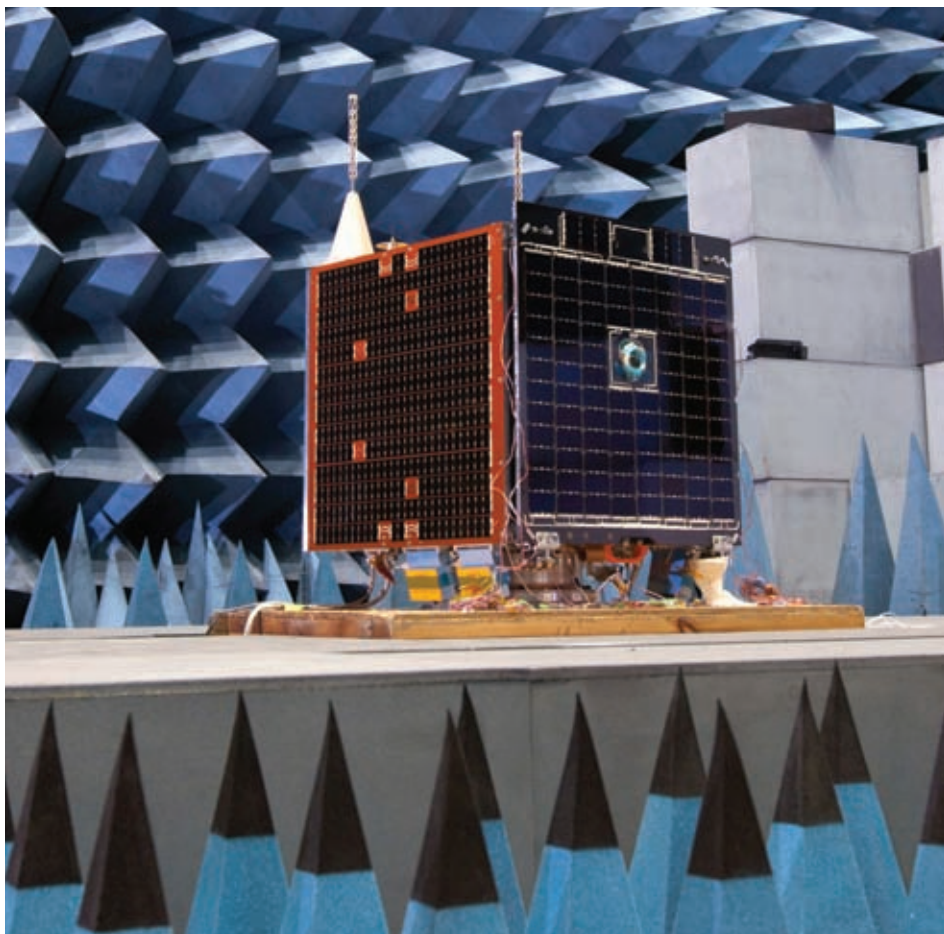
EV-1, launched in July, has successfully completed payload performance testing

Ship-to-shore cranes to be automated

www.abb.com

APM Terminals and Rotterdam World Gateway (RWG) are to install automation systems from ABB for their new ship-to-shore cranes, which will allow the cranes to be operated remotely, without a driver on board.

The two new terminals that will open in 2014 in Rotterdam at Maasvlakte 2 will be the first in Europe to use remote control of ship-to-shore (STS) cranes, with the APM Terminals terminal to be the first in the world where STS cranes have no driver's cabin installed.

"These projects underscore the need for fast and cost-effective container handling, and how the latest automation technologies can be applied to dramatically increase efficiency as a response to higher productivity requirements," said Veli-Matti Reinikkala, head of ABB's process automation division.

ABB's system has the crane operators working in a control room located in the terminal building, where they supervise the cranes' motion via onboard cameras.

Combined with access to control information provided by the automation system, the company says that this should help to improve overall operator performance.

Training technology usage expands

Transas has completed the supply of new training systems to the Nikola Vaptsarov Naval Academy and PanArab E-Navigation in two separate deals, while VSTEP has supplied NAUTIS and RescueSim simulators to the Technical University of Varna.

In Varna, Bulgaria, the Technical University has opened a new simulation training centre incorporating multiple VSTEP NAUTIS and RescueSim simulators that will be used for both maritime and incident management education and training.

VSTEP has delivered two NAUTIS Bridge Simulators, including a 360° Full Mission Bridge Simulator in line with DNV Class A specifications, as well as five Engine Room Simulators and a full classroom with desktop Navigation Simulators for maritime training.

A VSTEP RescueSim simulator was also delivered for incident management training.

The NAUTIS simulators feature Kelvin Hughes MantaDigital ECDIS and radar/ARPA systems, with the radar video delivered by the recently released NAUTIS Radar Interface Module. The NAUTIS bridge can also be used as an azimuth tug simulator.

At the Nikola Vaptsarov Naval Academy, also located in Varna, Transas has upgraded the training complex to include a full mission bridge simulator with NTPRO 5000 software and a new version of the TGS 5000 GMDSS simulator.

The deal also includes an update/upgrade, service, support and maintenance programme for the next three years.

The visualisation of the Main and Secondary Navigational Bridges was improved as part of the project, extending the screen of the Main Bridge to 300 degrees with a 5-metre screen radius, while the Vessel Traffic Management System (VTMS) simulator was also upgraded to allow imitation of VTS functions and creation of various navigational situations.

The Academy says that it also plans to upgrade its Engine Room Simulation system by the end of 2012.

In Egypt, a Transas Offshore and Dynamic Positioning simulator has been installed at the PanArab E-Navigation (PAEN) training centre in Alexandria, an affiliate company of Pan Arab Shipping Company (PASCO).

The installation consists of an Offshore bridge, reproducing a modern Anchor Handling Tug Supply vessel bridge. It includes elements such as a NAVIS DP2 system, Transas Multifunctional Display, physical controls for all thrusters, winches, pins and shark jaws systems, together with a Seagull 6000 visual system.

The Nikola Vaptsarov Naval Academy (left) and the Technical University (right), both in Varna, Bulgaria, have taken delivery of new training systems from Transas and VSTEP respectively

Anti-piracy systems launched

www.watchstander.com

Two new anti-piracy systems, offering alternative approaches to the challenge of maintaining vessel safety, have been launched in the US and UK, by Watchstander and Marine MTS respectively.

The WatchStander system combines surveillance and recognition technology with defensive measures to prevent pirates from boarding ships, and was originally developed for the US naval fleet.

That Navy system has been modified and adapted over the past two years for use by commercial vessels, cruise ships and yachts.

The automated and integrated system detects and identifies pirates before launching a series of non-lethal counter measures.

The system works by identifying pirate craft at long range and launching an automatic and unmanned defence at several miles range that becomes progressively more robust if the attacker fails to withdraw.

