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September 2007

IMO says no to ECDIS

Proposals at the recent IMO safety of navigation sub-committee NAV 53 meeting to introduce a mandatory carriage requirement for ECDIS have been rejected, with a lack of ENC coverage among the main complaints during the discussions

Discussions at the International Maritime Organisation's (IMO) safety of navigation sub-committee NAV 53 meetings at the end of July have failed to produce any firm decisions on whether electronic chart display information systems (ECDIS) should be made a mandatory fit for oceangoing vessels.

Proposals from Denmark, Finland, Norway and Sweden had argued that coverage, and projected coverage, of electronic navigational charts (ENC) was now good enough to require passenger ships over 500 gt and tankers over 3,000 dwt to carry the equipment, with the aim of improving safety at sea, from the beginning of 2010 onwards.

Japan supplemented this proposal with its own suggestion that new ships of 10,000 gt or greater should carry mandatory ECDIS, with existing ships also being required to fit the equipment over the next three to five years.

These arguments were strengthened by an in-depth research project recently conducted by Det Norske Veritas (DNV), which declared that the use of ECDIS would reduce the frequency of groundings for most types of vessels by more than one-third (see *Digital Ship* June / July 2007).

IMO proposals to make ECDIS mandatory on vessel bridges from 2010 were rejected at NAV 53

DNV CEO Henrik Madsen said that he believed these results proved that ECDIS should be made a mandatory requirement for the shipping industry, and it was hoped that some movement on the issue might be seen at IMO level.

However, these arguments failed to sway all of the member countries at the sub-committee meetings. Discussions on the issue of mandatory ECDIS are now scheduled to be revisited at next year's meeting of the navigation sub-committee.

Discussions

While ENC coverage has improved substantially in recent times, it seems that 'adequate' coverage for a mandatory ECDIS requirement is still some way off in the eyes of the IMO delegations.

Research presented to the sub-committee showed how global ENC availability is expected to reach 85 per cent coverage by 2010, but for the present the official report from the NAV 53 meeting states that some delegations to the committee felt there was a lack of "adequate global ENC coverage, especially around the coast of some developing countries and small islands."

"Most members raising these concerns were of the opinion that a decision on a carriage requirement for ECDIS would therefore be premature at this stage, and called for postponing a decision thereon until these questions had been

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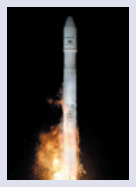

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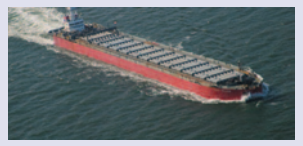

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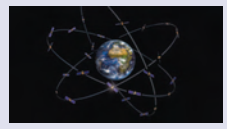

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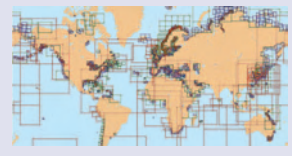

The case for ECDIS - Dr Andy Norris - 31

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answered and existing problems including global ENC-coverage issues had been solved," the report said.

ECDIS should be made a mandatory requirement for the shipping industry - Henrik Madsen, DNV CEO

While the issue of ENC coverage has now been a major part of the ECDIS debate for some time, it would appear from these reports that recent advances have not been enough to convince those delegates involved in the deliberations that a watershed level is getting closer.

The previous safety of navigation sub-committee meeting, NAV 52, had seen the majority of those present share the view that the right level of ENC coverage was a necessary prerequisite for the introduction of a mandatory carriage requirement of ECDIS.

Official reports said that "some delegations had been of the view that this did not mean a 100 per cent ENC coverage would be necessary or achievable." However, without any prescribed minimum coverage that would be acceptable for the introduction of a compulsory requirement, this will continue to be a subjective argument that will have to be constantly revisited with reference to the latest coverage maps.

This also creates a situation where the 'lack of coverage' argument can be continually cited as a justification for refusal to adopt proposals such as those suggested by the Scandinavian countries and Japan in this instance, without any clear indication of how much closer the Hydrographic Offices are coming to an 'acceptable' level.

Conflict

The reluctance to set clear milestones for progress in this area could be seen to be a representation of conflicting opinions as to the value of a mandatory carriage requirement for ECDIS.

The NAV 53 report itself states that: "On the one hand, there was substantial support, at least 'in principle' for the introduction of a carriage requirement."

"On the other hand, concerns and questions had been raised on the necessity, the feasibility and the cost-effectiveness of such carriage requirements, on the uncertainties of global ENC-coverage and related shortcomings in the content of ENCs, on the position of developing countries and small islands and on the human element and training aspects and related issues."

The report also added that the ICS (International Chamber of Shipping) observer at the meetings "was of the opinion that it was premature to mandate ECDIS carriage requirements as the system was not yet clearly defined."

With delegations divided between offering 'substantial support' for a carriage requirement, while others are raising questions on the 'necessity' of the same equipment, it would seem that many issues remain to be resolved before there is likely to be any great change in the regulations.

Among those that remain to be convinced are the delegations noted in the official report as being "of the opinion that there was no need to change something when it had proved to be safe over a long period of time, namely paper charts."

Whether these same delegates would have been opposed to the introduction of the light-bulb, on the basis that people had survived perfectly well with candles for a long period of time, is not known at present. DS

For further information on the ECDIS discussions from NAV 53 see Dr Andy Norris' analysis on page 31

Inmarsat announces launch plans for final I-4 satellite

www.inmarsat.com

Inmarsat has confirmed that the last of its three I-4 next generation satellites will be launched from the Baikonur Cosmodrome in Kazakhstan in March 2008. The deployment of this satellite will mark the final stage of the company's preparations for its FleetBroadband service, paving the way for the full global launch of the high-speed satellite communications system.

Inmarsat has reached an agreement with International Launch Services (ILS) to manage the launch, though it has also retained an option to launch the satellite on an Atlas launch vehicle in 2009 from Cape Canaveral, USA, as a backup capability, should any problems develop with the current schedule.

"Our agreement with ILS has enabled us to accelerate our launch plans for the I-4 F3," said Andrew Sukawaty, Inmarsat CEO.

"The third satellite will provide global coverage for our existing BGAN service and will benefit our new broadband maritime and aeronautical services as well as our global satellite phone service. This will provide incremental opportunities for growth in our maritime and aeronautical markets."

Piers Cunningham, head of maritime services at Inmarsat, added: "Fundamentally this underlines our commitment to provide global service provision for our forthcoming FleetBroadband services, and ensures network stability on a global basis for our existing services extending beyond 2020."

"It goes without saying that deep sea shipping is a global operation and Inmarsat has always supported this mandate, for both commercial and safety communications. This announcement ensures that our next generation services are globally provisioned, whilst maintaining the standardised, reliable and 'gold standard' nature of our current and future maritime services."

This satellite is the last of the three I-4 satellites built for Inmarsat by EADS Astrium. The I-4 F1 was launched in March 2005, and has an orbital slot over the Indian Ocean at 64 degrees East; while the I-4 F2 was launched in November 2005, and provides coverage for the Americas from an orbital slot at 154 degrees West.

The I-4 F3 was initially constructed as a ground spare for the two launches in 2005, but following the successful deployment of the first two satellite plans shifted towards adding the F3 to the network. Its launch and orbital position will fully complete the I-4 constellation and support the global delivery of FleetBroadband.

This announcement came at the same time as Inmarsat released its Q2 financial results for 2007, which showed an 11 per cent increase in revenues in the maritime sector compared with the same period in 2006, to $80.2 million.

This increase was mainly fuelled by increased usage of data services, which grew by over 18 per cent. Growth in voice services was less than 0.5 per cent in comparison, reflecting the shifting trends in the nature of satellite services reported by other service providers.

The Inmarsat I-4 F2 was launched in November 2005 - the March 2008 launch of the F3 will complete the constellation

Global Marine Communications set to launch VSAT service

www.globalmarinecommunications.com

Global Marine Communications (GMC), Hughes Network Systems, and Orbit Technology Group, have announced the successful completion of interoperability testing and sea trials between the Hughes HN series of broadband satellite modems and a specially-adapted Orbit marine stabilised satellite antenna.

Using the HughesNet satellite service in Europe, Cypriot company Global Marine Communications is now set to begin offering three grades of maritime Ku-band VSAT service.

The first, called 'Force 1', will provide a 128 kbps uplink and 512 kbps downlink for $758 per month. 'Force 3' will provide 256 kbps up and 1024 kbps down for $1,885 per month, while 'Force 5' will offer 512 kbps uplink speeds and 2048 kbps down for $3,002 per month.

The service will initially be available in Europe and the Middle East, while GMC says that it will be collaborating with operators in other regions in the hope of eventually providing global, seamless coverage worldwide over Ku-band.

The broadband terminals are based on the IPoS (Internet Protocol over Satellite) standard, which includes the DVB-S2 standard with Adaptive Coding and Modulation (ACM). GMC says that this technology enables its system to run a high throughput using Ku-band antennas at sizes smaller than previously possible on shipping vessels. The terminals also support LAN ports with IP compression and acceleration for optimised performance over satellite.

KVH announces Q2 financial results

www.kvh.com

KVH Industries, which recently announced the launch of its new 'mini-VSAT' and an upgraded version of its satellite TV system, has reported its financial results for the second quarter ended June 30, 2007, showing a 6 per cent increase in revenues compared to Q2 2006 to $23.2 million. Net income for the quarter was $1.5 million.

Mobile communication revenue contributed $17.5 million, which marks a 4 per cent year-over-year increase.

"Within our mobile communications business, (the) launch of our TracPhone V7 satellite communications system and the mini-VSAT Broadband service is one of the more important strategic announcements we've made in recent years," said Martin Kits van Heyningen, KVH's president and CEO.

"Our effort to bring broadband, affordable Internet access to mariners has been a large and complex project that involved establishing new relationships with both ViaSat and satellite owner-operator SES AMERICOM."

"The recent introduction of our new TracVision M-series satellite TV systems helped drive our marine sales up 12 per cent over the same quarter last year."

KVH's TracVision systems helped to increase maritime sales by 12 per cent

CapRock signs Cal Drive deal

www.caprock.com

Marine contractor Cal Dive International Inc. has signed a deal with satellite provider CapRock Communications Inc. to install VSAT broadband satellite communication services.

Terms of the deal were not disclosed.

Under the agreement Houston-based CapRock will provide Cal Dive's marine vessels with Voice over Internet Protocol (VoIP) services, broadband internet access and high-speed connections to its corporate voice/data network.

CapRock has had a previous communications relationship with Cal Dive, which is also a Houston-based, and says that the new agreement will act as a continuation of that deal.

China launches maritime satellite phone service

China Transportation Telecommunications (CTT), a subsidiary of the Ministry of Communications, has announced the launch of an Inmarsat maritime satellite mobile phone service.

Similar in size to common mobile phones, the maritime satellite mobile phone only weighs 210 grams, has a battery life of 42 hours in standby mode, and reportedly has all of the new functions of the latest mobile phones available for GSM or CDMA networks.

The phone runs over the new I-4 Inmarsat satellite network, which currently has two out of three next generation satellites in orbit. The I-4 network will also carry the FleetBroadband service when it is released later this year.

The satellite phone supports both marine satellite and GSM models, meaning that consumers can avoid the cost of using satellite services by reverting to the GSM system whenever they reach an area of cellular coverage.

At present, only a few developed countries in the world have opened this service, according to Michael Butler, president and chief operations officer of Inmarsat. Yang Kongyi, director of CTT, has told local media that the service covers Asia and most of Africa and it is expected to cover the entire world by 2008.

There are a variety of price plans available to users, with charges generally less than US$1 per minute. The phone is priced between US$2,000 to US$3,000, but this is expected to fall as production increases.

Iridium releases Q2 results

www.iridium.com

Iridium Satellite has released its Q2 2007 financial results, and claims that it now has 203,000 subscribers worldwide, a 27.7 per cent increase over the second quarter 2006 total of 159,000.

In the maritime sector alone the number of subscribers is up 18 per cent compared with last year, while maritime traffic through the satellite network grew at a rate of 12 per cent. The number of ships using Iridium's prepaid Crew Calling service increased by 17 per cent year over year.

Revenue in the quarter was $66.7 million versus $53.6 million in the same quarter last year, a 24.4 per cent increase.

Iridium attributes some of the growth to an increase in the number of partners supplying its services. The company signed eight new partners in the quarter, including Astrium Services (a subsidiary of EADS Astrium), Blue Ocean, LogicaCMG, Microdesign, NRG Telecom, Qinetiq, Solara and Upwards Innovation.

In the maritime sector alone the number of subscribers is up 18 per cent compared with last year, while maritime traffic through the satellite network grew at a rate of 12 per cent. The number of ships using Iridium's prepaid crew calling service increased by 17 per cent year over year.

Blue Ocean in SMART deal

www.blueoceanwireless.com

Irish maritime GSM provider Blue Ocean Wireless (BOW) has announced that SMART Communications, a Philippines-based wireless services provider, has agreed to acquire a 30 per cent equity interest in BOW for $15.9 million. The investment now values Blue Ocean Wireless in excess of $55 million.

This is a natural partnership given the significant number of Filipino seafarers - Robert Johnson, Blue Ocean Wireless

SMART, through its wholly-owned subsidiary SmartConnect Holdings PTE Limited, will take control of a combination of primary and secondary shares under the deal, and has negotiated an additional option to acquire a further 19 per cent in BOW within the next 3 years, should it wish to do so.

This move follows an investment of $4.8 million by Bank of Scotland in June of this year, for a ten per cent equity stake. The valuation implied by the SMART acquisition reflects an increase of $7 million in the price of the company in the two months since the previous deal.

The potentially huge market of Filipino seafarers connecting with their families using the Blue Ocean GSM network at sea, tied with the SMART terrestrial GSM network in the Philippines, would seem to be one of the major drivers of this move by SMART.

