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Sperry Marine's new bridge

www.sperry-marine.com

Sperry Marine has developed an entirely new bridge system, incorporating handheld computers, wireless data communications and a heads up display which shows critical information projected on the bridge window so the seafarer does not have to look down to read it.

The bridge console uses flat screens, with front panel access for maintenance and repairs.

Sperry has also lowered the bridge height from 1300 to 1100 mm, so it is easier for the operator to see through the bridge window. "We want to keep the driver's eye on the road," says Sperry's marketing director Frank Soccoli.

The "Voyage Management System" allows the radar picture, AIS targets and the ship's position to be displayed on an electronic chart.

There is a trackball control device and drop down menu windows, which should make it easier to learn how to use the system. The trackball's position can be altered, depending on whether the user is sitting down or standing up.

Sperry is keen to introduce technologies into the maritime industry which have already been thoroughly tried and tested in the aviation industry.

Many shipping people believe that bridge computers should only be considered as "aids" and seafarers should always be able to navigate without them.

But in aviation, a little known fact is that aircraft are required to make a landing once a month entirely electronically with no manual involvement at all.

"Part of a harrier pilot's life is dependent on radar," says Mr Soccoli. "Why not give the ship the same?"

Mr Soccoli notes that seafarers should never need to depend on one aid to navigation to the exclusion of the others; so there is always redundancy there, other equipment to use if one piece breaks down. Equipment is not being replaced, but being added to.

Handheld computers

In conjunction with the new bridge, Sperry has launched a wireless data communication system, enabling the ship master and officers to view any data from the bridge computer screens on a handheld Palm-type computer.

The handheld computer cannot be used to actually control the ship, only to provide information which is already available on the bridge.

The wireless technology can also be used for the captain to keep a check of what is happening in the bridge while he is in his cabin or the ship's office.

For example, he can monitor the locations of the six closest ships (based on radar tracks or AIS data), or check the running of the engine.

The tool can effectively make it easier for more seafarers around the ship to get involved in navigation, like an extra set of eyes. This is a partial solution to the problems of not having enough watchkeepers on the bridge.

An interesting application of the handheld computer is for use in monitoring the position of passengers in the event of a ship evacuation. If each passenger has an identity card, or each life vest has a bar code on it, then this can be scanned, immediately giving the captain information about which passengers are at which muster station and which ones are still trapped in their cabins.

The system uses 802.11b wireless data protocol.

The pocket computer can also show CCTV pictures from cameras around the ship, and history of where the ship has been and the alarms which have sounded. It can also serve as a trigger for the ship security alert system, so that seafarers anywhere on the ship can sound the alarm if the vessel comes under attack.

The wireless communications technology

can carry voice communications, so the handheld device can effectively act as a radio.

Heads up display

The "heads up display" shows information on the bridge windscreen, such as heading and speed, so that the navigating officer can look through the window continuously, not have to look through the window and then look down at his controls.

"Heads up display" has been used for many years in fast aeroplanes and racing cars, and is gradually being introduced on top of the range motor cars. So why not ships as well.

There is plenty of scope to expand the heads up display system, taking data from the GPS and the electronic chart. For example, the position of buoys could be projected on to the window if the navigator can't see them because it is nighttime or there is dense fog.

Other developments

There are developments underway to connect the bridge system to the communications satellite, so charterers and managers can find out how well the ship is performing.

Other developments are building a centralised alarm management system for the bridge, where deck officers can monitor and deal with the alarms.

Developments at Resurgence Software

www.resurgence-software.com

Shipmanagement company V.Ships is to integrate Resurgence Software's Wave equipment analysis and maintenance planning software with its own ShipSure planned maintenance system on a limited number of its technically managed vessels. The software is designed to increase the efficiency of

“Heads up display” has been used for many years in fast aeroplanes and racing cars, and is gradually being introduced on top of the range motor cars. So why not ships as well.

maintenance by predicting critical failures and prioritizing work schedules.

The software uses a range of analysis tools to identify maintenance trends and to increase the safety and reliability of equipment while reducing maintenance costs. Maintenance spending is linked to the criticality of the equipment, and prioritized according to the impact on operations, resulting in less chance of failure and downtime.