The company says that its tests have shown WatchStander to be accurate in identifying pirate craft and distinguishing them from other non-threatening vessels, and that it is currently undergoing an Audit and Performance Assessment by maritime security and operations consultants from Flag Victor.

David Rigsby, the founder of WatchStander, has worked with research partners at the Applied Research Laboratory of Pennsylvania State University to modify the product for commercial use, and holds an exclusive licence to take it to the global commercial shipping market.

"The answer to piracy has been eagerly awaited by the maritime industry. The strategies being used at present are piecemeal, uncoordinated, cumbersome or hugely expensive. The focus has generally been on either sensors or countermeasures with little or no effective integration of the two, until now," said Mr Rigsby.

"This one-off technological installation prevents pirates getting on board ships and will change the course of maritime history. Any vessel fitted with WatchStander will be far more secure from pirate attack. Quite simply, WatchStander will save lives, cargo, vessels and very significant amounts of money."

"When you consider that 95 per cent of goods and commodities are transported around the world by ship, it is imperative we end the scourge of maritime piracy once and for all."

Marine MTS meanwhile, based in Aberdeen, UK, has developed its own new Sentinel software system which aims to combat piracy by tracking user vessels remotely.

The application allows the user to plot a safe route through problem areas and automatically alerts emergency or military services should something unusual happen on board. The ships are tracked using a newly developed technology called Loc8.

The company says that Sentinel also offers additional covert capabilities which will not be advertised to ensure that users have an advantage in their battle against piracy, and that all buyers will be vetted prior to having the product supplied to ensure that the technology stays on the "right side."

Combining weather information and security data, the software will allow the user to plot the optimum route to take to minimise the piracy threat, monitoring any other vessels in the surrounding area, including their real time movements, with resulting data viewable on land, at a head office or emergency response centre.

Any deviation in planned course or speed would automatically spark an alert to nominated security forces.

"It's hard to believe that current software on the market doesn't track all the factors that might put a ship at risk, but that's the case," said Wynne Edwards, managing director of Marine MTS.

"Sentinel allows the user vessel to be monitored from a land base anywhere in the world, so that no matter where the ship is, its operator or owner can foresee problems that the onboard crew may not be in a position to spot, or communicate."

"Until now, the answer to anti-piracy has involved increasing armed presence on board vessels. This can escalate the problem in the long term, as data suggests that pirates are undeterred by this greater risk, and merely respond by 'upping their game' – given that the reward is still considerable. Increased vigilance via technology is a proactive approach that can become a long term option."

(L-R) Mustafa Iptes, Hugo Gorziglia, Robert Ward, HSH Prince Albert II of Monaco, Alexandros Maratos and Gilles Bessero mark the changes to the IHO committee

Robert Ward has taken over from Alexandros Maratos as president of the **IHO** directing committee. Mr Ward is joined on the committee by Mustafa Iptes and Gilles Bessero, the former national Hydrographers of Turkey and France, with Captain Hugo Gorziglia leaving his post.

Jotron's Tron AIS-SART has been 'Wheel Marked' in accordance with European regulations, meaning that its Radar SART and AIS-SART can both be used as 'Search and rescue locating devices' to meet SOLAS requirements.

Furuno is launching a help desk for its NavSkills ECDIS training service, which will provide online support to trainees using Voice over IP (VoIP). The help desk is accessible through a soft key on the system screen, which connects the trainee to an instructor who can guide the trainee or answer questions.

www.jotron.com
www.iho.int
www.furuno.com

Malacca Straits tidal model targets fuel savings

www.tidetech.org

Tidetech reports that it has developed a new high-resolution tidal model for the Malacca and Singapore Straits, with simulations showing that transit time savings of between three and 12 per cent can be made depending on vessel type, speed and tidal phase.

Tidetech says that using tidal information could save between three and 12 per cent on transit time

The company says that its high-resolution (up to 800m) Malacca and Singapore Straits commercial tidal model is the first of its kind in this region.

The model data is available in up to 10-minute time steps and can be integrated into ECDIS as a layer (or into other bridge systems), supplied within specialised optimisation software or as raw data.

Tidetech says that, until now, the existing tidal information for the region was limited and based on short-term, single-point observations, whereas its system uses global bathymetry data, satellite altimetry information and local observations to calculate hydrodynamic models using equations of motion that govern fluid dynamics.

This information can then be used to improve voyage efficiency, with the aim of reducing the amount of fuel required.

"By arriving at the optimal time, a ship can benefit from a favourable tide or current through busy, narrow or restricted shipping channels," said Tidetech managing director, Penny Haire.

"This means a vessel can reduce speed (or maintain slow steaming speeds) and save fuel – and also means the vessel can avoid having to increase speed to counter adverse current."

"We have run a simulation for vessels steaming between 14kt and 22kt and the difference between slowest and fastest times through the Straits' amounts to a significant difference. This means time and money is saved and emissions reduced."

CEACT software updated

www.sevencs.com
www.ceact.com

SevenCs and CEACT Information Systems Inc. have announced the latest version of their inland navigation system CEACT, with two new major functionalities.

The Multiple CPA function enables the user to track several AIS targets simultaneously. The operator can toggle between the most relevant targets without reacquiring, to make sure that dangerous targets don't get lost.

The Overtaking Calculation function displays how long it will take to overtake a vessel and marks a position in the chart where it will be completed.

Narrow passages, overtaking prohibited areas and upcoming traffic can be identified at an early stage, which the company says should allow for more fuel-efficient handling of the vessel.

The 2013 version also has a new graphic user interface for target tracking allowing acquisition and reading of target data to be done with two clicks, up to four times faster than in previous versions.

The new version of CEACT is available now.
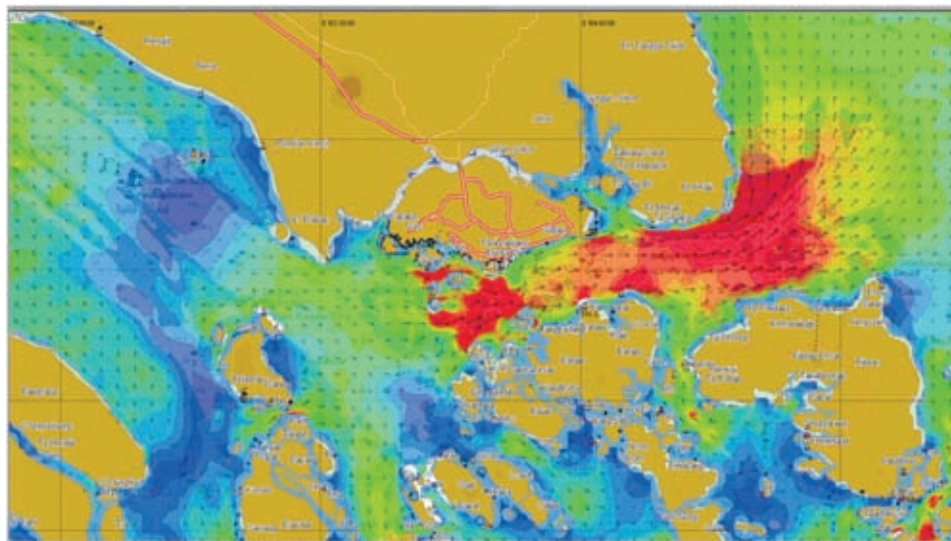
SAM agrees offshore vessel deal

www.sam-electronics.de

SAM Electronics reports that it has been awarded a contract for the supply and installation of an IT network and associated equipment aboard Pieter Schelte, a €1.3 billion dynamically-positioned platform installation-decommissioning and pipelay vessel being built by Daewoo Shipbuilding & Marine Engineering in South Korea on behalf of Swiss-based Allseas Group SA.