"The global merchant maritime fleet is currently populated by 1.2 million seafarers, of which 40 per cent are Filipinos," said Napoleon L Nazareno, president and CEO of SMART.

"Their communications needs are currently served by satellite-based, bridge-mounted or shared fixed phones that tend to be expensive, inconvenient and lack privacy. Moreover, these types of phones allow only a limited number of incoming calls and do not provide for SMS or texting."

"This is an exciting opportunity and a natural extension of our Philippines GSM service but also one which allows us to offer services, in a cost competitive way, to seafarers across the world."

"A partnership with (SMART) is a natural choice for us given that a significant portion of the world's seafarers are Filipinos," added Robert Johnson, Blue Ocean Wireless CEO.

"SMART also has a world-class software development team who are constantly bringing new and innovative products to their existing GSM customers. Working with them, we can progressively add additional services for Blue Ocean Wireless customers."

The deal would seem to have straightforward immediate benefits for both parties - BOW will have a direct link into the Filipino market through the SMART network, while SMART can extend the previous geographical limitations of its market base, while still utilising its core strengths in its home market.

Under the terms of the deal SMART will provide GSM network facilities and call/text terminations for the BOW service, and will also become a major reseller of BOW SIM cards and prepaid value cards.

EU clears Telenor acquisition by Apax

www.telenor.com

The European Commission has given clearance for the $400 million acquisition of Telenor Satellite Services by private equity firm Apax Partners, stating it had reached the view that "the transaction would not significantly impede effective competition."

Both companies had been awaiting confirmation from the EU to proceed with the take-over plans, having announced the deal as far back as October 2006. Closure of the deal was contingent on regulators approving the move.

Apax's existing interests in satellite communications company Vizada (formerly France Telecom Mobile Satellite Communications) had created the necessity for an investigation into possible effects on competition, but EU regulators came to the conclusion that the deal would not be anti-competitive as there were sufficient alternative competitors in the market, since wholesalers can sell airtime from a number of different satellite operators.

"The Commission found that the merger would not raise competition concerns in this sector as alternatives for two-way communication services complying with regulatory requirements exist, such as HF (high frequency) and VHF (very high frequency) radio, and other market players are expected to emerge in the near future at both satellite operator and wholesaler level," it said, in a statement.

While the companies have not been able to comment so far as to how they will proceed with the acquisition transaction, it would seem quite likely that the Telenor Satellite Services business unit will be merged with what was France Telecom Mobile Satellite Communications, with the combined company going forward under the newly created brand Vizada.

With a combined share coming close to 40 per cent of the market for Inmarsat satellite airtime, and a greater scope for creating synergies and economies of scale, such a move could have a considerable impact on the maritime communications market.

Iridium signs partners for new satellites

www.iridium.com

Iridium Satellite reports that it has contracted with seven partner organisations in what marks the beginning of the design and development stage of its 'Iridium NEXT' satellite constellation.

The companies in question - Avaliant, Boeing, General Dynamics, KinetX, MicroSat Systems and Trident Sensors - will work with Iridium on systems engineering, requirements definition and architecture development.

Iridium announced the plans for its NEXT satellite constellation earlier in 2007 with the view of offering enhanced services over its network in the coming years. The company hopes to deploy the new satellites on a schedule supporting a smooth transition from the current constellation of 66 low earth orbiting satellites that carry existing Iridium communications.

These plans form part of what the company describes as an overall infrastructure enhancement programme, which has also included the addition of new satellite ground stations in Fairbanks, Alaska and Svalbard, Norway.

Iridium's satellite deployment schedule has been designed to allow for a smooth transition for customers of the current service

Stratos Q2 results show increase in data services

www.stratosglobal.com

Satellite communications company Stratos has released its second quarter financial results, reporting an increase in revenues of 8 per cent on the same period last year, to $149.9 million.

The mobile satellite services (MSS) portion of the business, which includes the maritime sector, comprised the majority of the company's revenues, contributing $119.8 million, an 11 per cent year-on-year increase.

The results have reinforced recent trends whereby the maritime sector has seen a marked increase in the use of satellite data services, compared to the more traditional use of voice communications.

While Stratos' revenues from Inmarsat voice services dropped $2.6 million compared with the same period last year, to $31.6 million, Inmarsat data services showed an increase of $7.2 million for the period to $18.5 million - a jump of almost 39 per cent.

The company has attributed this improvement to growth in the use of Inmarsat Fleet among its customers. This growth has also allowed the company to take advantage of greater volume discounts through its distribution deal with Inmarsat, increasing its profit margins.

Stratos also reports that it has completed deployment of its AmosConnect system for 28 commercial vessels managed by Dockendale Shipping. Each of the vessels was fitted with one AmosConnect license, installed on an Inmarsat Fleet F77 satellite terminal.

Vizada to distribute Thuraya handheld service

www.vizada.com

Vizada (formerly France Telecom Mobile Satellite Communications) is to begin offering Thuraya GmPRS (Geo mobile Packet Radio Service), a service which allows users to browse the internet, use e-mail, download and share files (FTP), and set up a VPN (virtual private network), all with a single Thuraya handset.

Customers pay only for data sent and received over the system, and will also have access to Vizada Online, a management tool enabling distributors or owners of large numbers of Thuraya handsets to activate, bar and suspend SIM cards as required.

Thuraya is also planning to offer Multimedia Messaging Services (MMS) on its MMS-enabled phone later this year, whereby customers would be able to send pictures or video clips to an e-mail address or other MMS-enabled device.

Inmarsat activates 10,000th Fleet 77

www.inmarsat.com

Inmarsat has announced that its 10,000th Fleet 77 terminal has been activated on the new-build Samco Europe.

The 317,000dwt VLCC tanker, delivered to owner Samco Delta in April 2007, is registered in the Port of Marseille and managed by V.Ships of France. Inmarsat distribution partner Vizada (formerly France Telecom Mobile Satellite Services) will provide the communications service for the vessel.

Launched in 2002, the F77 is the flagship offering in the Inmarsat Fleet range, providing voice, 128kbps ISDN and IP data connectivity to vessels anywhere in the world, while also incorporating Global Maritime Distress and Safety System (GMDSS) features.

Piers Cunningham, head of maritime business at Inmarsat, commented that reaching this milestone establishes a strong foundation for the company ahead of the launch of its next generation FleetBroadband service later in 2007.

10,000 Fleet 77 terminals, like this one by Thrane & Thrane, are now active following Samco Europe's installation

Globe Wireless acquires SeaWave & Rydex

www.globewireless.com
www.seawave.com

Globe Wireless has completed a deal to acquire the assets of maritime IT company SeaWave & Rydex.

With the take-over Globe Wireless now provides services to over 8,000 ships and over 500 ship operators, and says it is the only maritime network provider who offers a global end to end vertical solution to the ship operator, including its digital radio communications network.

The financial terms of the agreement have not been disclosed.

Frank J. Coles, president and CEO of Globe Wireless says that he believes that existing SeaWave & Rydex customers will benefit from a greater level of support service as a result of the acquisition.

"With direct employee technicians in over 30 ports around the world, helpdesk services operating 24/7 from our support centres in Asia, Europe and the Americas, and 14 regional offices around the world to provide sales and support, Globe Wireless is now unmatched in our ability to touch-the-ship," he said.

"We have made available to a significant portion of the world's fleet a very strong worldwide support organisation for communications and IT. SeaWave & Rydex customers are already welcoming and leveraging Globe's ability to visit ships to install and service communications and IT equipment aboard ships."

The companies say that SeaWave Integrator and Rydex customers will see no interruption in service as a result of the transaction, and that development for both product lines will continue for the foreseeable future.

Customers of both companies will benefit - Frank Coles, Globe Wireless CEO

SingTel to offer global IP networks via VSAT

www.singtel.com

Singapore Telecommunications Limited (SingTel) has launched what it says is Asia Pacific's first and only integrated global IP Wide Area Network (WAN) solution, to provide business communications in remote areas via IP technology.

The system uses a combination of IP-VPN and satellite technologies that marries four communication services - maritime VSAT (very small aperture terminal) for maritime communications, BGAN (Broadband Global Area Network) for mobile connectivity, satellite IP for land-based remote communications, and ConnectPlus IP-VPN for other locations.

The service will allow companies to bring remote business units, such as deep sea vessels, into the corporate network and allow them to communicate with the organisation using a high speed, two-way IP broadband connection.

"Companies that conduct businesses worldwide can (now) enjoy a one-stop multi-platform service from SingTel to connect their regional offices in remote or offshore areas," said Bill Chang, SingTel's executive vice president of business.

FleetBroadband infrastructure deal for Thrane & Thrane

www.thrane.com

Thrane & Thrane has been awarded a DKK 20 million (approximately $3.6 million) contract by Inmarsat to supply and install two Radio Network Controller stations in Hawaii.

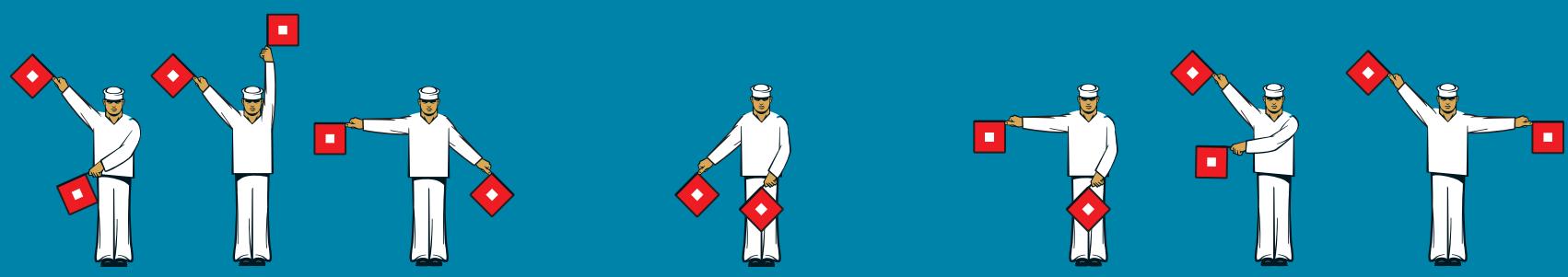
This deal represents one of the first contracts awarded under plans to begin the implementation of necessary infrastructure to support the operation of the third and final Inmarsat-4 next generation satellite, due to be launched in early 2008.

The contract delivery is planned to take place over the next two fiscal years. Installation of equipment is planned to be completed during the current fiscal year, with integration and testing scheduled to follow.

Thrane & Thrane has worked with Inmarsat since 2001 in the design, manufacture and installation of radio network infrastructure for BGAN, the forerunner to the upcoming maritime FleetBroadband service, which has been worth more than DKK 500 million to the Danish company over that period. This new contract is intended to assist in providing infrastructure for FleetBroadband service coverage in the Pacific Ocean region.

Thrane & Thrane says that, to date, it has now installed over 150 Inmarsat Land Earth Stations around the world.

Thrane & Thrane has signed a deal to develop part of the ground infrastructure for Inmarsat's new FleetBroadband service in Hawaii



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Globalstar launch schedule to proceed despite losses

www.globalstar.com

Globalstar has announced its Q2 financial results, showing a decrease in service revenues from $21.5 million to $20 million compared to Q2 2006, and a net loss of $12.7 million compared to $0.8 million. For the first six months of 2007, service revenue was $37.5 million compared to $42.2 million during the same period the previous year, with a net loss of $12.2 million compared to net income of $21.7 million.

The company is still forging ahead with its plans for an upgrade of its entire satellite network however, having launched four new satellites in May of this year, just months after a compulsory announcement was made to the stock exchange admitting that Globalstar's existing network had encountered some unforeseen problems, and that service quality may be compromised in the near future.

"Globalstar had a challenging second quarter however we continued to show an increased number of subscribers," said Jay Monroe, Globalstar CEO.

"Globalstar ended the quarter with approximately 278,000 subscribers, a net increase of about 41,000 from the number of subscribers we had at the end of the second quarter last year. We believe the issues related to our two-way communications services and the continued concerns about the service life of our satellites resulted in quarterly decreases in net income, adjusted EBITDA and service revenue."

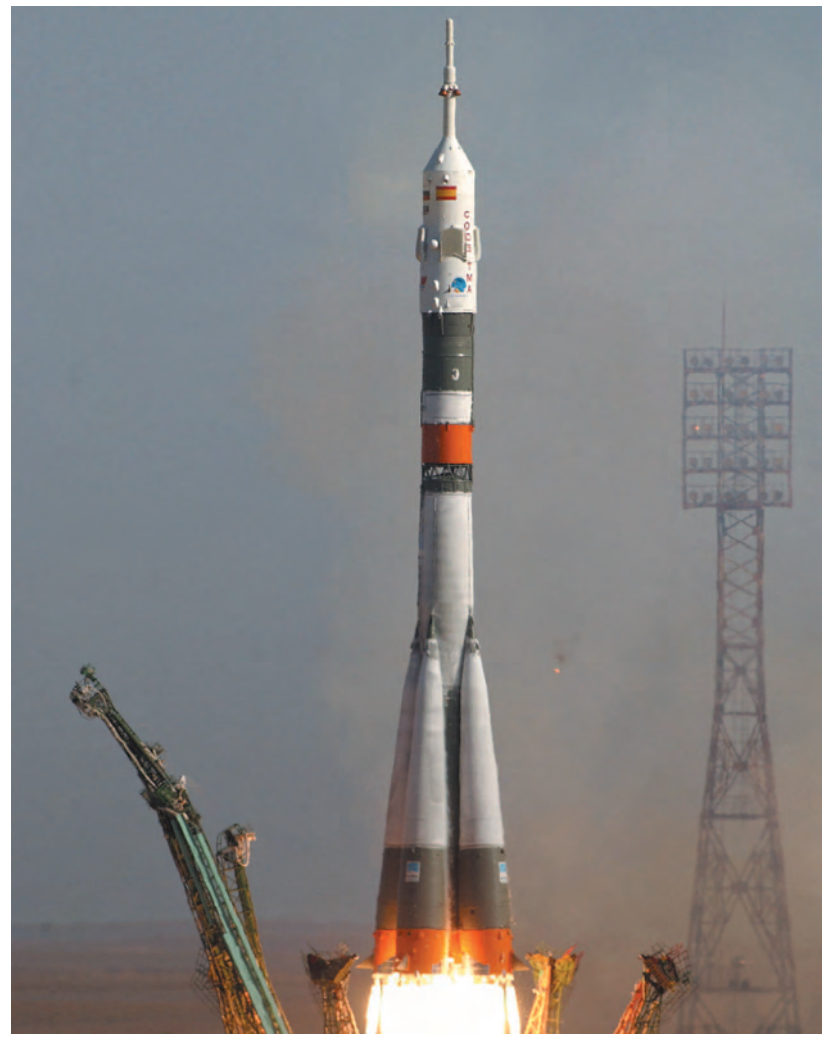
Globalstar has also recently agreed approximately $12 million in contracts with Thales Alenia Space, formerly known as Alcatel Alenia Space, for the upgrade of the company's satellite Operations Control Centre, its backup ground control facility and its satellite control gateways, in anticipation of its new satellite network.