V.Ships hopes the product will help it to increase value for its customers and to improve its service. It may also result in longer equipment lifetime, identifying early of faulty equipment and elimination of unnecessary maintenance.

Meanwhile the Wave system has been updated to Wave Version 2003, Release 2, which has several new functions.

Two statistical equipment performance indicators have been added, to monitor the efficiency of individual pieces of equipment and their dependencies on other components. Equipment performance can also be linked to mission criticality at a fleet wide level, and poor equipment performance can be identified.

A key feature of Wave is its ability to compare equipment against industry benchmarks. The benchmarking indicators have been increased from one to seven allowing more detailed comparison of the same equipment across different fleets and different operation conditions. This makes it easier to predict failure and assist in identifying specific problems.

Developments for BMT Rembrandt ship handling software

www.bmt.org

V.Ships is testing British Maritime Technology (BMT) Rembrandt 4 beta version at one of its training centres in the UK prior to the upcoming release of the soft-

ware. The PC-based ship handling simulation and training software includes 3D and ECDIS style displays and features accurate mathematical ship models.

The testing is the last phase of an 18 month consultation process that has resulted in the enhancements to the new version. VShips, the world's largest trainer of seafaring staff, already uses previous Rembrandt versions, and has integrated Rembrandt into its junior and senior officer training programmes.

Meanwhile BMT has installed its PC-based ship maneuvering simulation software onboard the Queen Mary 2 and linked it with the vessels dynamic positioning (DP) system. This is the first time such a direct link has been accomplished and will provide onboard ship specific maneuvering training for its crew.

The simulator was linked with an Alstom A-series DP system combining its dynamic positioning algorithms designed specifically for the QM2 with the Rembrandt mathematical model, charts and 3D visualizations.

The system is currently being used in the shipyard and will be integrated into the bridge upon delivery of the vessel. It will be used for crew training in maneuvering the vessel both with and without the DP system. The ability to train onboard the vessel, at a port of call, is another significant advantage.

Teledata opens Singapore office

www.teledata-usa.com

Indian-based Teledata has opened a Singapore office for software development and after sales support to its Asian clients. Teledata's marine products include ShipManager, RepairNet, Port Operations Management System, the Web-based Fleet Monitoring System, Registry Management System and Shipstaff.com

It is developing a PortManager system to

‘ A key feature of Wave is its ability to compare equipment against industry benchmarks ’

focus on all facets of port operations in response to the need for heightened security in the port environment.

ABS launch SafeHull Express

www.eagle.org

A new version of shipmanagement software SafeHull was launched by ABS at the Marintec China maritime exhibition and conference in Shanghai. SafeHull Express automates some procedures and brings 3D modeling into the early stages of the design process, thereby helping to predict costs.

SafeHull Express aims to reduce the time it takes to compete design evaluations with several time saving features. Included in these is an intuitive workflow menu, leading the user through the design process, templates to generate geometry of the hull structure and scantlings of the main hull structure and automatically generated finite element models from the 3D design model.

Bringing the 3D modeling as early as possible into the design process benefits shipyards that can use the 3D CAD model to prepare bidding contracts with accurate estimates of material and construction costs. The 3D structural model can also be automatically converted to the finite element model required for strength assessment and requires no user input.

There is also an automatic report generation tool, another time saver, and an intuitive graphic user interface. A version for double hull bulk carriers will be released in the spring of 2004.

SIS in European top 500

www.sismarine.com

Star Information Systems has been ranked as one of the 500 fastest-growing technology companies in Europe by Deloitte

European Technology Fast 500.

ShipyardsXchange and IMI finalise integration

www.shipyardsxchange.com

Online shipbuilding parts procurement portal Shipyardsxchange has integrated with online ship supplier database IMI to allow purchases using the online trading portal to view details of marine suppliers in the IMI marine purchasing directories and databases.

When sourcing a product, IMI registered suppliers will be visible to the purchases, helping to facilitate the transaction.