With a length of 382m and width of 117m, Pieter Schelte will be the world's largest vessel of its type when it enters service, which is expected to be in 2014.

The new vessel is being equipped with a specially-designed multifunction IT network by SAM Electronics, based on a 10GB LAN network and two core switches.

The complete assembly includes an IP-based master clock facility for worldwide use, IP TV and video-on-demand equipment, powerful satellite antennas for internet access, and a VoIP telephone system featuring a GSM solution enabling vessel personnel to make telephone calls via their own cell phones.

Approximately 250 internal, external and underwater cameras will also be supplied, in addition to 30 strategically-sited viewing stations for monitoring pipelaying and lifting operations. SAM will also provide GMDSS safety equipment.

In related news, SAM Electronics also reports that it has successfully completed supply and installation of a range of electrical and other equipment aboard HGO InfraSea Solutions' new offshore heavy-lift jack-up crane vessel Innovation, including an integrated bridge system.

The installation was performed as part of a consortium headed by Caterpillar Marine Power Systems and including thrust manufacturers SCHOTTEL and Zeppelin Power Systems.

The SAM Electronics-designed NACOS Platinum bridge-based automation, control and monitoring system for the vessel comprises a series of standardised workstations with multi-function displays supported by a common operating network.

Components include one wave radar, one S- and three X-band radars linked to five Multipilot workstations which can be variously used for control of radar, ECDIS and conning functions.

The system's automation sector can process approximately 4,500 input and output signals controlled by ten process stations, with operator control possible in differing locations such as the engine control room and officer cabins in addition to the bridge.

The NACOS Platinum assembly will also be integrated with a DP2 dynamic positioning unit for maintaining vessel location in changing environments. It has been developed by SAM's associate L-3 company, Dynamic Positioning & Control Systems.

ENC Analyzer from SevenCs

www.sevencs.com

SevenCs has introduced a new version of its ENC Analyzer, which implements over 900 individual checks on electronic navigational charts.

The new ENC Analyzer 3.0.0 can be supplemented with an optional Horizontal and Vertical Consistency (HVC) Module.

SevenCs notes that, in the creation of electronic charts, features that are common to neighbouring ENCs and overlapping ENCs of different scale bands are often encoded from different data sources, potentially leading to inconsistencies in the encoding of the feature's spatial geometry and attributes.

The HVC module assists with the identification of conflicting features and allows the cartographer to apply the appropriate corrective action to resolve these errors, thereby achieving a consistent presentation of their ENC data across cell boundaries and scale bands.

In addition, the standard software includes four new SCAMIN checks based on the 'Use of the Object Catalogue for ENC' (Ed. 3.0.0).

Horizontal Consistency refers to the consistent representation of features that span cell boundaries. Vertical Consistency refers to the consistent representation of features that appear in overlapping cells of differing usage / scale bands.

The ENC Analyzer HVC module performs horizontal and vertical consistency validation based on 'S-65 – Electronic Navigational Charts (ENCs) Production Guidance', Ed. 1.2.
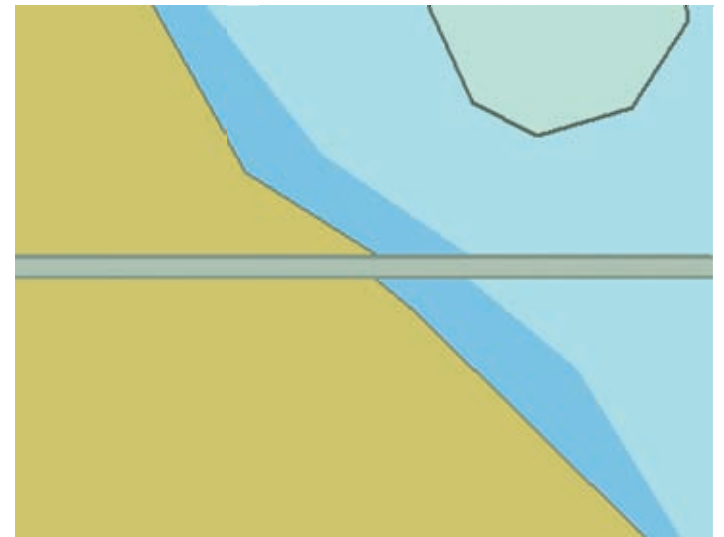
The Analyzer will look for problems in electronic charts, such as gaps between bordering cells

Technology not enough to prevent accidents

Modern maritime technology has the capability to vastly improve situational awareness – and yet, as numerous reports show, vessels equipped with advanced technology still manage to run into problems. *Digital Ship* examines some recent incidents where technology wasn't enough to prevent disaster

You're a modern shipping company, keeping up with developments at the cutting edge and implementing the latest in navigation technology on your vessels to ensure that safety is at the forefront of your operations.

ECDIS systems have been installed, well ahead of the mandatory deadline, with multiple units to allow for full paperless navigation. Your bridge integrates radar, AIS and electronic chart data with a variety of different data sources to make sure those on watch are always fully aware of the situation unfolding around them.

The risk of accidents, collisions and groundings is finally something you can consign to the past, right?

Sadly, no. Unfortunately, investigators all too frequently report that the improper use of navigation technologies has been a contributing factor in maritime accidents, despite the additional safety these systems were supposed to introduce.

While the technology itself is sound, it is in its application that the problems arise – begging the question of whether, in some circumstances, these systems have proven to be more of a hindrance than a help.

If used properly, the technology could assist vessel officers in avoiding danger – and yet, in many instances, the capabilities of the onboard systems have not been applied correctly, in a way that would improve safety.

The excellent accident reports published by the UK's Marine Accident Investigation Branch (MAIB) illustrate some of these types of incidents, highlighting the circumstances that have led ships into problems which technology should have helped them to avoid.

Among them is the case of the CSL Thames.

Running aground

As reported by MAIB in its accident report 02/2012, in August 2011 the Maltese registered bulk carrier CSL Thames briefly ran aground off the coast of the UK while on passage from Glensanda to Wilhelmshaven.

The CSL Thames. Photo: MAIB

The vessel hull was damaged, and a resulting 3-metre fracture to one of the water ballast deep tanks caused it to be flooded. Thankfully, no injuries or resulting pollution was reported.