"Currently we are preparing to launch four additional satellites later this year, and our second-generation constellation development continues to be on schedule," said Mr Monroe. "Our satellite contractor Thales Alenia Space has also just submitted a plan, which we are evaluating, that could result in the acceleration of the deliveries of our second-generation satellites by up to four months."

This investment in infrastructure was coupled with improvements to the Globalstar satellite ground station located in Dubbo, Australia, which allowed for an expansion of data coverage to include all of Australia, New Zealand and the surrounding maritime region. The expansion will now allow the company to provide additional satellite asset tracking, tracing and data monitoring services to its customers in the region.

"Installation of this new appliqué continues our expanded presence in the Pacific Rim region, which includes some of the world's fastest growing economies," said Mr Monroe.

"In the last two quarters Globalstar has made a number of compelling simplex data announcements, and we expect to continue to expand our simplex market opportunity through 2007 and beyond."



A Soyuz launch vehicle like this one launched 4 new Globalstar satellites in May, and plans are on track for a second launch later this year. Photo: NASA/ Bill Ingles

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Intelsat goes maritime

Intelsat, one of the world's largest commercial satellite operators, has launched a new maritime specific broadband VSAT service. *Digital Ship* spoke to Jay Yass, Intelsat's vice president of network services, about what the shipping industry can expect from this new satcom offering

Already a big name among the world's commercial satellite operators, Intelsat has changed its approach to the maritime market and launched a new marine-specific C-band VSAT communications service.

The company, through distribution partner Schlumberger, is currently completing the onboard testing phase of this new venture with a number of different vessels, in preparation for a full-scale assault on the market.

The quality of service that Intelsat has to offer, backed by its size and commercial strength, will form the core of what Jay Yass, vice president of network services at Intelsat, thinks will be an appealing offering for the shipping industry.

"Our Global Maritime offering, although a new service in the market, actually incorporates past experience from similar products, something that has helped Intelsat launch the service much stronger as it utilises proven technologies that have been enhanced to increase the general product capabilities," he told us.

"There are 3 major components - the space segment, the teleport infrastructure, and the IP (internet protocol) backbone."

Intelsat has the luxury of being able to use its existing global infrastructure, which includes 52 satellites and 8 teleports, to offer its new service, which it will call Network Broadband Global Maritime.

Basic packages of bi-directional 128 kbps and 256 kbps will initially be on offer through distribution partner Schlumberger, with the possibility to extend upwards to 2048 kbps to the vessel and 512 kbps back to shore.

Schlumberger, whose VSAT (very small aperture terminal) experience to date has been mostly centred on supplying the oil and gas markets rather than shipping, will initially act as the sole distribution partner for the service, though Mr Yass expects this to change as the service becomes established.

"There's a good deal of commonality (between Intelsat and Schlumberger), there will be overlap for Schlumberger with its customers, in oil and gas in particular," he said. "But by Q4 this year, and going into 2008, we should have more distribution partners."

"We have several trials going on at the moment. The trials are working with 128 / 128 (kbps). I believe that's the best place to start, and then people can scale up as they need to. There's not much point starting with 512 (kbps) and looking for ways to fill it, unless you know you need that speed."

"This has really been driven by requests from customers, they asked us if we could offer this kind of service," Mr Yass added. "They wanted an always-on system, with a high QoS (quality of service), and a fixed fee. This is something people have been seeking, ways to avoid the budget variance you can get with pay per minute systems."

Automatic beam switching

One of the areas where Intelsat believes it will really be able to stand out from the rest of the VSAT crowd is in its ability to automatically manage the transfer of a vessel's satellite connection from one satellite spot beam to another, which it can do without the need to change the ship's IP address.

"The Automatic Beam Switching is the big differentiator," said Mr Yass. "I believe that's one of the strongest cards we have to play. As the vessel moves from one beam to another the IP service is maintained, and I think this is very important."

"It has GPS built-in, and senses if the vessel is in an area where two beams are overlapping, monitors the vessel's heading, and chooses the best beam to use. Keeping the IP address maintained across the different beams, I think that's something that's unique to us."

"We also have a global monitoring system that operates via VPN (virtual private network), and it provides real time data and statistics. This helps us to run everything more efficiently, and also to control the vessels' connections as they are running across different beams."

Mr Yass believes that demand for this type of IP based communication is going to increase rapidly in the maritime market, as a conduit to facilitate a greater flow of information throughout shipping organisations, and that this will be a key factor in driving demand for broadband satellite connectivity at sea.

"Even in the general land-based market, the requirements for IP are burgeoning everywhere," he told us.

"The sophistication of vessel and fleet management is becoming greater. And there's a growing emphasis on crew welfare and crew retention services. We've had interest in TV, interest in the internet, in VoIP. Using this data people can change the way they do business, and create new value."

Costs

Intelsat is banking on increasing usage of data services to push the demand for communications, but also feels that it will be able to offer a cost competitive service at usage rates that are not too excessive. Though the market price will be determined by Schlumberger, Intelsat does expect to be 'competitive' with other satellite communication providers.

"We've put together a package that we know we can sell," said Mr Yass. "We are different to the other guys, with the automatic beam switching, but we've also commercially packaged this to be attractive."

"It will be priced on a 'per vessel' basis, you're not buying space segment and splitting it between your fleet, you're buying for each vessel. I think this is another thing that sets us apart."

"We have the capability to use our existing infrastructure to make this affordable now and scalable into the future. We have the opportunity to look into the future, we have room for growth."

Mr Yass also believes that the Intelsat system will be able to sit side by side with Inmarsat's satcom offerings, such as FleetBroadband, due to be released later this year, rather than competing head on for the same customers.

"I'd see us as being complementary, these are different models, they work at different speeds," he said. "What we're targeting is different from Inmarsat, the supertankers, cruise ships, big container ships."

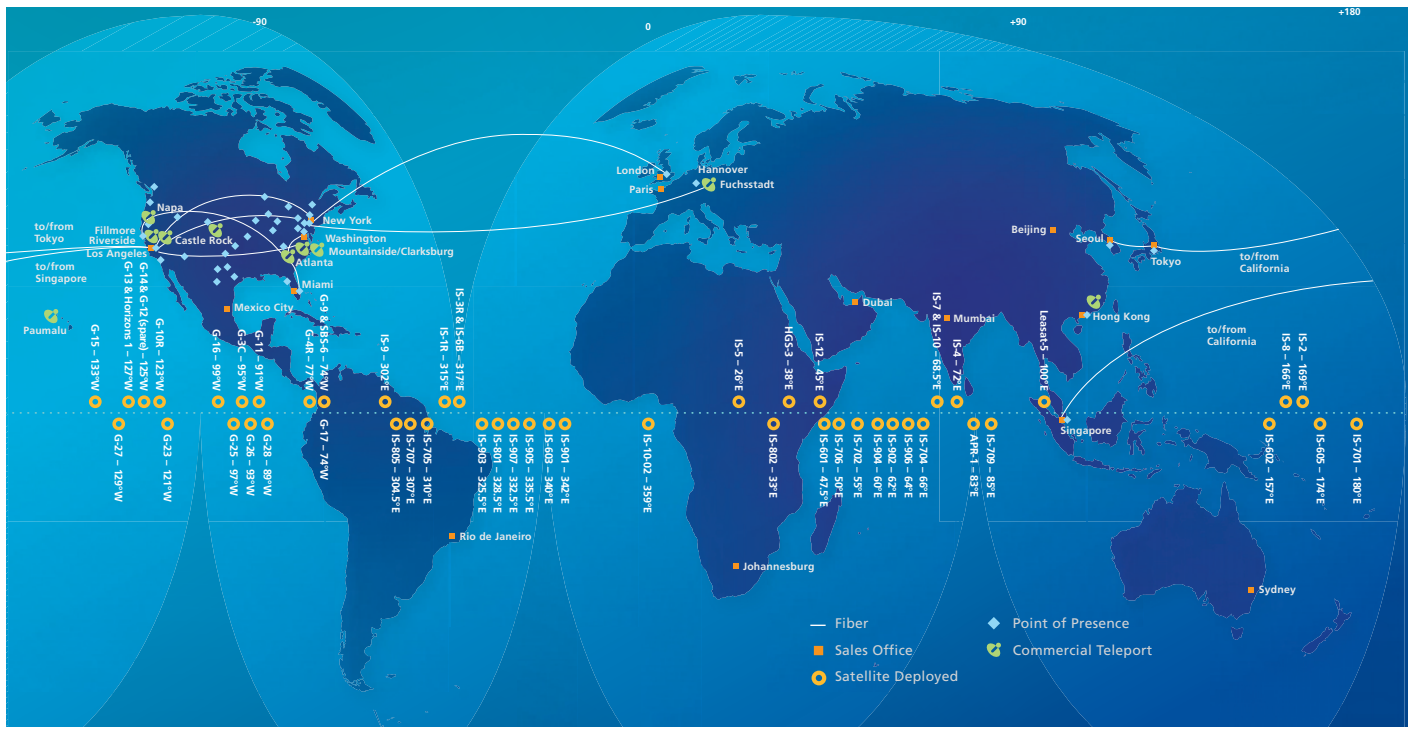
"Attracting vessels that don't need an always-on system, that wouldn't really be right for us. We're looking at larger vessels, a type of niche, where Inmarsat is looking at a broader market."

"However, the crossover points (where you are using enough data to make VSAT cheaper than Inmarsat) are quite low. I believe, with regard to price (compared) to performance, we have an advantage."

This would appear to be a common perception at the moment, with a number of different companies increasing their focus on the maritime VSAT market in the last 12 months, despite the fact that Inmarsat's flagship broadband offering is due for release in November of this year.

These operators seem to be convinced that data needs in the shipping industry will outstrip the level where pay-per-megabyte systems have a cost advantage for a large number of vessels in the near future.

Either way, shipping companies can be hopeful that the increasing emergence of more intense competition will benefit them in the best way possible - lower prices for their essential communications. DS



Intelsat says that its existing network of 52 satellites will ensure a high level of service quality for the maritime market

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PC-based engine training program launched

www.pcmaritime.co.uk

PC Maritime has released a new marine diesel engine diagnostic simulator, the Turbo Diesel 4, a PC-based training program that allows users to train in all aspects of engine operation and maintenance.

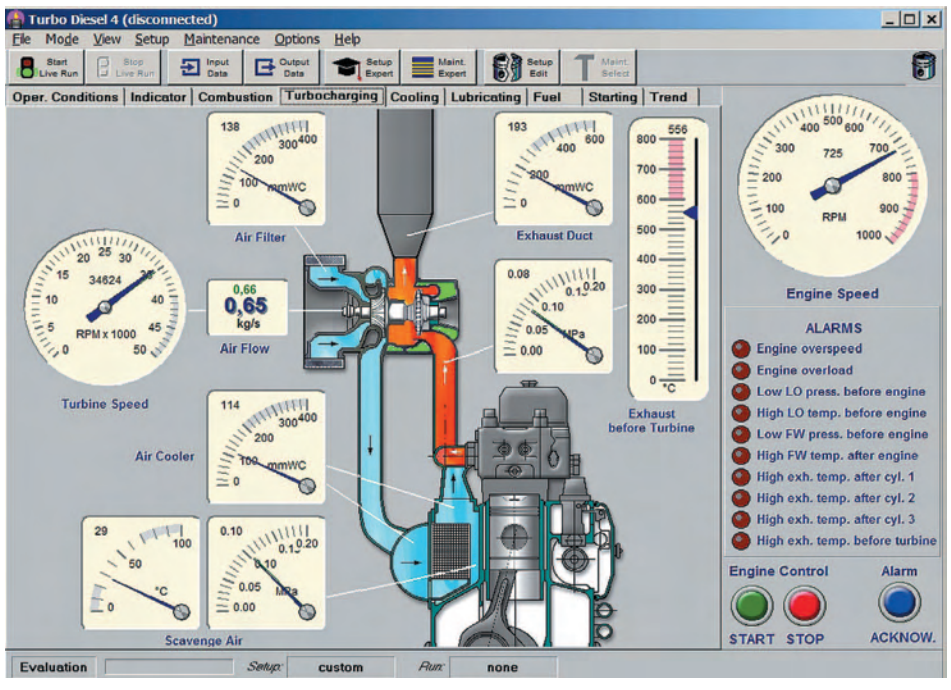
The system includes 15 hours of ready-made lessons in the accompanying manual to assist instructors and help students get the most out of their training. Training options include Evaluation, Live Run or Replay Run modes.

Evaluation mode allows trainees to change the technical state of the engine elements, as well as the engine load and operating conditions, and can be used for testing the relationship between engine operation conditions or technical state and engine operation parameters.