The large databases are continuously updated and are expected to be integrated into Shipyardsxchange's December 2003 product update.

Tribon counts 200,000 products on its website

www.tribon.com

Tribon now has more than 200,000 products available to shipbuilders on its website, Tribon.com. It also has new orders with University of Michigan, RMK Marine and ISOICO.

AVECS increases sales 50 per cent in 2003

www.avecs.de

Maritime software company AVECS reports that 2003 was its most successful year ever with a 50 per cent increase in sales volume. In particular, there were many new customers from the Mediterranean region and Asian Pacific.

"The basics for the worldwide success of the AVECS solutions are the complexity of the software systems and the permanent updated portfolio," the company claims.

A "significant" part of the growth was in

SafeHull Express aims to reduce the time it takes to compete design evaluations with several time saving features.

sales of voyage data recorders, through subsidiary AVECS Bergen.

The company also expects business to grow substantially in the newbuild market.

Globalstar introduces Europe-wide flat rate calling

www.globalstar.com

Maritime satellite communications company Globalstar has introduced a new flat rate Pan-European calling tariff that eliminates the complicated and expensive roaming and international surcharge fees.

The new tariff is available for calls to and from any two points in Europe and some parts of North Africa, apart from Russia and Turkey. The recommended price is US \$0.99 per minute (excl. VAT).

The standard European pricing plan, through which calls are charged at a cheaper \$0.70 per minute but only when in a limited number of Western European countries, is still available. The new tariff is seen as an optional alternative and both price plans still allow calls to be made from 120 countries worldwide.

The coverage area for the Pan-European tariff includes maritime and land regions of 48 European countries and three African nations - Morocco, Algeria, and Tunisia. Calls to or from regions outside of this home service area incur international call and roaming surcharges.

Globalstar markets a dual function handset that can be used to access both satellite and terrestrial GSM services using the same telephone number.

Inmarsat in bid for Galileo

www.inmarsat.com

Inmarsat Ventures plc, EADS Space and the Thales Group have formed a consortium to enter a joint tender to operate Galileo, the proposed European Union satellite naviga-

tion similar to GPS.

The Galileo operator will lead the arrangement of private funding for the deployment and operational phases of the project, and ultimately run the system. The bid is in response to the first call for pre-selection of tenders.

The three companies are market leaders in their respective areas: satellite communication, navigation and aerospace. EADS has experience with other large public private partnership (PPP) schemes including the European space programme, while Thales is a global provider of electronics to the aerospace and defense industries.

The Galileo programme is an important advance for Europe, being the first European project with global significance and the first PPP with a multi-national reach. The concession will provide many benefits for the successful party, serving a wide range of potential customers and providing global service.

Fleet 33 upgraded for speed

www.inmarsat.com

Inmarsat has upgraded its Fleet 33 technology, automatically compressing all data which goes through the system by up to 7 times.

This upgrade is available to all Fleet 33 users without the need for any change in existing hardware or additional software and at no extra charge. The enhancement is completely transparent (invisible) to the user and will give effective data rates of 40 kbit/s and above.

This should make internet access speed will be comparable to that experienced on land using a standard modem, although compression rates will be dependent on the type of data being sent.

Inmarsat has upgraded its Fleet 33 technology, automatically compressing all data which goes through the system by up to 7 times.

Rutter's healthy VDR sales

www.ruttertech.com

Rutter Technologies reports that it enjoyed a successful year with revenues rising

585% off the back of hugely increased VDR sales.

The company also made several acquisitions, predominately companies already providing integral parts of its VDR solution and involved with R&D.

Rutter hopes to continue increasing profits, despite large fluctuations in the market dependent on the timing of regulatory deadlines, by encouraging shipowners to think ahead on VDR requirements, pushing newbuild orders and integrating its new acquisitions.

Sperry Marine to supply IBS for 12 new container ships

www.sperry-marine.com

China Shipbuilding Corp. has placed an order for 12 Sperry Marine Integrated Bridge Systems for newbuilds at its Korea shipyard for Chilean ship owner Compañía Sudamericana de Vapores (CSAV).