In this case, one of the major issues that emerged from the investigation was the fact that, despite ECDIS systems having been installed onboard the ship, the crew had failed to realise the potential danger ahead and was not sufficiently aware of the situation to prevent the grounding.

Below follows adapted excerpts taken from the report, outlining the circumstances of the incident.

"The MAIB investigation found that CSL Thames ran aground after the third officer had altered the vessel's course to starboard of the planned track to avoid another vessel."

"He did not notice that the alteration would take CSL Thames into shallow water, and the audio alarm on the electronic chart display and information system (ECDIS) that should have alerted him to the impending danger was inoperative."

"At 0935, CSL Thames entered the Sound of Mull. To assist with navigation during the transit, the master used two radars and an ECDIS."

"The ECDIS was set with the following safety parameters: a safety contour of 10 metres; a cross-track deviation limit of 0.2 mile either side of the planned track; and an anti-grounding warning zone that covered an arc 1° either side of the vessel's track out to a distance equivalent to 10 minutes steaming."

"The alarm on the ECDIS should therefore have activated if CSL Thames deviated more than 0.2 miles from her planned track, or the anti-grounding warning zone crossed a safety contour or other user-defined danger."

"The master (subsequently) instructed the helmsman to engage the autopilot and then handed the con to the third officer, who stood facing the starboard radar display, with the ECDIS display to his right (see photo above)."

"The master increased the volume on a

View of ECDIS and position of bridge team. Photo: MAIB

portable compact disc player that had been playing music on the bridge since the pilot disembarked, and moved to the communication centre on the port side of the bridge to send routine departure messages."

The next development in the story came about 35 minutes after the vessel had entered the Sound, when the third officer noticed a sailing vessel on his navigational displays.

At this point the CSL Thames was about one mile from its next planned waypoint, and the third officer estimated that the sailing vessel would be ahead of his own ship as it stayed steady on course.

The report continues: "Intending to leave the sailing vessel to port, (the third officer) decided to turn early and, by adjusting the autopilot, initiated a slow alteration of course to starboard towards the next planned course 314° (T).."

"The third officer (subsequently) acquired on the radar an automatic identification system (AIS) target of the sailing vessel at a range of 3.6 miles and on a bearing of 318.5°(T)."

"With CSL Thames approaching her planned course of 314° (T), he decided to continue the alteration to starboard to place the sailing vessel onto the port bow…CSL Thames was on a heading of 321° (T) when the third officer observed another small vessel right ahead at about 1 mile range."

"With the intention of leaving the small vessel to port, he continued altering course to 324° (T). The ECDIS antigrounding warning zone alarm then activated on the display, but no audible alarm sounded."

"The third officer (went on to sound) two long blasts on the ship's whistle to alert the small vessel to the presence of CSL Thames and … the small vessel passed clear on CSL Thames's port side. The third officer then focused his attention

on the sailing vessel ahead, which was now at about 1 mile range."

Having avoided this small vessel, the third officer was however unable to avoid grounding the CSL Thames moments later, with the vessel travelling at a speed of 12 knots.

The report continues: "The contact with the seabed lasted 16 seconds and caused the vessel to vibrate loudly."

"This prompted the master to return to the conning position and to look at the ECDIS display. Recognising that his vessel had run aground, he instructed the helmsman to switch to manual steering and ordered the wheel to hard-a-port."

"The sailing vessel also altered course to port and both vessels narrowly avoided colliding with each other."

In spite of the damage inflicted by the grounding, and having secured agreement from its classification society, the vessel was able to continue its passage to Wilhelmshaven to discharge its cargo before entering Emden dry dock to be repaired.

ECDIS issues

The unsatisfactory application of the ECDIS equipment onboard the CSL Thames was identified as a key issue by MAIB in its investigation of this accident.

The ship had two ECDIS units onboard, which were used as the primary means of navigation and allowed the vessel to sail 'paperless'.

All of the bridge officers, including the master, had completed generic ECDIS training based on the IMO Model course (1.27) – however, MAIB notes that type specific training had not been carried out.

The report notes: "No training or familiarisation on the type of ECDIS fitted on board CSL Thames had been provided by the ship's management company … or by previous employers."

AIS tracks of CSL Thames and sailing vessel. Photo: Admiralty

"There is currently no mandatory requirement for bridge officers to receive such 'equipment specific' training, and reliance is placed on the vessel's technical management company to provide familiarisation training in compliance with the ISM Code."

"However, for UK registered vessels, the MCA, through its Marine Information Note 4052, has clarified what generic and 'equipment specific' training it regards as acceptable. The company had not provided any instructions or guidance on the use of the ECDIS fitted to CSL Thames."

With respect to this incident in particular, the report points out that, despite the fact that he was using the ECDIS as his primary means of navigation, the third officer did not make full use of the information available from the equipment.

It says: "(The third officer) last looked at the ECDIS display immediately before initiating CSL Thames's turn to starboard at 1010. The ECDIS display anti-grounding warning zone alarm activated at about 1018."

"However, the focus of the third officer's attention was on collision avoidance, and involved him looking ahead through the bridge windows and monitoring the radar display."

"While the third officer relied on the ECDIS as the primary means of navigation, he did not appreciate the extent to which he needed to monitor CSL Thames's position and projected track in relation to the planned track and surrounding hazards."

One problem identified by investigators involved the physical location of the ECDIS on the bridge, which did not allow a person operating the equipment to keep an eye on the display and the bridge windows at the same time.

The report describes the layout as having the ECDIS "orientated so that the OOW had to face to starboard to look at the screen" (see photo on page 32).

"Although this might have been ergonomically satisfactory for routine navigational watchkeeping, the third officer's overriding priority during the period leading up to the accident was collision avoidance, which required him to look ahead."

"Had the ECDIS display been located in front of him, he would have been more likely to routinely consult it when monitoring the navigational situation."

The report also suggests that the automatic nature of the equipment, compared to the regular engagement required with a paper chart, also contributed to the lack of situational awareness.

The report notes that: "Traditional navigational techniques require an officer of the watch to regularly plot a series of historical positions on a paper chart from which to project the vessel's track."

"The ECDIS display provided the third officer with an ability to immediately identify the vessel's current position and projected track at any time without the need for regular plotting."

"Furthermore, the third officer was aware the ECDIS anti-grounding warning zone feature was designed to automatically determine and alarm if the vessel was running into danger."

"Consequently, he felt no obligation to check the vessel's position and projected track during the 15-minute period leading up to the grounding."

The problem with the anti-grounding alarm was exacerbated by the fact that the 10 metre safety contour that had been set on the ECDIS was inappropriate for the draught of the CSL Thames, which measured 10.63 metres.

The report says: "Taking into account the height of tide of 1.4 metres and an estimated squat of 0.9 metre, the vessel would have grounded at a charted depth of 10.13 metres, before crossing the safety contour."