Live Run mode simulates changes in engine technical state, allowing trainees to carry out maintenance and repair and to change engine speed, but not technical state. Live Runs can be saved and then replayed in Replay Run mode for debriefing and evaluation.

Wallem Shipmanagement is among the first shipping companies to agree to implement the program, having already acquired multiple units of Turbo Diesel 4 for the Wallem Training Centres in the Philippines, Ukraine, Russia, Romania and Hong Kong.

Designed for Microsoft Windows operating systems, the program is network-enabled and includes free instructor software for LAN installation. It also comes with two in-built 'experts' to advise students - a Setup Expert that explains the relationship between a change in engine setup and a change in operating parameters, and a Maintenance Expert that indicates necessary maintenance and evaluates what maintenance was necessary but not done.



Test yourself in the operation of marine diesel engines - PC Maritime's computer based simulator

Fincantieri to install MSC simulation software

www.mscsoftware.com

Shipbuilder Fincantieri Cantieri Navali Italiani S.p.A is to adopt SimEnterprise simulation technology by MSC Software across all of its company sites and extended supply chain.

The deal is a result of a joint evaluation programme carried out by the two companies, aimed at rationalising the simulation environment and significantly reducing the time involved in the overall design-to-manufacture process.

Under the new agreement the Fincantieri group will extend its existing simulation capabilities by introducing the multidiscipline solver MD Nastran, the process management solution SimManager, and the simulation process automation environment SimXpert.

"We are confident that by standardising the company's new solutions we will be able to achieve the 50 per cent productivity gains that we are targeting within the group," said Giorgio Bacicchi, head of ship design integration at Fincantieri.

It is anticipated that the new software will be implemented within the next 3 to 6 months.

ShipConstructor Software has launched its next-generation ship design platform, called ShipConstructor 2008, an AutoCAD-based, three-dimensional product modelling and production planning software.

Imtech (parent company of **Radio Holland**) has acquired all of the shares of the Dutch-based maritime software company **Free Technics B.V**. The acquisition price (including earn-out) is based on five times the EBITA and is being paid in cash. In 2006 Free Technics, which employs ten people, realised profits of about Euro 1.5 million, and says its software is installed on hundreds of ships. René van der Bruggen, chairman of the board of Imtech, commented that the move would help Imtech to expand into the sector of smaller ships.

We have acquired a high-tech maritime company and are expanding our position in the segment of smaller ships - René van der Bruggen, chairman of the board of Imtech

Weather software company **Applied Weather Technology (AWT)** reports that it is to move into an expanded new facility this month located in Sunnyvale, California, which will accommodate about one half of AWT's total workforce, including up to 40 meteorological scientists and software engineers. AWT also says that its new version 5.5 of the software system is expected to be released soon.

Videotel Marine International has launched 'Courses on the Web', an online system that aims to provide 24-hour access to its training courses. The courses will retain all of their usual features while offering additional functions such as the ability to view progress and access course updates and information online.

Montreal-based software engineering company **Stelvio Inc.** has signed a ten-year deal to provide its ShipDecision system to Canfornav, a member of the Canadian Forest Navigation Group with a fleet of 30 vessels. The software provides online access to company information and a record of voyage data and documents, and Stelvio says that the system has already processed more than 45 million transactions.

www.shipconstructor.com
www.appliedweather.com
www.imtech.nl
www.videotel.co.uk
www.shipdecision.com

Seatrade installs Quantum ERP software

www.quantum-bso.com

Seatrade Reefer Chartering N.V., which claims to be the world's largest operator of fully refrigerated vessels, is to install a range of software by Quantum Business Solutions (QBS) to assist in its liner and break-bulk operations.

The deal will involve users from all of Seatrade's business and trading areas, incorporating three QBS products - a web based non-vessel operating system (Q-NVO), a contribution management system (Q-CMS), and a unique break bulk system (Q-BBS) for Seatrade's underdeck and non-liner cargo that the companies have constructed through a collaborative development process.

All of the new applications are built on MS .NET technology, and use Oracle 10g databases with web based architecture. The systems are designed to be ERP or ERP enabled, and are claimed to be very effective for cross-application integration and single point data input.

Seatrade is to install three Quantum software applications across its organisation

LNG e-learning programme launched

www.teledatamarine.com

The Malaysian Maritime Academy, also known as Academy Laut Malaysia (ALAM), in partnership with Teledata Marine Solutions, Singapore, has developed an e-Learning training programme for LNG Cargo Operations, aimed at educating officers to effectively manage cargo operations on board advanced LNG ships.

The programme has six modules: LNG Basics; LNG Equipment; LNG Support Systems; LNG Operations; LNG Security; and LNG Commercial, and is web-based so as to be accessible from anywhere in the world at any time.

The programme is hosted on Teledata's Learning Management System (LMS) platform, also known as 'Lighthouse', and includes features such as animation and simulation functions, specialised e-coaches, and a discussion forum.

There is a practice test at the end of each module to monitor progress, with no limitation on the number of attempts allowed for the test. Scheduled tests are conducted by the e-coaches to examine the performance of the learner, while a Final Assessment generates random questions from the question bank, giving different weight to different modules depending on operational requirements.

The system will automatically generate a 'Course Completion Certificate' when the learner scores a minimum of 70 per cent in the Final Assessment.

Solstad Offshore to install onboard stability software

www.autoship.com

Ship modelling software company Autoship Systems Corporation (ASC) reports that it has received an order from Norwegian shipping company Solstad Offshore ASA to install its Autoload onboard stability software on board 10 of its vessels.

Installations will take place onboard vessels *Normand Jarl, Normand Drott, Normand Titan, Normand Trym, Normand Atlantic, Normand Borg, Normand Mjolne, Normand Draupne, Normand Skarven* and *Normand Seven.*

This will complete a total of 33 Autoload vessel installations for Solstad Offshore, from its total fleet of 43 construction service vessels, platform supply vessels and anchor handling tug supply vessels. The company also has 10 vessels currently under construction in Singapore and Norway.

Normand Seven, delivered to Solstad Offshore in July, is the largest offshore construction vessel (OCV) ever built by Ulstein Verft in Norway.

The vessel is 130m long and 28m wide with a bridge at a size of 400m^2. It is equipped with ROV support on each side, a 250 tonne crane with heave compensation and has DP IMO Class III.

For the next 17 months, Normand Seven will install flexible riser and flow line pipes in Brazilian waters on the Petrobras' project 'Roncadore'.

Autoship now claims to have completed over 400 installations of its system for a number of shipping companies, including BP, Swire Pacific, Rolls Royce, Statoil and Teekay Shipping. The software uses a 3D model to simulate current or anticipated loading conditions and enables a user to verify stability, trim, drafts, and structural strength status.

Bay Ferries to install marine purchasing system

www.marinesoftware.co.uk

UK based Marine Software has supplied Bay Ferries with its MPS Marine Purchasing system for Incat hulls 046, 059 and 060, along with motor vessels 'Holiday Island', 'Confederation' and 'Princess of Acadia'.

The company also supplied 'Lite' purchasing systems for 'Wood Island, Yarmouth, Portland, Digby, Saint John and Bar Harbor' terminals ensuring all requisitions can be centrally managed in a single HQ system based in Charlottetown, Prince Edward Island (P.E.I).

Marine Software will provide on-site installation and training for office staff, along with installation on both 'Holiday Island' and 'Confederation' during a trip between Caribou, Nova Scotia and Wood Island, P.E.I.

The company says that it already counts P&O Ferries, Midocean, Stena Line, Tallink, Hornblower Marine, Brooklyn Shipping, CEC Shipmanagement and Northern Marine Management among its customers.

Real-time fuel monitoring at TECO Ocean Shipping

TECO Ocean Shipping recently implemented a real-time fuel monitoring system in an attempt to reduce fuel costs across its fleet. Marc Schwartz, director of engineering, TECO Ocean Shipping; Conor O'Muirgheasa, Nautical Control Solutions; and Peter M. Grotsky, program manager, Alion-JJMA Maritime and Industrial Operations, write about their experiences in implementing the technology

TECO Ocean Shipping (TOS) is the ocean transportation connection in the TECO Transport family of companies, carrying dry bulk commodities domestically between all US deep water ports on the Gulf Coast, East Coast and West Coast of the United States.

The company currently operates eight ocean-going tug-barge units and three ships that range in size from 19,200 to 42,800 deadweight tons (DWT), having a total shipping capacity of approximately 400,000 DWT.

In addition, TECO Ocean Shipping barges are covered and compartmentalised to enable shippers the ability to transport one or more commodities on the same voyage.

As part of the TECO Transport family, TECO Ocean Shipping has access to two sister companies which complete the TECO Transport water transportation network: TECO Bulk Terminal, the largest coal storage and transfer terminal on the Gulf Coast; and TECO Barge Line, an inland river-barge company.

Addressing fuel consumption

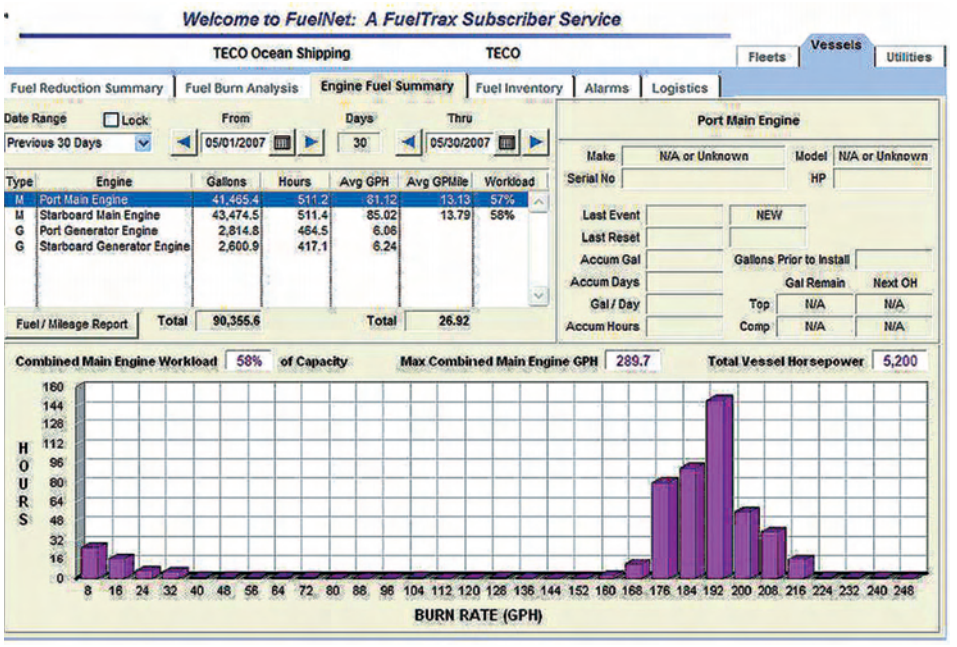
In early 2005, TOS began actively seeking ways to reduce rising fuel costs. Even at that time, and continuing today, the cost of fuel was becoming the company's largest operating expense.

TOS sought technologies for monitoring and reporting fuel consumed, in order to manage and control this increasing expense item. After evaluating several fuel monitoring technologies, the FuelTrax system from Houston-based Nautical Control Solutions (NCS) was selected for a rigorous evaluation.

In July, 2005, the technology was installed on one vessel as part of a structured evaluation program intended to prove the effectiveness of the system on TOS' vessels. The initial application was to simply monitor fuel burn rates, engine performance, and crew operations.

All data during this time period was captured and archived in FuelNet, the FuelTrax web portal and executive dashboard. FuelTrax transmits vessel operations data via satellite to the FuelNet database in Houston, Texas, where it is permanently maintained.

At the conclusion of the first month, TOS operations, maintenance, and engineering staff were able to access and graphically view detailed information on vessel fuel consumption and engine analysis. During the following thirty days, training was done for the crew to utilise the technology most effectively.



TECO has a record of the gallons per hour (GPH) of fuel being consumed by each engine and the entire vessel

Today, the system is installed on six bulk carriers trading between Africa / Mediterranean and the US.

Real-time monitoring

Both the rate of fuel consumption and changes to fuel consumption over time are important indicators of engine and vessel conditions.

As a first step, TOS wanted to assess the fuel usage on its vessels in real time. How much fuel did each Main Engine use, each minute of its voyage? How about the fuel usage of the combined Main Engines and also the Generator Engines?

With FuelTrax, the flow of fuel into each engine is measured real-time, as is the return fuel flow from each engine. The difference is then calculated by the software as the fuel consumption of the engine.

Therefore, on a minute-by-minute basis, TOS has a record of the GPH (gallons per hour) of fuel being consumed by each engine onboard and of the entire vessel.

Different technologies

The calculation of fuel consumption based on precise measurements, by engine, not only enables improved efficiencies, but provides a more accurate indication of engine performance and wear. It also provides a basis for assessing alterative fuel-saving technologies.

The ever-rising cost of fuel has encouraged the development of many technologies to increase operating efficiencies. The challenge in evaluating the effectiveness of these various technologies lies in having accurate engine fuel consumption measurements.

Some of the principal new technologies offering increased fuel savings include, for example, fuel additives, engine modifications, hull conditioning, vessel routing, and vessel design.

Beyond assessing these alternative technologies, accurate fuel measure-

ments can be used to study how various operating modes of the vessel impact fuel consumption. A simple example here is how to evaluate the trim of the vessel andcorrelate trim to fuel consumption in real time.

Because TOS now has a valid, real-time, independent, highly-accurate means of measuring fuel consumed, alternative technologies can be effectively assessed and compared. Through accurate fuel consumption rates and trends vs. time, TOS is able to make much more intelligent decisions on which technologies to employ.

The result has improved TOS operations, and has also reduced operating costs, resulting in a higher return on capital employed.