The IBS integrates all the navigation and steering control systems resulting in improved awareness of the ship's course with radar overlay and display on an electronic chart system.

The system will include Differential GPS, AIS, VDR, echo sounder, radar and gyro compass, Fleet 77 terminal and other information and control systems. Sperry's Navipilot 4000 that helps to optimize fuel consumption is also part of the package. This is a self-tuning autopilot system that takes into account ship loading dynamics and weather conditions and makes minimal rudder movements to keep the ship on course.

As part of the contract, Sperry Marine will also provide support for installation, interfacing, commissioning and crew training. Sperry Marine is a business unit of Northrop Grumman.

Marex Social installs new Tideland marine AIS system

www.marineexchange.org/

The Marine Exchange of Southern California is currently testing an AIS shore station installed by Tideland Marine for its jointly operated Marine Exchange / USCG Vessel Traffic System (VTS-LA/LB).

This monitors traffic in a large area around the port extending 25 nautical miles into the bay, covering over 28,000 deep water and coastal vessel transits each year.

The system will gather information from vessels in the area, reducing the need for radio and radar contact and allowing operators more time to co-ordinate vessels movements and ensure safety standards. It is an additional component to the NorControl IT VTS-5060 vessel traffic system already in place at the port.

In addition to increasing the efficiency and safety of port operations, the AIS station will help to meet the need for tighter security precautions by assisting in the identification of suspect vessels and raising alarms. The accurate position and velocity data will be used to co-ordinate a response, while anomalous AIS data will give an indication of a high risk vessel.

The VTS-LA/LB is also responsible for facilitating the passage of tankers to a ChevronTexaco offshore oil refinery and US Navy ships to the Seal Beach Naval Weapons Center.

Horizon to sell Winchart electronic chart solution

www.horizon-mobile.com

Horizon Mobile Communications (HMC) has purchased the rights to sell the WinChart electronic charting software suite from Nav Tech. The suite of products includes navigation solutions for small vessels and fishing

“ **Horizon Mobile Communications (HMC) has purchased the rights to sell the WinChart electronic charting software suite from Nav Tech.** ”

fleets as well as merchant shipping.

HMC is a provider of communications solutions and sees the WinChart product as another step in the direction of a one stop shop for maritime clients.

HMC has already started its introduction to the US and Asian markets with the sale of 40 WinChart Navigator units to a major Asian ship owner.

Kongsberg receives largest ever German orders

www.kongsberg.com

Kongsberg will supply owners Reederei Claus-Peter Offen in Hamburg with its AutoChief 4 propulsion control system for 30 newbuilds.

It will also be installing 22 of the vessels with the DataChief C20 Integrated Automation System. This represents its largest ever newbuilding order from a German owner.

The AutoChief 4 allows the engines to be controlled from various points on the vessel, monitors safety parameters and administers limiting functions. It is designed for low and medium speed diesel engines with fixed propellers.

The DataChief C20 is a comprehensive alarm, monitoring and control system which offers extra functionality for ballast automation, air conditioning management, and information management.

The Kongsberg solutions were chosen for their functionality, modular design and cost effectiveness. The vessels will be built in several shipyard in Korea, where Kongsberg maintains a growing presence.

Meanwhile the AutoChief C20 propulsion control system for low to medium speed diesel engines has received the Award for Design Excellence from the Norwegian Design Council (NDC). The award recognizes design elements that help to improve usability and provide advantages to the operator as well as aesthetic appeal.

"The AutoChief C20 is a consistent and

complete control panel for larger ships where the functionality is considerably simplified and improved. The pure visual design is intuitive, it has good tactility and feedback to the user. This is a professional and uncluttered product of high quality, with good aesthetics and high durability," said the NDC.

Univan has first ABS ISPS audited vessel with security alert system

www.eagle.org

Shipmanagement company Univan has decided to meet its ISPS code requirements well ahead of time by installing Pole Star Space Application's Purplefinder DSAS solution on its "C Dream" VLCC tanker.

Most vessel types, including tankers, will be required to have a security alert system in place by 1 July 2004.