"Although the ECDIS anti-grounding warning zone visual alarm activated, the audible alarm, which should have alerted the third officer to the fact that CSL Thames was heading into danger, did not function."

"This was because the ECDIS unit was not connected to a loudspeaker or buzzer capable of sounding an audible alarm, contrary to the IMO's performance standards."

"The ECDIS on board CSL Thames was originally configured to alarm through the bridge alarm monitoring system but this was found disconnected following the accident."

"On joining CSL Thames, neither the master nor the other bridge officers had questioned the absence of an ECDIS audible alarm. Despite having attended training courses that met the standards of the IMO model course for ECDIS, CSL Thames's master and bridge watchkeepers lacked an understanding of the

ECDIS equipment's safety features and/or their value."

In analysing the performance of the bridge officers in this case, MAIB goes on to note that it remains critical for watchkeepers to stay alert, and suggests that type-specific training could make a difference in promoting higher standards.

The report says: "ECDIS provides t he officer of the watch with an efficient and effective means of navigation. However, its ability to continuously provide the vessel's current position and projected track, and to warn of approaching dangers, can lead to over-reliance and complacency."

"The officer of the watch still needs to monitor the vessel's position and projected track at regular intervals and to fully understand the equipment's safety features in order to make best use of them."

"The above shortfalls can be addressed through equipment-specific training and onboard instructions and guidance."

Conclusions

MAIB published in its report a list of 10 conclusions drawn from its investigation of this case, the first eight of which are directly related to use of the ECDIS and situational awareness. There were as follows.

"1. The third officer's decision to prematurely initiate a turn to starboard before CSL Thames's next waypoint was based on an assumption that the sailing vessel would follow an approximately reciprocal course to CSL Thames's next planned course."

"2. Analysis of CSL Thames's radar recording indicates that, had the third officer followed the planned track in accordance with the passage plan, the other two vessels would have passed clear on her starboard side."

"3. Had the ECDIS display been located in front of him, the third officer would have been more likely to routinely consult it when monitoring the navigational situation."

"4. The third officer did not detect activation of the anti-grounding warning zone visual alarm because he was not monitoring the ECDIS display."

"5. The ECDIS anti-grounding warning zone audible alarm, which should have alerted the third officer to the fact that CSL Thames was heading into danger, did not function."

"6. The ECDIS safety contour setting was inappropriate for CSL Thames's draught at the time of the accident, and neither the master nor the other bridge officers had questioned the absence of an ECDIS audible alarm. This indicates a lack of understanding of the equipment's safety features and/or their value."

"7. The master's confidence in the third officer's abilities was misplaced. The third officer lacked experience and, given the navigational demands of the passage, needed the support of the master."

"8. Even if the ECDIS audible alarm had been functioning, the third officer might not have heard it over the loud music being played on the bridge."

The report also notes that, since the accident, the ship management company has

gone on to make changes to try and improve navigation.

These include repositioning the main ECDIS unit adjacent to the starboard radar to enable the officer of the watch to view the display while facing forward, and reconnecting the ECDIS unit to the bridge alarm monitoring unit to provide a functioning audible alarm.

The company has also arranged for the CSL Thames's bridge officers, and the management company's DPA and nautical superintendent to attend an 'equipment specific' training course on the ECDIS type fitted on board.

The nautical superintendent will also provide onboard ECDIS training to the fleet's other vessels fitted with ECDIS or electronic charts.

In addition to these measures, MAIB is recommending that the company introduces written instructions and guidance to its fleet and carries out verification visits to its vessels.

It is hoped that this would ensure that bridge watchkeeping officers have a clear understanding of how ECDIS should be used on board the company's vessels, and that officers and crew understand the vessel's emergency procedures.

Information overload

AIS technology is one of the most commonly used tools on modern bridges when it comes to determining the proximity of other vessels, and is an important complement to ECDIS.

However, as another MAIB report demonstrates, sometimes tools such as these can provide too much information – and the watchkeeper may begin to struggle to 'see the wood for the trees'.

In MAIB Safety Digest 02/2012, the Bureau describes a tragic incident involving a container ship on coastal passage travelling at 21kts, at night but with a moderate sea state.

On the bridge, the OOW was accompanied by an AB, until, at about 0150, the OOW gave the AB permission to leave the bridge to conduct a fire patrol and get a snack from the galley.

The report continues: "By now, heavy rain had reduced the visibility to about 3nm; it had also adversely affected the quality of the picture on the bridge radar displays. The OOW was not monitoring AIS information."

"The OOW altered the vessel's heading … to avoid concentrations of stationary fishing vessels. During this period, he also saw an east-moving radar target 5nm to the north which was crossing from the port bow. This vessel, which was transmitting on her AIS Class B, was bound for fishing grounds 150nm offshore at a speed of 8.5kts."

"As the container ship cleared a group of fishing vessels on her port side, the OOW remained concerned by the movement of the east-bound vessel, which was now within 2nm, so he sounded one blast lasting approximately 3 seconds on the ship's forward whistle."

"The east-bound vessel maintained her course and speed so the OOW decided to make a bold alteration of course to port. He checked the radar display to confirm that the intended heading … was clear of other vessels."

Converged IP Communication

Remote Maintenance Platform for IP Devices

- Master clock
- Mobile communication
- VoIP Telephone
- IPTV
- IP CCTV
- Data sharing

SWAN
Shipboard Wireless Area Network

Wi-Fi Convergence Network
Smart Communication & Infotainment Product

COENS ENERGY

http://www.coens.com

● Head Office

901 Intellium, 1458, Woo-dong Haeundae-gu, Busan, KOREA
TEL. +82-51-740-6823
FAX. +82-51-740-5095
http://www.coens.com

● Geoje Branch Office

104, Mijin Tower Palace, 556-11, Okpo-1Dong Geoje-Si, Gyeongnam, Korea(656-904)
TEL. +82-55-639-2097
FAX. +82-55-688-6040
E-mail : IT@coens.com

"He then moved to the port bridge wing and looked over the port bow and the port beam to ensure that it was safe to alter course. The OOW then returned to the centreline console and began to adjust the vessel's heading to port using the joystick control on the vessel's track pilot system."

"At about the same time, the east-bound vessel altered course to starboard …, towards the path of the container ship. This alteration was not seen by the container ship's OOW, and the vessels collided 2 minutes later."

After the vessels collided, the OOW felt what was described as a "sudden and unusual vibration" from the forward part of the ship, but was unaware that a collision with another ship had taken place.

However, he did put the engine telegraph to stop and then telephoned the master, telling him that the container ship might have hit something, but that he did not know what. Sadly, the other vessel quickly sank without trace.

The report notes: "When the master arrived on the bridge he analysed the situation."

"Bearing in mind that the container ship was not damaged, there was no sign of another vessel in close proximity, no distress messages were heard, and the fishing vessels in the vicinity appeared to be getting on with their business as usual, the master concluded that the vibration felt during the alteration of course was possibly caused by waves hitting the hull. The container ship resumed her passage."