Optimisation

While under way, vessels experience changes in operating conditions such as currents, loads, wind, wave action, hull condition, trim and prop condition. These conditions represent changes in the forces acting against the vessel, and therefore require variation in the level of work being done by the engines in order to maintain the desired course and speed.

The vessel's fuel consumption rate is a direct indicator of the work being done by its engines to accomplish this desired result. In effect, the changing operating conditions typically result in either changing vessel speed or changing fuel consumption rate.

Because of these changing conditions, optimising fuel usage means that any optimisation function must be based on real time information (to respond to changes as they occur) and continuously adapting to prevailing conditions.

The FuelTrax system uses the fuel consumed by the engines and 'speed-over-ground' as indicators of the forces acting on the vessel in real-time. Optimisation algorithms determine where to set the throttles for optimum fuel efficiency, and advise vessel operations accordingly.

In general, the optimisation routines account for the work done by the engine, vessel acceleration curve and speed over ground. The information used in the optimisation algorithms is updated dynamically as conditions change, typically over several hours.

For the purposes of this article, the FuelTrax Fuel Consumption Curve of a vessel is defined as the relationship between the vessel's speed over ground and its rate of fuel consumption.

There are two distinct points on the Fuel Consumption Curve that represent opportunities for fuel consumption optimisation. The system defines these two points as BestSpeed and BestEconomy.

BestSpeed is the point on the fuel curve at which no substantial additional speed will result from an increase in fuel consumption. BestEconomy is the point on the fuel curve where there is a one-to-one trade off between fuel consumption and speed.

Both the BestSpeed of a vessel and its BestEconomy speed will change as conditions change, and represent two distinct business opportunities for vessel operations.

Schedule permitting, vessel operations can use BestEconomy to realise the most fuel savings over a journey. BestSpeed is employed when a journey must be traversed as quickly as possible.

Business impact

Since the installation TOS has experienced a range of fuel burn reductions across its fleet, and has realised a greater than 10 per cent reduction in fuel burn on individual vessels in specific service conditions, without compromising operations.

TOS sees the system as a solid investment that has exceeded its payback expectations. As with many investments in technology, hard benefits such as fuel savings are easier to identify and measure and, therefore, typically represent the hard dollar amounts used to justify an investment.

Soft benefits, however, are much more difficult to quantify but often are of equal or greater value to multiple functions within a marine operating company such as TOS.

Quantitative (hard) benefits include fuel savings from optimised throttle settings and the improved awareness of fuel inventories and fuel utilisation. Qualitative (soft) benefits include improved management oversight of vessel performance, timely information on vessel logistics, improved planning for engine maintenance, and accurate accounting of fuel utilisation.

TECO's vessel **Peggy Palmer** *is one of six bulk carriers installed with the FuelTrax system*

Value

Historically the marine industry has used a simple principle of engine hours of operation to schedule engine overhauls. Perhaps as valuable as fuel savings, the measure of total fuel consumed by each engine provides additional benefits in assisting operations in determining when engines require overhaul.

Total fuel consumed over time and fuel consumption versus time are both excellent indicators of the health of an engine and vessel. As the ship's hull becomes fouled, or if the propeller is damaged, or as the engine wears with time used, the ship's fuel consumption in terms of tons per kilometre will increase.

Because this information is available on demand through FuelNet (the web dashboard), TOS can extend the utilisation of its vessels by more accurately predicting when engines and propulsion systems must be overhauled.

Shore personnel can visualise the changes in vessel fuel efficiencies, and determine if changes in fuel consumption rates are affecting the ship's performance. This information can then be used to choose the optimum time to carry out antifouling work.

Given the current demand for shipping services, a few additional days of vessel utilisation may actually have greater value than saving ten percent in fuel annually.

The rising cost of fuel has encouraged the introduction of many types of fuel-saving technologies. One of the principal difficulties in assessing the effectiveness of these various types of technologies has been accurately measuring fuel efficiency.

The custody-transfer grade fuel metering devices that come with FuelTrax provide an excellent means of capturing vessel and engine performance to assess 'before vs. after' results and vessel-to-vessel comparisons of alternative or competing fuel-saving technologies.

Just as important, the same detailed information on fuel and vessel efficiencies can also be used to assess differing vessel operating practices and designs.

Having the history of individual vessel efficiencies and performance available on demand it is easy to compare fuel consumption between engines and vessels on the same voyage, or on the same vessel doing the same voyage at a different time.

The level and timeliness of this information enables the sharing and adoption of best practices among vessel operations. Also, variation in the way specific seafarers navigate the vessel may have substantial impact on fuel consumption, which can be analysed and compared.

Conclusions

Over time, captains and crew 'learn' and are more aware of the correlations among throttle settings, speed, and fuel consumption. Through this learning process, the system enables the development and use of 'Best Practices' across a fleet.

Some marine operators have observed that they are realising as much as a 2 per cent fuel savings, simply by raising awareness among vessel operations that the company is monitoring fuel inventories and usage.

In locations where accurately accounting for fuel inventory and reporting discrepancies is a major concern, such 'awareness' can result in an even larger fuel savings.

The convergence of fuel monitoring, satellite communications and the internet is changing the game in marine fuel management.

The confluence of advanced engine-room electronics for fuel monitoring, real-time fuel optimisation algorithms and tank gauging; global satellite communications, and web enabled software over the internet has enabled TECO Ocean Shipping to better manage fuel consumption across the fleet, while reinforcing best practices among vessel operations. DS

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Electronic purchasing at Alfa Laval

As the number of shipping companies using electronic systems to automate parts of their purchasing process increases, suppliers are expected to be able to provide the solutions that their customers require, and integrate with the latest technology. *Digital Ship* spoke to Mats Ottosson, Alfa Laval, about what his company has been doing to improve its e-commerce capabilities

Alfa Laval, a global provider of specialised products and equipment, has been working on increasing the amount of its business that can be handled automatically through electronic purchasing, and Mats Ottosson, head of e-business development, parts and service equipment, says that, while the number of transactions using these systems may still be small, the market is moving in the right direction.

"We still haven't reached 5 per cent of transactions as e-transactions," he told us. "But it has started to ramp up significantly over the last year. Companies like SpecTec, ShipNet, Star Information Systems, and the like (who have developed e-purchasing integration platforms with their software packages) have been making it easier."

"We're on the way, but the customers are the drivers and we need to serve them. If the supplier doesn't support the buyer, and vice versa, it'll never pay off. Both should be able to take the full benefits out of the investments to get a win-win situation."

"The system and the process have to be aligned, and it requires collaboration to get the best out of the system."

Alfa Laval received its first electronic transaction in 2002 after coming on board with electronic purchasing platform Marine Transaction Services (MTS) as a funding partner, and has been trying to increase the level of automation in its purchasing processes ever since, to improve its integration with the total supply chain.

The company successfully closed a full 'electronic loop' for the first time in May of this year, handling a complete transaction with one of its customers, from the original quote requisition through to the invoice, using the electronic process.

"As a supplier it's good to have all of the systems in place, and have a whole view of the supply chain, with everything in line from end to end," said Mr Ottosson. "It's important at that stage that we all share the same language in terms of systems talking to each other."

"It's not just 'plug and play'. (These changes) will push improvements in our systems, but also in our way of thinking. It's not about new technology for the sake of new technology, there has to be a good reason behind it."

"More buyers and suppliers on board will really push things to a critical mass. There are gaps to be closed and improved, but you have to make a start in the right direction towards improving efficiency to generate gains in the value chain."

Same process, but better

The progression involved with changing the purchasing process to incorporate new software and different electronic systems can be awkward for some, in the same way that the advent of any new technology can be uncomfortable for people used to working in a certain way.

But, says Mr Ottosson, it's not a question of creating a completely new method for purchasing, it's about finding tools to do the same job, better.

"Some people may have the idea that this will take away the personal relationship between the buyer and the supplier, but you have to continue to talk with each other so everything comes together, and you can share ideas in order to put mutual and efficient solutions in place," he said.

"Doing things the same way you used to, but in a smarter and more efficient way is the key to realise the savings."

Given the fact that electronic purchasing still only accounts for a small percentage of total purchasing transactions, any electronic or automated system will still need to plug into the traditional purchasing system in some way to be useful.

"The majority of the industry is still using fax as well as beginning the journey with electronic transactions," said Mr Ottosson. "We've tried to make e-business as similar to the existing order process as possible, not compromising anything on our customer service."

Installing these systems is not just a matter of a few people adjusting their working pattern, but also involves a complete revamp of the company's internal processes. Mr Ottosson believes, however, that these changes will lead to improvements throughout the organisation.

"Our internal supply chain now has to be more 'up to speed', since the process is electronic all the way to the customer and back," he said. "We can always do more internally, and we're always trying to make it more efficient. Our standard internal processes get cast in a different light when connected to the external marketplace, helping us to improve."

"As well as meeting our customers' needs, Alfa Laval feels such integrations has helped validate its own infrastructure."

"When the critical mass is there the community as a whole will have to come up to speed. You have to remove a problem rather than just move it along the chain - and then we can collaborate with our customers on how it can work better."

Challenges to overcome

While there has been a steady rise in the numbers using electronic purchasing, and the number of transactions over the networks in the last few years, Mr Ottosson is aware that there are still challenges out there that need to be met for this technology to continue to grow.

"One problem is the kind of 'e-hype' you get, like this will be some magic thing," he said. "And people wonder if they should be a pioneer using a new system."

"But it's happening, and we want to be at the forefront of it. Just using the system doesn't change the way we do business, we'll always be Alfa Laval - this is just another important service in the whole scope."

The issue of integrating the MTS platform with other e-purchasing systems, particularly Danish e-commerce provider ShipServ, has been seen by some in the industry as one of the key issues that will need to be resolved as this type of technology goes forward.

Mr Ottosson says that his experience of integrating across platforms, such as with Star Information Systems, has been very successful, and he strongly believes more can be achieved with other suppliers, though he himself did not refer to ShipServ specifically.

"The big challenge is platform to platform integration, which has proven difficult to resolve so far," he told us. "We're waiting for more inter-traffic solutions similar to the one set up between SeaSupplier and MTS. The customer, the buyer, can only benefit."

Mr Ottosson likened the situation to a mobile phone user that has a contract with one particular phone network being restricted to calling only those with the same provider, saying: "Clearly such limitations slow the development and limit the freedom. It's a hurdle itself."

Whatever solution emerges from the integration debate, Mr Ottosson is confident that e-commerce in the maritime industry has a bright future ahead.

"If the business continues as it has been, critical mass could arrive in two or three years," he said. "When everyone can see the benefits it will grow quite quickly, and further development of solutions for the logistics part, and e-invoices, will also help."

"The challenge is for us to be ready for this, to be able to support it in a good and efficient way, creating value for our customers. If you haven't done your homework at the start, then you can't offer a good service to the customers at the end."

Mr Ottosson hopes that Alfa Laval will be ready with these services when the market demands it, and that everyone can share in the benefits. How great these benefits might be could hinge on how enthusiastically the industry embraces electronic purchasing technology. DS

Transas and the Kenya Ports Authority (KPA) have signed a contract for the supply, installation and commissioning of a VTMS system for the Port of Mombasa, which will be installed in February 2008. The main operator control room will be located inside the brand new 70m high Port Control Tower, with additional equipment installed at Ras Serani Station, Likoni Sector Light, and KPA Headquarters.

Transas reports that it has signed a memorandum of understanding with computer hardware giant **Intel**, to cover software development and optimization for hardware platforms (including processors and mainboard chipsets) used in the full range of Transas navigational and simulation products.

Transas has been awarded a contract to re-fit the Green Reefers ASA fleet with the company's Simplified Voyage Data Recorder (S-VDR). The contract will cover a total order of 23 vessels out of about 40 vessels owned by Green Reefers.

Kongsberg Maritime, via its subsidiary Simrad Spain SL, has completed the delivery of an MNOK 25 electronics system for the newbuild Spanish research vessel, Miguel Oliver, including dynamicic positioning, heading reference, trawl monitoring and echosounder equipment. The 70m Spanish Fishery Ministry owned vessel has recently completed its first fishery research expedition in Hatton Bank.

www.transas.com
www.konsberg.com

EU and US sign GPS / Galileo agreement

The United States and European Union have reached an agreement to jointly adopt and provide an improved design for their respective Global Navigation Satellite System (GNSS) signals. These signals will be implemented on both the Galileo Open Service and the new GPS IIIA civil signal.

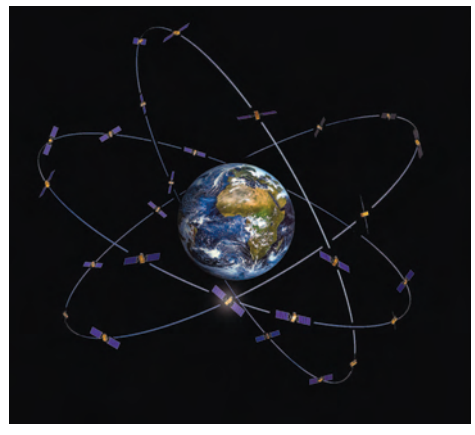
Following on from work that began in 2004 after a cooperative agreement was reached between the two sides, a joint compatibility and interoperability working group says it has overcome the technical challenges involved to design interoperable optimised civil signals that will also protect common security interests.

The resulting GPS L1C signal and Galileo L1F signal will be optimised to use a multiplexed binary offset carrier (MBOC) waveform as a result of the deal. Future navigational receivers using the MBOC signal should be able to track the GPS and/or Galileo signals, resulting in higher accuracy in areas with high levels of noise and interference.

"(This) announcement underscores Europe's commitment to interoperability between Galileo and GPS and to managing the Galileo program in an innovative partnership with the United States," said EC director general Matthias Ruete.

"The international GNSS community, including the US, will have full and transparent access to information on how to access Galileo and GPS services. This should facilitate the rapid acceptance of Galileo in global markets side by side with GPS."

US State Department principal deputy assistant secretary Reno Harnish added, "The US-EU collaboration that produced this innovation and led to its joint adoption reflects the strong working relationships that we have developed on GPS and Galileo. This technical milestone represents the next step in our ongoing commitment to open standards and market-driven innovation that will benefit all users world wide."



The Galileo network will now share a common waveform with American GPS, allowing dual-receivers to access both signals for improved accuracy

The EU has stated that the use of this common waveform will enhance commercial opportunities for the development of new GNSS products and services, a view that has been welcomed by some in the United States.

"The market will probably drive dual-use receivers," said Raymond Clore, a senior advisor on GPS and Galileo in the US State Department.

"We think probably that single GPS-specific, or Galileo-specific receivers, the market will phase out in time. It just doesn't make sense to limit yourself to just one system."

Though EU plans for Galileo have previously been marred by infighting between members of the private consortium initially tasked with its development, and criticism of the decision for taxpayers to foot most of the bill for the new satellites, the EU still aims to have launched 30 satellites by 2010, and to have the system fully operational in 2012.

New satellites planned for an upgrade of the US GPS system are planned for launch by 2013. The GPS network also currently consists of 30 satellites.

Dual-use receivers capable of receiving signals from a combined 60-satellite network would have a much greater degree of accuracy than either system used independently. These potential benefits of a combined network, and improving relationships between the GPS and Galileo camps on either side, would seem to the main motivation behind the proposed agreement.

Norway grants funding for fuel cell development

Eidesvik Offshore ASA, working with Det Norske Veritas (DNV) and a number of other companies, has been granted sponsorship from the Research Council of Norway to develop the first ship to be fuelled up on natural gas.

Norway has already committed to reducing NOx emissions by 30 per cent before 2010, and this project is seen as a significant step towards that objective. If the new technology works as intended it has the potential to cut ships' CO2 emissions by 50 per cent and remove NOx emissions completely.

With the first phase of development completed in 2006, the participants now aim to have the system installed on a ship for testing in 2008, with the launch of a vessel with a completely integrated hybrid fuel cell system scheduled shortly after

"We are positive that we'll get the results we want," said Jan Fredrick Meling, CEO of Eidesvik Offshore.

OSI Geospatial signs $1.3m Coast Guard deal

www.osigeospatial.com

OSI Geospatial has signed contracts valued at approximately $1.3 million to provide navigation systems to the US Coast Guard (USCG).

This includes a fixed contract valued at approximately $900,000 to provide the USCG with ECPINS navigation systems and an option valued at approximately $400,000 to provide a four year extended warranty period.

The systems will be installed on nine ice breaking tugs (seven new installations and two upgrades to existing units) and one shore base facility. OSI currently has a USCG installed base of 34 vessels, while this contract will increase that total to 41 vessels.

Siemens introduces port power system

www.siemens.com/ptd

Siemens Power Transmission and Distribution (PTD) has developed a new ship's power system called 'Siharbor', based on its DC transmission system Siplink, which enables ships berthed in port to be connected to the medium voltage network of the local power supply company and supplied with electricity.

Removing the need to keep diesel generators running, Siemens estimates that use of the system can result in a saving of between 25 and 30 per cent in electricity costs.

Siharbor is designed to be used with any type of vessel and allows any combination of 50-Hz and 60-Hz power supply systems and all voltage levels to be supplied.

The system uses two converters that are connected together by a DC intermediate circuit and connected to a power supply network, so that it can not only feed a separate network from a distribution network but can match power supply systems with different parameters and interconnect them.

In order to use Siharbor both the harbour and the ship must be equipped for the shoreside power supply with a plug-in connection system. After connecting the plug-in connector in the ship, the automation system installed on shore initiates the system start-up procedure. The user dialogue is conducted from the ship, and the ship's power supply is not interrupted.

Siplink is self-synchronising and takes over the power supply within a few minutes. Afterwards, the diesel generators for the on-board supply network can be shut down and the complete on-board network can be supplied in an environmentally friendly way from the shore-based power supply system.

An archiving system records all data about the power transmission that is relevant to the ship. Ship-to-shore communication is via a fibre-optic cable, and the Siplink system continuously checks the parameters of the connection.

A software module is also available that not only records and archives power consumption while the ship is berthed in port, but also forwards the total power consumption of the ship to the shipping company immediately for payment of the electricity costs.

Oakland invests in alternative to cold-ironing

The Port of Oakland in the US has approved funding of $275,000 to test a new emissions reduction technology that could provide an alternative to the traditional 'cold-ironing' method.

The system, which Port officials have dubbed 'mobile shoreside power', uses liquefied natural gas-powered generators to produce electricity for shipboard operations while in port, allowing vessels to turn off their engines, as opposed to the cold-ironing method where a ship turns off its main engines and plugs into a shoreside power grid.

The Port of Oakland estimates that it would cost more than $90 million to modify its infrastructure to implement traditional grid-based cold ironing port-wide, as the Oakland power grid does not have the capacity to handle the increased power usage from docked vessels.

Another significant feature of the project is a concession agreement between the port and its technology partner, Wittmar Engineering and Construction, under which the Port will receive 10 per cent of gross receipts on the liquefied natural gas shoreside mobile power unit under development.

If a test of the new process is successful, it will allow Port of Oakland to present its findings to the California Air Resources Board for consideration as an approved alternative technology in their proposed rule on cold ironing for major California ports, upon which a decision is expected in the autumn.

Port of Oakland is to fund the development of LNG generators to produce electricity for docked vessels

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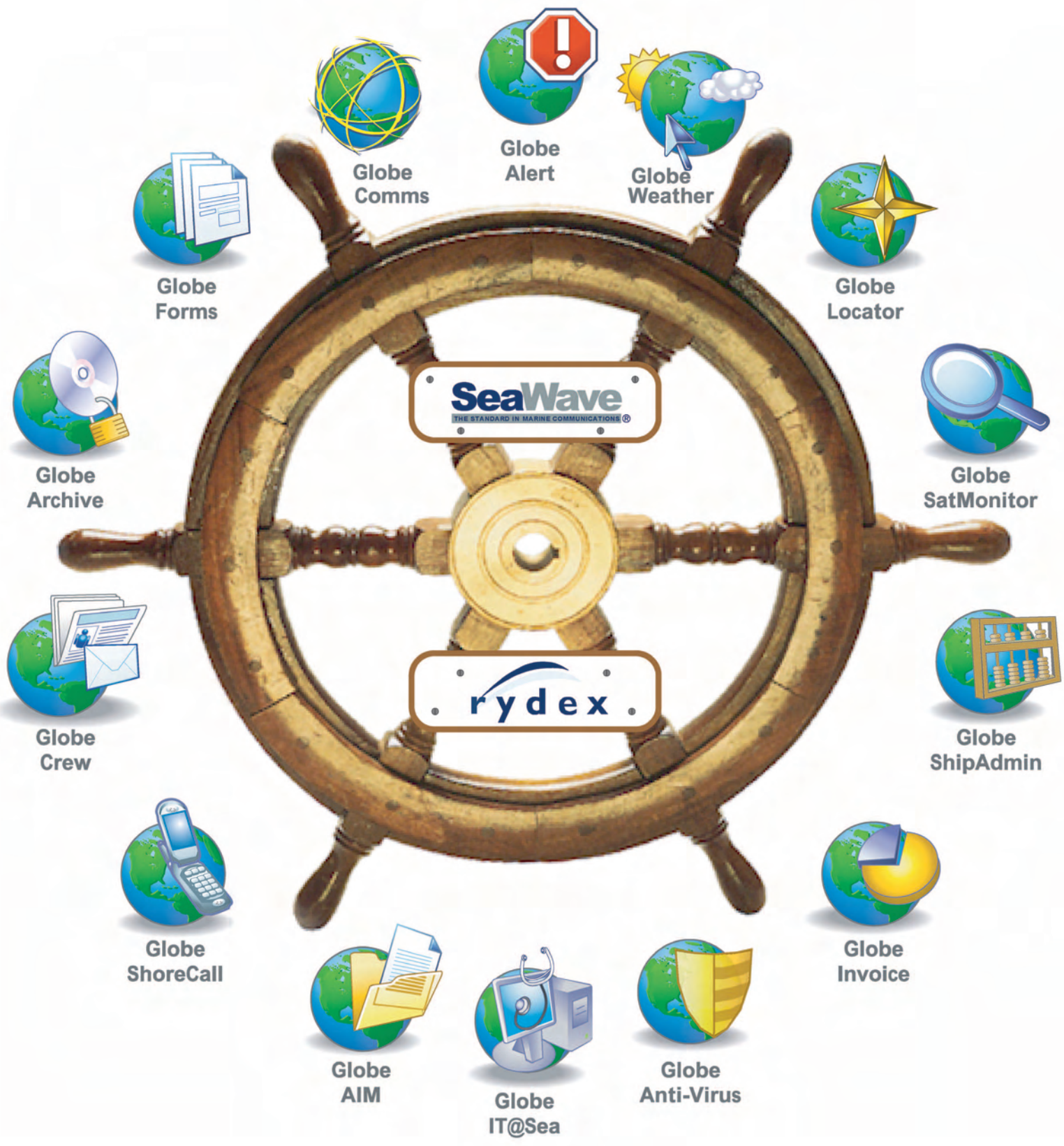

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Cyprus begins work on VTS

www.transas.com

Work has commenced on a coastal Vessel Traffic Management and Information System (VTMIS) for the Republic of Cyprus, under the terms of an agreement signed between the Department of Merchant Shipping in the Ministry of Communications and Works and Russian maritime technology company Transas earlier this year.

The VTMIS will be operated from a main control room inside the Department of Merchant Shipping headquarters in Limassol, with local control rooms to be installed in the Ports of Limassol and Larnaca.

The system will include two high performance coastal surveillance radars at these two ports, with an option for two additional radars at Fanos and Lara, as well as Automatic Identification Systems (AIS), Radio Direction Finders, Ship-Shore (VHF) Communication, and other ancillary equipment.

The Limassol Port radar will be sited on a silo inside the port, with the primary aim of providing coverage of the Limassol port area and approaches, the Moorings, Vassilikos Port and approaches, Episkopi Bay, and the marine area around Cape Dolos (Zyggi area). The Larnaca Port radar will be sited on a new 20 metre mast alongside the existing port control room, and will provide coverage of the Larnaca port area and approaches, the Moorings, and Larnaca Bay.

The Marine and Port Police, and KSED Search and Rescue Authority will be able to access the system to assist in their operations, with operator displays providing information about vessels operating in Cypriot territorial waters at distances up to 100 miles from the coast.

The completed system is scheduled to be officially handed over to the Department of Merchant Shipping early in 2008, and is being funded by the European Regional Development Fund.

Lloyd's MIU launches new AIS information services

www.lloydsmiu.com

Lloyd's MIU has launched AIS Lite and AIS Free, two new services aimed at providing information from what it calls "the largest AIS network in the world" to interested parties around the globe.

With approximately 418 AIS receivers deployed across 100 countries AIS Lite will offer live coverage of over 6,900 ports and terminals. Publishing over a billion AIS positions per month, from 60,000 vessels, the service hopes to provide a live window on the world's trading fleet.

Access to the AIS Lite system, which features an intuitive interface and interactive viewing options, is priced at £650 (approximately $1,290).

The AIS Free service will provide a more limited service, but with free access for clients who are happy with a smaller number of ports and time-delayed data.

"We are the only company that receives movements from every port in the world via the Lloyd's Agency Network, and our AIS data adds an additional movements source to our movements collection," said Julio Espin, managing director of Lloyd's MIU.

"Our new AIS services complement our main AIS Global service for customers that want all our movements data."

Users can register for AIS Free or AIS Lite by visiting www.lloydsmiu.com/ais.

Peter Döhle Schiffahrt signs Sperry deal

www.sperrymarine.northropgrumman.com

Peter Döhle Schiffahrt, the Hamburg-based fleet operator, has signed a new contract with Sperry Marine to cover all shipboard service, support and maintenance for bridge navigation and communication electronics aboard its fleet.

The service program will initially cover more than 100 of Peter Döhle's existing ships and will extend to newbuilds as they come out of warranty.

Founded in 1956, Peter Döhle Schiffahrt operates a diversified fleet of nearly 200 vessels, consisting mainly of container vessels, coasters and bulk carriers up to Panamax size.

Sperry Marine will perform onboard service for the Peter Döhle ships through its network of approximately 200 service locations in the world's major seaports, and will also offer a web-based service program to increase the speed an efficiency of necessary work.

Water resistant PC released

www.trident-uk.co.uk

A rain and splash resistant PC for harsh environments has been introduced by UK company Trident, housed in a compact casing that provides protection against demanding conditions on seagoing vessels.

The MMB Mobile PC is powered by a cool running VIA C7 1 GHz processor, eliminating the need for fans and vents, and is sealed to IP65 standards on all but one side, where the connections are placed. An optional 1 inch skirt for further protection is also available.

The overall dimensions of the PC are 204mm x 203mm x 62mm. It weighs 2400g and has an operating temperature range between 0 and 45 degrees C.

The water resistant PC can be supplied with Microsoft Windows software.

Work in soggy conditions with this water resistant PC

US to begin 100% container scanning

The US Senate and House of Representatives have voted to approve a new bill which calls for 100 per cent scanning of maritime cargo, before it is loaded onto vessels at foreign ports, to be required within the next five years. The bill was signed by President George W Bush on August 3, and will now be implemented as law.

The specifics of the bill include the introduction of increasing annual benchmarks of the percentage of cargo screened, and an analysis of the technology and extra personnel that will be required to reach the goal of scanning all US-bound containers.

Critics of these requirements have stated that the move will damage the United States' economy by introducing delays in the supply chain, with the US Chamber of Commerce going so far as to write to the House, stating its belief that the measures "would have a crippling effect on global trade without significantly improving security."