"Eighteen hours after the collision, the coastal authorities were made aware that a fish transportation vessel was missing. An air and sea search was quickly commenced, and a review of AIS information indicated that the position and time of the missing vessel's final transmission coincided with the container ship's track."

"The wreck of the missing vessel was later located: all of her 11 crew were lost. She did not carry an EPIRB and the vessel's liferaft was never found."

Lessons learned

MAIB outlines a number of important lessons which it believes should be learned from this case, including the fact that AIS information can be easily overlooked by watchkeepers in circumstances such as those aboard this container ship.

The published list of highlighted points includes the following:

"1. In some areas of the world, the size and extent of fishing vessel concentrations can make bridge watchkeeping nerve-racking, even for the most experienced officers. However, hours of anguish can often be avoided by early minor adjustments to the passage plan to head through less congested waters."

"2. Following the COLREGS is crucial to safety at sea. When weaving through large concentrations of near-stationary fishing vessels, OOWs must think quickly on their feet, but the 'rules' must still be followed wherever possible. In this case, the alteration of course to port by the container ship, following the sounding of the whistle, was not only contrary to the 'rules',

but it was also dangerous."

"It would certainly not have been expected by the wheelhouse watch-keeper on board the fish transportation vessel who simultaneously altered his vessel's heading to starboard."

"3. The monitoring of any action to avoid a collision is essential to ensure a safe outcome. No matter how bold a course alteration or reduction in speed, the actions of other vessels should never be taken for granted."

"4. The determination of safe speed is a bone of contention, but there is no doubt that a speed of 21kts in darkness, poor weather and sea conditions, and at close quarters with numerous fishing vessels, is far too fast."

Radar display showing three fishing vessels on the starboard bow at 1 mile range. Photo: MAIB

"5. At night, a bridge must be manned by at least an OOW and a lookout. However, in areas of higher traffic densities such as fishing grounds and traffic separation schemes, masters should not hesitate to enhance routine manning to meet the demands of the situation. Standing down the lookout is not an option."

"6. The use of AIS is becoming widespread among vessels of all types and sizes. Although the system is extremely useful in highlighting the presence of smaller vessels in open waters and shipping lanes, there is a danger of AIS information overload in areas of high traffic density."

"In such circumstances, the AIS information stands a good chance of being ignored or filtered by OOWs on board larger vessels."

"7. EPIRBs are a reliable means of alerting SAR authorities when things go horribly wrong. If a vessel doesn't carry one, the potential delay in starting a search and rescue can be the difference between life and death."

Information integration

The need to integrate the information available on the bridge, from technolo-

gies like radar and ARPA in addition to AIS, was highlighted in another MAIB report from its 02/2012 Safety Digest, which also led to tragic loss of life following a collision.

The report describes the circumstances surrounding the accident as follows: "A large ferry left port on a clear and calm evening. The master handed the watch to the second officer and left the bridge. Traffic was light and, although there were some targets on the radar, none of them had been acquired for plotting."

"Soon afterwards, the second officer plotted the vessel's position on the chart and initiated a planned alteration of course … using the autopilot. He then interrogated an AIS target about 6.5 miles on the starboard bow and altered the vessel's course again, … to increase the CPA with this vessel to about 1 mile."

"The second officer and AB on watch sighted three fishing vessels on the starboard bow. Their radar targets were not plotted and their bearings were otherwise not monitored."

"When the nearest fishing vessel was at about 1 mile range, the AB expressed his concern at what appeared to be a close-quarters situation with three crossing vessels."

"With an ever-decreasing range, and thinking he had insufficient sea room in which to alter to starboard, the second officer initiated an alteration of course of about 10° to port."

"While the two trailing vessels took action to avoid an imminent collision, the nearest fishing vessel continued on a collision course."

"The second officer sounded a short blast on the whistle in an attempt to attract attention, and ordered the AB to place the wheel on hand-steering and alter hard to port. However, this did not prevent the fishing vessel colliding with the ferry despite her skipper taking last minute avoiding action."

"The fishing vessel sank rapidly. The skipper was rescued immediately but, despite an extensive search and rescue operation, the other crew member was not found."

Again in this case, MAIB highlights a number of key lessons that should be learned from this accident, form knowledge of the COLREGS, to a lack of appreciation of how the technology on the bridge could aid in this situation.

These 'lessons learned' include the following:

"1. One of the fundamental requirements of the COLREGS is that vessels maintain a proper lookout. If they do not, many of the regulations intended to avoid collisions in varying circumstances cannot be applied."

"2. When determining if there was a risk of a collision with the three crossing fishing vessels, the second officer on board the ferry should have, as a minimum: monitored or plotted their radar targets using the cursor or ARPA facility; taken a series of compass bearings using the radar's electronic bearing line; and/or taken a series of visual compass bearings using the azimuth ring."

"3. Rule 8 of the COLREGS requires any action to avoid collision to be positive, made in ample time, and be large enough to be readily apparent to another vessel observing visually or by radar."

"This collision could have been easily avoided if the second officer on board the ferry had made an early and bold alteration of course in accordance with the requirements of a give-way vessel."

"4. Although the fishing vessel's wheel house had been left unattended intermittently, she was the stand-on vessel in a crossing situation and was required to maintain her course and speed."

"However, Rule 17 (b) of the COLREGS requires action by a stand-on vessel when collision cannot be avoided by the give-way vessel alone. The fishing vessel's skipper's last-minute avoiding action was too late to be effective."

"5. The navigating officers on board the ferry had a preference for interrogating AIS targets on the radar display."

"While there are some distinct advantages in interrogating AIS data for collision avoidance, this can engender a misperception that only targets with AIS symbols warrant interrogation, with the potential for all other targets on the radar display being ignored without determining if they actually pose a danger."

All of the above incidents reported by MAIB have seen serious consequences, even fatal consequences, follow from an inadequate use of the tools available to navigators onboard or a failure to properly appreciate the circumstances they had found themselves in.

The lessons learned from these incidents should serve as an important reminder to everyone working with maritime technology of the unquestionable importance of making sure these tools are used correctly so that they can positively contribute to improving the safety of life at sea.

DS

Digital Ship

www.thedigitalship.com

Upcoming Maritime IT & Communications Conferences/Exhibitions 2013

Digital Ship Scandinavia 2013
30-31 January 2013, Grieghallen, Bergen

Digital Ship Hamburg 2013
27-28 February 2013, Magnushall

Digital Ship Cyprus 2013
23-25 April, 2013, Grand Resort Limassol

Selection of shipping company attendees at past events

DS Scandinavia
A/S J.L.Mowinckels Rederi, Bergen Oilfield Services AS, Canadian Coast Guard, DeepOcean AS, DOF Management AS, Falck Nutec Bergen, Farstad Shipping ASA, Gearbulk Norway As, Green Reefers, Grieg Shipping Group AS, Høegh Fleet Services AS, Jo Tankers, K.G.Jebsen Skipsrederi A/S, Kristian Gerhard Jebsen Skipsrederi / Gearbulk, Misje Rederi AS, Mowinckel Ship Management, NDLO, Northern Marine Management Limited, Norwegian Defence Logistic Organisation, Odfjell Management AS, OSM Ship Management AS, Petroleum Geo-Services, Rederei Stenersen, Seatrans, Stiftelsen Seilskipet Statsraad Lehmkuhl, Torm A/S, Utkilen AS, Wallem Shipmanagement Norway AS, Westfal-Larsen Management, Wilhelmsen Ship Management, Wilon Management AS, Wilson Ship Management

DS Hamburg
Ahrenkiel Shipmanagment, Alpha Ship management. Aug. Bolten, Beluga Fleet Management, Bernhard Schulte, Blohm + Voss Shipyards, BREMER SCHIFFSMELDEDIENST, Briese Schiffahrts, Chemikalien Seetransport, Columbia Shipmanagement, d'Amico Società di Navigazione, E.R. Schiffahrt, Emder Schlepp-Betrieb, Fairplay Towage, GBA Ships, German Tanker Shipping, Hamburg Sud, Hammonia Reederei, Hanjin Shipping, Co., LTD, Hansa Shipping, Harren & Partner Ship Management, Hellespont Ship Management, Johann M.K. Blumenthal, John T. Essberger, Köpping Reederei, Maersk Supply Service, Maersk Tankers, Marlow Navigation, Monjasa, MPC Münchmeyer Petersen Steamship, Norddeutsche Reederei H. Schuldt, Nordic Hamburg Shipmanagement, Nordic Tankers, NSC Schiffahrtsges, Offen Tankers, Orion Bulkers, Peter Döhle, Pron-av Ship Management, Reederei Blue Star, Reederei F.Laeisz, Reederei Harmstorf, Reederei NSB, Reederei Stefan Patjens, Reederei Wieczorek, RHL Reederei Hamburger Lloyd, Rickmers Holding, Schokland coaster, Seaarland Shipmanagement, Unterweser Reederei, Vega Reederei, Wessels Reederei

Who will you meet?
➜ **Managing Directors**
➜ **CIOs**
➜ **IT Directors**
➜ **Directors of Communications**
➜ **Purchasing Directors**
➜ **Fleet Managers**
➜ **Crewing Managers**
➜ **Technical Managers**
➜ **Vessel IT Managers**
➜ **SHEQ Managers**

Book your stand and sponsorship with Youngsuk Park

T. +44 207 253 2700
M. +44 755 375 0160
E. yong@thedigitalship.com

DS Cyprus
Admibros Shipmanagement Co. Ltd, Bernhard Schulte Shipmanagement (Cyprus) Ltd., Chemikalien Seetransport, Columbia Shipmanagement, Cyprus Minister of Communications and Works, Cyprus Shipping Chamber, Dobson Fleet Management Ltd, EPSCO Ltd., EXMAR Shipmanagement nv, Gourdomichalis Maritime Greece, InterManager KPI Working Group, Internaut Shipping Ltd., Intership Navigation Co.Ltd, Island Oil (Holdings) Ltd, Kotani Shipmanagement Ltd, Lemissoler Shipmanagement, Lotus Shipping Company LTD, Maestro Ship Management, Marlow Navigation, Mastermind Shipamanagement Ltd, Medstar Shipmanagement Ltd, Navigation Maritime Bulgare, Petronav Ship Management Ltd., Reederei "NORD" Klaus E. Oldendorff Ltd., Reederei Austria Eberhard Koch Ltd, SCF Unicom Management Services, Seatankers Management Co. Ltd, Unicom Management Company, Uniteam Marine Limited, V-Ships Limited.

Digital Ship Limited, 2nd Floor, 8 Baltic Street East, London EC1Y 0UP, UK. Tel: +44 (0)20 7253 2700 Fax: +44 (0)20 7251 9179

www.thedigitalship.com

When is an ECDIS not an ECDIS?

Having an electronic chart system onboard a vessel does not automatically make the ship 'ECDIS compliant' – there are a number of criteria that must be met to ensure that the technology being used is, in fact, a recognised ECDIS, *writes Dr Andy Norris*

There have always been questions as to what constitutes an ECDIS, but in the past year the particular query of "when is an ECDIS not an ECDIS?" has more frequently been asked.

SOLAS Chapter V states that the requirements for chart carriage are met on ships fitted with ECDIS.

IMO last defined the performance standards for ECDIS in 2006 within its Resolution MSC.232(82), which applies to all equipment fitted after 1 January 2009. It is this document that defines an ECDIS.

SOLAS also requires that when ECDIS is being used for primary navigation there must be suitable back-up arrangements, which are defined within MSC.232.

However, it is the flag state that ultimately decides if any particular unit and its installation meets IMO's performance standards.

Even a type approved ECDIS unit cannot be considered an ECDIS unless it is displaying official ENCs

As with all statutorily fitted bridge navigational and communications equipment, the certification that a particular manufacturer's unit meets specific IMO performance standards involves a type approval process.

For ECDIS, this is mostly performed in accordance with the international standard known as IEC 61174, issued by the International Electrotechnical Commission.

That standard is based on MSC.232, but includes additional information. In particular, IEC 61174 defines an agreed method of testing to ensure that the equipment meets the requirements of IMO.

For other fitted navigational units on ships' bridges, such as radar and the gyrocompass, it can almost invariably be taken for granted that the equipment will be type approved and therefore the actual certification is of little concern to users.

What is different with ECDIS is that currently far more ships carry an electronic chart system (ECS) that is not approved as an ECDIS, and so must only be used as a secondary source of navigational information in parallel with full paper chart work.

IMO makes it very clear that an ECS is not an ECDIS. The problem here is determining whether a particular unit is, in fact, a type approved ECDIS – a quality ECS can notionally look very similar to an ECDIS.

Since this is such a critical matter for navigators it is perhaps best confirmed by a statement within the formal bridge instructions on the status of the fitted chart equipment

Data and software

There is one particularly clear-cut case where a type approved ECDIS unit cannot be considered to be operating as an ECDIS. This is when it is displaying charts that are not official ENCs.

The basic definition of the term 'ECDIS' in MSC.232 effectively states that the displayed information has to be from the System Electronic Navigational Chart, which is derived from the ENC. The ENC has to be issued by, or on the authority of, a government.

MSC.232 also states that ENC data has to meet the requirements defined in IHO documents S-52 and S-57.

This all makes it absolutely clear that whenever you are using non-ENC data on a type approved ECDIS you have to base your primary navigation on appropriate and up-to-date paper charts – an ECDIS is not an ECDIS when it is displaying unofficial chart data.

Unfortunately, a very fuzzy situation arises when using ECDIS in the optionally available Raster Chart Display System mode with official raster chart data.