Others have suggested that possible retaliatory moves by other states in response to US action could slow up global trade even further, with serious consequences.

Supporters of the bill have suggested, however, that the incorporation of a five-year incremental adoption process will allow the industry to adapt to the requirements and install the necessary technology without too much disruption. The Department of Homeland Security has also been granted the power to extend this deadline by a further two years if it is deemed necessary.

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Maximising benefit from navigation technology

Improving technology in navigation, like ECDIS, AIS, and Integrated Bridge Systems, can improve safety onboard modern vessels - but only with adequate training and procedures to make sure they are utilised correctly, writes Gustaf Gronberg, Fleet Captain, SVP Marine Operations, Star Cruises Malaysia

Utilisation of advanced navigational technologies originated in Scandinavia-owned large cruise ferries operating between Finland and Sweden in the early 1980's. The route incorporates 12 hours of navigation in one of the most difficult areas in the world and is made even more difficult by adverse weather and ice conditions.

Today, in addition to the cruise and ferry industries, advanced technologies are also found in other sectors of the shipping industry. More and more companies understand the benefits to safety by the proper application of new technologies on the bridge.

The recent implementation of Electronic Chart Display and Information Systems (ECDIS) and the Automatic Identification System (AIS) has the potential to reduce the stress level on the bridge as it is possible for the OOW (officers on watch) to have a better appreciation of both the position of the ship and the surrounding traffic.

This is particularly true in congested waters locations such as the Singapore Strait, Hong Kong and the English Channel. ECDIS and AIS free the bridge team to pay more attention to collision avoidance.

But with the new technology also comes the responsibility for shipowners to ensure proper training in the functionality and limitations of the equipment. Port Authorities have a similar responsibility to ensure that Pilots are up-to-date with the latest technology and trained in its usage.

Training is an area that needs continuous improvement. New technology alone will not improve safety. Training has a crucial role in getting the maximum benefit from new technology.

Lacking standardisation

The lack of standardisation of equipment is one of the shipping industry's dilemmas.

Today there are many different suppliers of Voyage Data Recorders (VDRs) but without standardisation the industry cannot share the benefits of analysing near misses and accidents.

Just as in the airline industry maybe it is time that IMO consider type rating of integrated navigational systems.

The introduction of AIS and ECDIS are a very good example of present day problems where a supplier comes on board, installs the equipment and provides a few hours of "training" for the officers. This is nowhere near sufficient. For example, what about the relieving officers?

Also, lack of proper training can result in the use of incorrect chart datum, leading in turn to the display of wrong information and increased risk of accidents. Inevitably accidents will occur if training issues are not properly understood and addressed.

Some sections of the industry are on the right track, and responsible cruise and ferry companies have adopted risk mitigation approaches such as the Pilot - Co-pilot system, closed loop communication, and Standard Operational Procedures (SOP's), which are well established on board and in simulator based training programs.

The Pilot - Co-pilot System of watchkeeping greatly increases the possibility of detecting both human and equipment errors. This acknowledges that even the most professional person is capable of making the worst mistake, and that a completely error free bridge environment belongs to the realms of fantasy.

These approaches are copied from the airline industry which has a similar profile with regard to responsibility for passengers and crew. But there is still much to learn from this industry with its dual human factors and technological approach

'New technology alone will not improve safety' - Capt Gustaf Gronberg, Star Cruises

'The lack of standardisation of equipment is one of the shipping industry's dilemmas'

- Capt Gustaf Gronberg, Star Cruises

The Pilot - Co-Pilot system greatly increases the possibility of detecting errors

to safety.

There are good reasons to respect the quality and integrity of an approach that is used in an environment where most failures (human or technical) are very likely to lead to sudden and total destruction of the craft.

Involve the people on board

When installing new technology in a new building or a retrofit, the shipowner should work hand-in-hand with the yard and supplier to ensure a layout of the bridge that enhances and encourages the safe use of the equipment.

All monitoring and operational equipment should be located where it eliminates unnecessary moves to reach a switch, view a monitor, and so on. The shipowner should endeavour to make the bridge as close to an ideal workplace as possible.

The best way to ensure this is to involve the bridge personnel in the selection and positioning of equipment.

During recent years major suppliers of Integrated Bridge Systems have welcomed input from owners. These suppliers also tend to take a greater responsibility for the integration of the various pieces of equipment.

Know how to use the back-up system

Analysis shows that nearly all navigational accidents such as collisions and grounding are caused by human error, i.e. the people operating the equipment. Modern ships' bridges are fitted with back-up systems for most of the critical operations like thrusters, steering, propulsion, GPS, radar, etc.

It is not accepted anymore that failure of one piece of equipment should lead to an accident.

People on the bridge must be trained to handle the situation when there is a failure. This was one of the reasons why Star Cruises became the first shipping company to design, own and operate a full mission bridge simulation with an Integrated Bridge System.

It is a unique training tool where emphasis has been placed on realistic simulation. The simulator bridges are replicas of those on the ships and also incorporate similar navigational instruments.

This enables officers to develop high order 'reversionary skills' in the use of back-up systems and strategies. Being able to practice reversion to back-up systems and a wide range of equipment malfunctions opens up a new dimension in navigational training.

Benefits from training in the recognition, detection and consequences of failure modes of the equipment have been acknowledged in the aviation sector for many years, and similar training is now given in the shipping industry.

High Tech Equipment and Pilots

The purpose of taking a pilot must be to strengthen the existing bridge team. This can only be achieved if the pilot integrates with the bridge team and each bridge team member continues to be involved to the same extent as prior to the boarding of the pilot.

To completely hand over the con to a pilot unfamiliar with the ship reduces standards of risk management to an unacceptable level, by making the operation susceptible to a 'one person error' accident. It also places the pilot in a difficult situation and defeats the very purpose of having a pilot on board.

In terms of operational safety, it is critical that the working relationship between the pilot and bridge team is managed properly.

This is receiving some attention in the shipping industry at large but there are some special problems in this regard that need to be addressed. Many modern ships have advanced integrated navigation systems that remain unused during pilotage, because many pilots lack the familiarity, technical knowledge and skills to use the equipment.

With no accepted standards for training or technical specifications of the equipment, Port Authorities are sceptical about the claims of the ship, and generally insist on the pilot being allowed to conduct the pilotage using traditional techniques.

This is a very unsatisfactory situation, as it defeats the purpose of having the equipment, reduces safety margins, and is a potential cause of conflict between the pilot and the bridge team.

New Technology and Pilotage

Star Cruises ships are equipped with advanced integrated bridges, voyage data recorders and officers trained to a very high level in both BRM and technical skills, including precision navigation. These skills are checked and validated on a continuous basis by examining and reviewing the data from the voyage data recorder.

The use of the above data to develop effective and realistic simulator training exercises, and amend and refine passage plans and procedures, effectively 'close loops' this system.

Using such a system creates a problem with regard to operating in compulsory pilotage schemes in which the 'con' of the vessel is required to be handed over to the pilot. If Star Cruises agreed to this mode the advanced technology for enabling precision navigation would not be used and BRM unlikely to be practised, as most pilots have not done the training.

This would seriously compromise the safety system developed with so much effort and care and dilute risk management to an unacceptable level.

Some ports are working towards developing and implementing a safety management system for pilotage. This implies a systematic approach and should improve the coordination between the pilot and the ship. Star Cruises welcomes this approach, as at present the pilot's approach is individualistic and the Star Cruises approach is systematic.

In most ports the scheduling of Pilots means that 'the next in turn' will get the job, regardless of whether it is a passenger ship with highly sophisticated equipment and a safety management system in place, or a cargo ship. With this approach, the ship's officers meet new pilots all the time.

In this situation pilots will have difficulty in developing the level of understanding of the ship's systems required to make a proper and effective contribution to safe navigation.

The ideal is to have a smaller group of dedicated pilots specially trained to handle the large passenger ships as the foundation for the best possible team work between ship's officers and pilots.

Only sensible way to go

The installation and usage of Integrated Bridge Systems, AIS and ECDIS is the only sensible way to go as it enables officers to get a better understanding of the situation and results in reduced stress on the bridge and improved safety.

But without well thought out training programs on the use of the equipment for officers and pilots there is a risk that integrated navigation systems will remain unused, thereby defeating the purpose of the investment by the shipping company.

It must be clearly understood that the consequence of inadequate training is potentially incorrect usage of the equipment and the resulting reduction in safety.

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Creating an e-navigation future

In the first part of a two part discussion on the development of an e-navigation strategy at the IMO, David Patraiko, director of projects for the Nautical Institute and a member of the e-navigation sub-committee at NAV 53, speaks to *Digital Ship* about how this concept has developed, and some of the issues he believes need to be addressed before the full safety benefits of systems like ECDIS can be realised

The use of existing and emerging maritime technologies was at the forefront of the agenda during the IMO's NAV 53 committee meetings at the end of July 2007, with proposals to make the carriage of ECDIS (electronic display information systems) a mandatory requirement and the development of a comprehensive strategy relating to electronic navigation systems two of the major issues facing the regulators.

While the issue of mandatory ECDIS has remained on the back burner, with the only decision made being an agreement to pursue further discussions next year, work on developing a consensus on an e-navigation strategy has made some progress, according to David Patraiko, director of projects at the Nautical Institute.

"E-navigation is an IMO initiative supposed to harmonise the integration of all of these electronic navigation systems, and is supposed to be user-needs led," he told us. "Obviously there's a big need to get the mariners viewpoint in the design stage, so as a major representer of mariners we've been asked to be involved."

"Over the years we've done a lot of work with IBS (integrated bridge systems) and so on, we've run a number of conferences on IBS and the human element. We've spent a lot of time looking at how mariners do their job using the new technology that's coming along."

"Their role is changing as the technology changes, but there aren't really a lot of people dedicated to looking at how that role changes. The new tools are wonderful and can really improve performance, but you have to be aware that they are changing the job, and therefore the training and the procedures for how you use it have to change as well."

Changes in the type of technology available, and the ways that this technology interacts with the user and other pieces of equipment, will obviously have a very real effect on the work of the seafarer. Making sure that the needs of crews are not excluded from the e-navigation deliberations is of most importance to Mr Patraiko.

"When we heard that the IMO was looking to start harmonising all of these systems, we knew we had to get involved at the design stage to try and get the mariners needs in that picture," he said.

"They need to have good, reliable systems that they can depend on, to have the training and procedures in place that support them, to have better communication with shore authorities, and the ability to interface well with the system, not just in terms of ergonomics but also having tools that engage them and support that."

"If you assume that, at least in the near future, we are still going to have mariners on board ships, then you have to say 'what's their role?'. At the moment we have to look at where the balance is between the things that the machines do very well and the humans do very well. We need to get that balance right."

Technology and users

The idea of creating this balance between emerging technologies and the crews that use them is where the strategy for e-navigation will become most important. Technological development will continue as vendors look to bring new products to the market, but ensuring that these advances create an environment where the seafarer is able to work to the optimal level is a matter that will require planning.

"E-navigation is a concept, you'll never really be able to hold up a piece of equipment and say 'this is e-navigation'," said Mr Patraiko. "You may say that this piece of equipment has been developed to meet e-navigation criteria, but e-navigation itself is a way of thinking."

"Hopefully, if we get it right, the development of e-navigation will mean that it will be able to continue for many years to come, constantly looking at user needs, available technology, and then balancing costs and benefits and always keeping harmonisation in mind."

"Because of the enormity of scope in how people think of e-navigation, the people who tend to be at the forefront of development are tending to think in terms of separate systems rather than a whole concept," he added. "One of the dangers when you talk about technology is that it becomes technology-led - 'we're doing this because we can'."

"At NAV 53 there was overwhelming support saying that they didn't want to hear technologies mentioned, they only wanted to hear about the user needs. The outcome from NAV 53 has been very specific, and told us we need a strategic vision based on the user needs. That's where we are at the moment, we're doing a lot of work on defining the user needs."

Fulfilling the needs of the user, in Mr Patraiko's mind, includes a continued focus on developing the seafaring skills that the industry depended upon before electronic systems became commonplace, to supplement the new options available with these technologies rather than replacing them altogether.

"Nobody wants to get rid of the traditional skills, and there are systems that are being proposed that will actively use some of the traditional methods (such as the monitoring of visual and radar bearings), but enhanced for electronic integration," he said. "Those might be options in the future."

"E-navigation is a big umbrella, it's going to cover all sorts of things like communication, radars, and so on. At the moment the industry is looking at implementing ECDIS, we've got a new radar standard coming out, there's a lot of work being done with IBS and INS systems. The aim of e-navigation will ultimately be to harmonise all of this."

"It is envisioned that once e-navigation is defined, and we have a strategic vision, then we will see all of these different pieces of equipment being brought in under the e-navigation strategy."

"The technology is great if it works, but the mariner's role has to be re-assessed so that he/she remains engaged in the process, remains motivated to stand a good watch, and remains aware of his duties and how to do them. If things are starting to develop in the wrong way, the mind is a fantastic tool for picking those things up. Let the computer compare the electronic data, but let the human stay focused on the situational awareness."

ECDIS

ECDIS, a technology expected to fall under the e-navigation concept, has, in particular, drawn a lot of recent attention. Proposals from Denmark, Finland, Norway, Sweden and Japan have recommended to IMO to make the system a mandatory carriage requirement, and studies from DNV (Det Norske Veritas) have suggested that the use of this technology can cut groundings by more than one third.

Mr Patraiko is among those who believe that these systems are an important and valuable tool, but cautions that a mandatory requirement by itself may not improve safety if training and the seafarers' overall working environment are not taken into account.

"With technology like ECDIS you change the task of navigation; rather than the watchstander running around the bridge taking visual bearings, radar ranges, GPS readouts, and going back and forth and plotting those positions on the chart, they now just look at the electronic chart," he said.

"If you're not careful you can change

from the role of an active navigator running around position fixing, to a passive navigator, or a monitor of the navigation system."