This is mainly because of the statements within MSC.232 that allow primary navigation to be carried out on a type approved ECDIS when in RCDS mode, but require that 'an appropriate portfolio of paper charts should be carried on board and be readily available to the mariner'.

Gaining a common global interpretation as to what constitutes acceptable practice has proved impossible. Fortunately, with the far better availability of ENCs, the use of the RCDS mode is no longer a real issue.

Another difficult area, but one of real significance, is in maintaining onboard ECDIS equipment with an appropriate issue version of the software.

Software upgrades are necessary when additional chart features are introduced or if errors are found in the functioning of a particular ECDIS.

In particular, IMO has made it very clear in SN.1/Circ.266/Rev.1 that an ECDIS not updated to the latest version of IHO standards may not meet the chart carriage requirements as set out in SOLAS.

More clarification on this important issue can be expected from IMO. It is certainly a potential instance of when an apparently type approved ECDIS can no longer be considered to be an ECDIS.

It is important that shipping companies remain in close communication with their ECDIS suppliers to ensure that this is never a problem.

Chart updates and back-up

It is not uncommon to hear it said that an ECDIS is not an ECDIS when it is not using the latest available ENC updates.

This is probably because the definition of SENC in MSC.232 includes the phrase 'the entire ENC contents and its updates' and the SENC is referenced within the formal definition of the term 'ECDIS'.

But if it's not an ECDIS based on the notion that it is using unofficial data (i.e. not the latest available data), the implication is that you have to use paper charts. This situation is clearly nonsensical – the ship is most unlikely to have an appropriate set of fully updated paper charts when the ENC is not up-to-date.

In fact, it is SOLAS Chapter V Regulation 27 that defines the fundamental necessity to keep all nautical charts and nautical publications up-to-date, whether paper or electronic. It also requires that such data is 'adequate' for the intended voyage.

Not having up-to-date and adequate charts in contravention of SOLAS is the major issue that should be driving the onboard thinking, not obscure interpretations of the ECDIS performance standards.

A more significant issue arises when the main ECDIS has failed and use of the back-up becomes essential.

If the back-up solution is a second ECDIS it is a relatively straightforward issue. A type-approved ECDIS remains in use, although appropriate consideration should be made as to what the emergency action needs to be should this unit subsequently fail.

If the back-up is neither a second ECDIS nor the use of appropriate and fully updated paper charts then the system is certainly no longer fulfilling all the requirements of a type approved ECDIS and extra navigational caution needs to be taken.

Positional input

Not surprisingly, MSC.232 requires the ECDIS to be connected to various other equipment, including the ship's position fixing system.

The definition of the term ECDIS also includes the statement that it displays selected information with positional information from navigational sensors.

This has led to some surprising statements, such as 'if GPS position is not available then the ECDIS ceases to be an ECDIS and the ship should immediately stop proceeding or else revert to paper chart operation'.

The logic of such statements is difficult to follow, especially the implication that all would be OK if paper charts were used for primary navigation.

In fact, the opposite is surely true. MSC.282 requires ECDIS to have facilities to manually plot the ship's position from bearing and distance lines of position and also to insert a determined geographical position of the ship.

In particular, there is a requirement for ECDIS to have its own built-in dead reckoning facility. This is a highly useful tool in the event of failure of the GNSS positioning system and a vast improvement in tackling the problem compared to using paper charts.
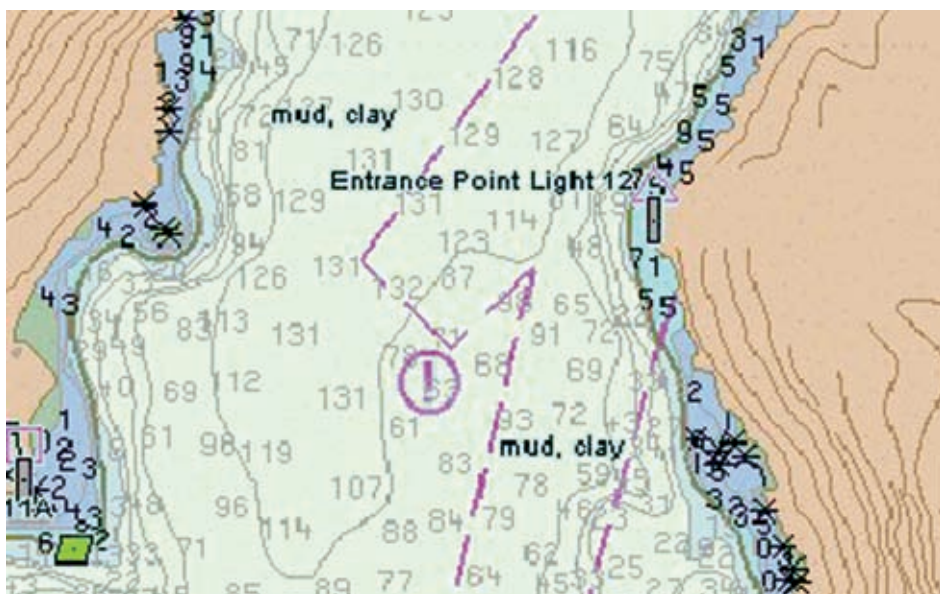
All this is quite opposite from the implication that ECDIS equipment is effectively paralysed if the position fix system fails.

The ECDIS definition statement does include the requirement for the display of SENC data with positional information from navigation sensors, but it does not say '*connected*' to navigation sensors'.

The sensors, by implication, therefore also include off-line examples, such as optical bearings and ranges.

Of course, we need to navigate the ship in an appropriate manner if GNSS fails – but that does not imply reverting to paper charts or, in general, ceasing to be underway. The ECDIS remains an ECDIS and is highly useful in such an emergency situation.

The truly important issues for the equipment to be considered an ECDIS is that it is type approved, is correctly fitted, is using official data and that its software is appropriately maintained. Furthermore, to meet the requirements of SOLAS, the data has to be adequate and up-to-date. **DS**

Dr Andy Norris has been well-known in the maritime navigation industry for a number of years. He has spent much of his time managing high-tech navigation companies but now he is working on broader issues within the navigational world, providing both technical and business consultancy to the industry, governmental bodies and maritime organizations. Email: apnorris@globalnet.co.uk

DESIGN FOR
THE FUTURE

High performance Ku-band system prepared
for rapid Ka-band conversion

Aptus software for ease of control and
system monitoring

Three-year-limited warranty

Global service and support network

Available from stock

**From installation to operation, consider yourself
connected to better RF performance, better
reliability, better warranty, better ideas and
higher surfing speed.** The all new v100GX is a high
performance, 1m Ku to Ka Band convertible VSAT antenna system.
Providing world class performance in a simple to convert package,
ready for the future. Experience the latest designs in VSAT antenna
technology with Intellian.

Aptus | 3 YEAR LIMITED WARRANTY | Learn more about the Intellian v100GX at
http://www.intelliantech.com

Intellian ®