"It would be very easy for a watchstander to become complacent and to become disengaged with that process. However, there are a lot of benefits of using an electronic chart system, by taking advantage of their real-time display you can then focus more of your attention on what's happening outside the windows, and make better decisions because you're not distracted by the running around and spending a lot of time back in the chart room manually plotting position."

"This is something that few people are looking at the moment, and unfortunately a lot of the officer of the watch training is still traditional training of thirty years ago, not taking into account the changing role due to evolving technology."

"We have to redefine the role of the mariner. If the standard is going to be ECDIS, so that every ship is going to have an electronic display with real-time position fixing, and the watchstander won't be running around manually plotting, then his role will have to change. We'll have to develop techniques for engaging the mariner. Electronic systems may be 99.9 per cent accurate, but how do you as an individual stay situationally aware, and capable of intervening without getting bored or demotivated?"

Mr Patraiko does concede that training methods in the use of newly developed navigation equipment are changing for the better, but still feels that more importance needs to be placed on students developing their role as a navigator rather than just learning how to operate the machinery.

"Whenever I do presentations I always use the same slide that shows a three legged stool," he explained. "I'm very convinced that whenever you look at technology you have to look at it as one leg of that stool, where the other two legs are procedures and training. If you ever have one of those missing the whole thing's going to collapse."

"Technologies, such as an electronic chart system, will require procedures for best use, that are taught, captured within a vessel's safety management system and reinforced by the Master. Then there's the training, and it's not just the training in what we call 'knobology', how to get the menu systems to work - at the end of the day it's about how you make good decisions based on that."

"One of the challenges we have is that the IMO model course for ECDIS training can be as little as three days," added Mr Patraiko, by way of example.

"If you take someone who has never used an electronic chart before and give them three days training, how much of that is going to be conceptual training to make better decisions? A lot of it's going to be just the 'knobology', this is how you load up a chart, this is how you manipulate the menu system."

"It's all about trying to get that balance right. Which leg of the three-legged stool is most important; the technology, the people, or the procedures? The answer is: 'the one or ones that are missing'."

The human element

Mr Patraiko says that the Nautical Institute's own research has pointed to mistakes by crews onboard vessels as a major contributing factor in a large number of accidents. While ECDIS may be providing real time information and improving the options open to the mariner, he still believes that this is the key point that needs to be addressed if safety levels are to be significantly improved.

"ECDIS has the potential to improve safety, but the training and procedures for its use need to be very well established," he said.

"We just produced some research, which we published in the NI journal Seaways in July (2007), which looked at incidents of collisions and groundings over the last 10 years that you could say were human element incidents. In something like 50 to 70 per cent of cases it was found that one or both vessels didn't even see each other until it was too late."

"It really just comes down to very poor watchstanding, regardless of the level of equipment on board. There were very few incidents where people ran aground or had collisions because their equipment just wasn't up to date. And there was an estimated total of less than one or two per cent of cases where the charting detail wasn't good enough."

"These were just bad decisions by people who took their eye off the ball. Is ECDIS going to change that? With ECDIS, the training and the procedures need to be there, and people have to be competent using them, and then they will improve safety."

When asked about the importance of ENC coverage in the argument for mandatory ECDIS, Mr Patraiko replied: "It is very easy to point to the lack of ENC coverage as an issue because you can measure it, that's a nuts and bolts issue and there are tools and process that will help to sort that out. The soft issues, such as the engagement of mariners, you can't point to that and say 'the mariners aren't engaged, and until we get them engaged we aren't going to do this'. It's only through research where you can look back and say 'actually, this is a problem'. "

One area that Mr Patraiko points to as a potentially confusing situation for modern navigators is distinguishing between electronic charting systems (ECS) that primarily use privately produced electronic chart data that is not permitted to be used for navigation (according to SOLAS), and an ECDIS displaying official electronic charts, which are legally approved to be used for navigation.

"ECDIS is very specific, it's specific technology and requires that the systems be type approved, that the chart data be official, and that the installation be approved by the flag administration," he said.

ECDIS has the potential to improve safety, if paired with training and procedures - David Patraiko, Nautical Institute

"It's very specific, and that's why there's such a small percentage of ships that have it. ECS is everything that isn't ECDIS, and I've heard statistics of 60 per cent of SOLAS class vessels having some sort of electronic chart systems."

"I've gone up onto numerous bridges to find a big electronic chart hardware system in the middle of the conning station, and some even say 'ECDIS' on them, because it is a type-approved ECDIS unit. However, on closer inspection you realise that it's using unofficial chart data, which may be very functional, seamless and is easy to use - but is not approved for navigation under SOLAS Chapter V. You cannot use that system to navigate."

"Is there any way of letting the mariner know this? Some poor mariner walks up on to the bridge of a ship, sees this enormous unit mounted into his conning display, it says ECDIS on it - and he's supposed to understand intuitively that it's not supposed to be used for navigation? This really bothers me."

"Technically there are ways of identifying that a system is not approved for navigation, but they're difficult to find, and change with different manufacturers. This is something that we need to redress."

One of the primary aims of e-navigation will be to prevent situations such as this developing in the future and to ensure that navigation systems will be designed with harmonised integration in mind, therefore creating a working environment where seafarers are more effective and can make better decisions. Mr Patraiko is hoping that such changes in the shipboard environment will be possible, and that they can create a substantial improvement in the pursuit of zero accidents. DS

The Nautical Institute's research paper on collisions and groundings, first published in Seaways, can be found at www.thedigitalship.com/seaways.pdf. Seaways is the professional journal of the Nautical Institute and is free to members or available through subscription. For more information visit : www.nautinst.org/Seaways/index.htm

The case for ECDIS

Despite murmurings of possible movement in the area of a mandatory carriage requirement for ECDIS, the IMO's NAV 53 meetings ended without any resolution on its future direction. Dr Andy Norris looks at what's next for this navigation technology

The international debate on the compulsory carriage of ECDIS (electronic chart display information systems) for certain types of ships is far from resolution. Despite expectations, the July meeting of the IMO Subcommittee on Navigation (NAV 53) in London ended without consensus on the way forward.

Maybe the biggest problem in getting agreement is that the safety and environmental benefits are smaller than some of the other legislation that has enthused IMO. Therefore, perhaps many think there is no pressing need to come to an early agreement.

An argument often repeated by those who appear to be totally against the introduction of carriage requirements is that paper charts are safe, as evidenced by their successful use over many years, and so why change anything?

Those backing compulsory carriage stand behind the various studies that have been submitted to IMO showing that there will be useful improvements to safety and environmental protection. Furthermore, at a macro-economic level, the studies indicate that it will be a cost-effective measure, over a wide range of vessels.

While it is certain that the proper use of paper charts results in safe navigation, ECDIS has a safety edge, alerting users to charted dangers, which may have been missed because of human error.

A new factor, now emerging from recent studies undertaken in Russia, is that the use of ECDIS also appears to reduce stress levels. Reduced stress would presumably lower the probability of human error in all work undertaken on the bridge, and not just chart-centred activities.

Problem areas

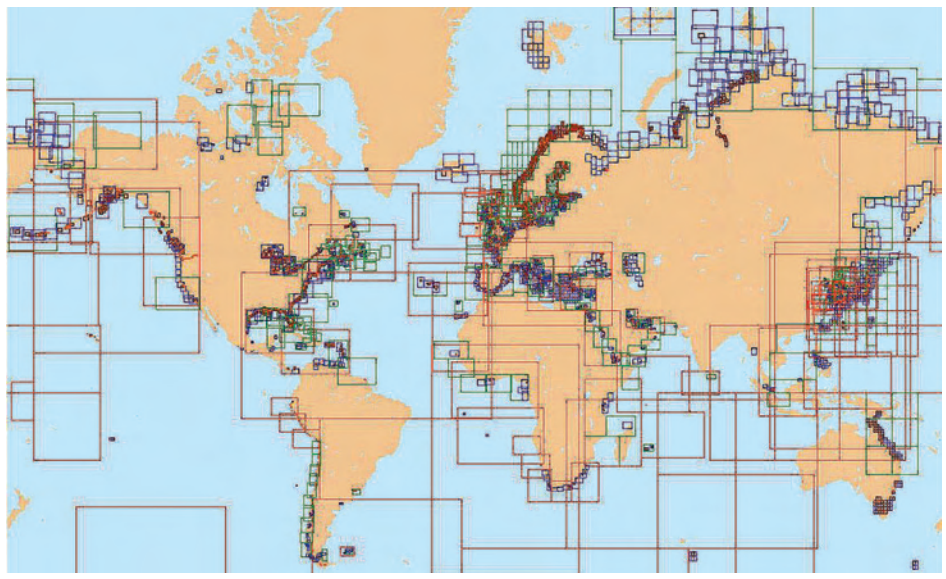
From its earliest days there was considerable opposition against compulsory carriage because of concerns of its costs, in terms of both equipment procurement and data. Additionally, some administrations may be concerned about the costs and burden of inspection and approval.

Cost issues did not really rise to the surface at NAV 53 but they are likely to remain an issue. Since the economic benefits of ECDIS are at the macro level it does not mean that those responsible for implementation costs will necessarily reap an equivalent saving.

An overriding argument against compulsory carriage has been the lack of ENC (electronic navigational chart) data, although the situation has been improving over the last few years. The IHO informed NAV that 6,969 ENC cells were available for use by mariners in April 2007, an increase of nearly 900 in 12 months.

It is difficult to interpret the raw IHO figures. The results of a study undertaken by DNV, sponsored by Denmark, Finland, Norway and Sweden, concluded that, when taking into account the distribution density of the world's shipping routes, 82 per cent of the coastal operations of bulkers are covered by presently available ENCs. Even higher percentages apply to tankers, containers and general cargo ships.

Although not formally presented to IMO, other studies have suggested somewhat lower figures (65 - 70 per cent).



There has been an increase of nearly 900 ENCs in 12 months

However, the disagreement is probably because different criteria have been used for defining adequate coverage.

Studies are estimating that by 2010 there will be around 85 per cent coverage. This figure was also mentioned at NAV 53 by a representative of the Russian Federation.

There was no meaningful debate on what percentage coverage is needed to allow the imposition of carriage requirements, or how the percentage should be measured.

Another aspect is that there are concerns as to whether ECDIS technology is proven or whether the present standards for ECDIS equipment and ENCs are sufficiently rigorous.

Those in Favour

The main point being made at NAV 53 by those in favour of carriage requirements was on the safety advantages that are inherent in the use of ECDIS. By using Formal Safety Assessment procedures DNV estimated that grounding frequency reductions of up to 38 per cent would be made for the various routes studied.

The study also calculated that the net cost of averting an accident was negative, indicating the cost effectiveness of compulsory carriage.

Studies undertaken in Japan and submitted to NAV 52 last year had concurred with the FSAs of earlier phases of the DNV study.

The apparent reduction in stress levels, as measured by pulse rate reductions when using ECDIS, could also prove to be an important aspect. The Russian Federation was asked to provide more information on their research to the next meeting of NAV.

Many ECDIS features help towards reducing stress by simplifying route planning and monitoring, reducing workload and providing automatic danger alerts. Of particular note are the continuous and automatic plotting of position, direct comparison with intended route, warnings of immediate hazards to navigation, easy and accurate updating, and the elimination of datum errors.

Resolution of the arguments

The Chairman of NAV, Mr Kees Polderman, recognised that the expected consensus could not be obtained at NAV 53, and invited the submission of further proposals for NAV 54.

It is clear that the issue of ENC coverage must be resolved, including an agreed method of measuring coverage and its acceptable level for carriage requirements to be imposed. Also, should this level be met before deciding implementation dates or can IHO forecasts be used?

A proposal from Japan recommending a particular phased approach to implementation seemed to be given good support. In essence, all ships above a certain gross tonnage, suggested to be 10,000 gt, will need to carry ECDIS, phased-in according to ship age and type.

This could perhaps form the basis of a NAV 54 agreement, with implementation dates consistent with the existence of adequate ENC coverage.

The adequacy, or not, of existing standards for ECDIS has been questioned and needs to be resolved. However, the standards are actually quite mature.

IMO performance standards have existed since 1995 and have been updated several times since. IEC 61174, first issued by the International Electrotechnical Commission in 1998, defines the technical and test standards for ECDIS. The third edition of this document is currently being prepared.

ECDIS equipment has been available for nearly 10 years. There appear to be no accidents attributable to the use of existing equipment. This does not mean that the standards are perfect and should not evolve further but it gives good indications that the present standards are adequate.

Many IMO delegates recollect the problems that first occurred with the introduction of radar, where 'radar assisted collisions' became notorious. For some there is a fear that ECDIS-assisted collisions will also be likely.

For radar, the problem was resolved by developing appropriate training, rather than by the revision of equipment standards. The proper use of ECDIS seems to be well covered in the existing IMO Model Course.

Concerns also perhaps extend to ENC data, where better international coordination is still required, to provide consistency and a seamless service as viewed by the user. The present standards set by paper chart services, raster charts and some private vector data need to be at least equalled.

The need for a decision

There is an inevitability in the change from paper to electronic charts. IMO, in collaboration with IHO, needs to announce a clear schedule in the shortest possible time. This clarity will help all concerned, including governments, hydrographic offices, manufacturers and ship operators, to plan a successful transition.

The continued use of paper charts puts limits on the safety of vessels. They are costly to distribute and keep updated, they provide no easy interface to electronic navigational equipment and ignore the advantages of information technology used in every other sector of life.

Most bridge staff are highly computer-literate and many of them must be dismayed at the archaic way that navigation has to be ultimately performed on most ships, despite the capabilities of technology.

It is reasonable to assume that many of these are using the vast numbers of non-approved electronic chart systems and plotters installed on ships as, in effect, their primary navigation chart system. Although improper, this is understandable. The lack of an ECDIS carriage requirement just increases this misuse and the chances of an accident. 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

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