The system comprises multiple ship alert activation points, which can be moved around, and a concealed hardened transmitter with no visible antenna that potential hijackers would find hard to identify.

Using Purplefinder can also bring commercial benefits beyond the quick response to a pirate or terrorist attack. Using accurate position data Univan can track its fleet for analysis purposes and provide value added services to its customers. It can also take part in schemes whereby position data is made available to recognized agents such as a port or coastguard.

Transas ARPA simulator installed in Cyprus University

www.transas.com

Transas has installed a Navi-Trainer Professional 3000 ARPA simulation system at Yacin Dogu Universitesi (Near East University, Northern Cyprus), which possesses one of the largest maritime training faculties in the Middle East Area.

Using accurate position data Univan can track its fleet for analysis purposes and provide value added services to its customers.

Atlas Elektronik to upgrade Shenzhen VTS

www.atlas.de

Atlas Elektronik of Bremen has won a \$800,000 contract to upgrade VTS facilities at Shenzhen, one of China's fastest growing container ports on the mouth of the Pearl River.

The present radar station will be fitted with new CCTV facilities, with an additional station to be established at Beizaijiao, close to Yantian on the Eastern side of Hong Kong, with installation of a Atlas radar transceiver, CCTV, dual AIS base station and 3 channel VHF facilities. Both sites are connected to the port VTS control centre by 2 mpbs data link.

The control centre will be equipped with four PC workstations which can display the traffic and the management information system, as well as CCTV monitors.

SAM Electronics launches ship security alert system

www.sam-electronics.de

SAM Electronics has launched Debeg 3200, a ship security alert system, with a mini Inmarsat C terminal, mast mount kit, interconnection box, two alert buttons and cabling. The system has a test mode. Options include a battery pack, supplementary alert panels and add on software upgrades.

The information can be relayed by e-mail, GSM, fax and telex, to the shipping company and to anti-piracy centres.

Tideland Maritime and Norcontrol develop vessel monitoring system

www.tidelandmaritime.com

Tideland Maritime Systems and Norcontrol IT has jointly developed V-Track Modular, a

vessel identification and monitoring system, to help ports comply with the ISPS code. It identifies ships using AIS and also picks up information from radar, with everything displayed on a chart.

ChartCo upgrades 1000 ships software

www.chartco.com

Maritime data broadcast service ChartCo has upgraded its shipboard user software, oceanMaster, remotely on 1000 ships at sea.

The new software can support the digital nautical publications products from the UKHO, with a number of other general enhancements.

ChartCo supplies navigation, weather and news services to all different types of shipping companies, but particularly oil tankers and bulk cargo vessels.

UKHO's North Sea sailing directions come with free CD-ROM

www.ukho.gov.uk

The North Sea Admiralty Sailing Directions is now being supplied on a CD-ROM as well as a printed copy from the UKHO. The Sailing Directions cover the North Sea between the UK and Norway, intended to provide useful information to seafarers for safe navigational planning and execution.

The CD version includes additional photographs and hyperlinks for easier navigation around the contents. Port and waterway information, small harbour anchorages and facilities have their own sections.

Highlights of Europort

The Europort exhibition in Amsterdam, November 18-22, had some exciting new information technology developments in display. This is what we found most exciting

Kelvin Hughes

Kelvin Hughes has completed what the company describes as a complete restructuring to one that "faces and services the market and gives it what it wants," in the words of managing director Ron Nailer.

The company has rebuilt its website www.kelvinhughes.com and broadened its service into emergency communications services for ships, supplying an Inmarsat D+ based system.

It is developing its full bridge support contract service, now covering 200 vessels which contract Kelvin Hughes to do everything required to keep their ships bridges running.

The company has a network of service centres around the world and expects them to do over 75 per cent of fits first time.

Kelvin Hughes has a sister company, ChartCo, which has a distribution system for update details for paper charts, electronic chart updates and weather information. About one third of ChartCo customers are also Kelvin Hughes customers.

Until now, the two companies have been at pains to distance themselves from each other; now they have realised that it makes sense to work more closely together.

The two companies have jointly launched "ChartCo plus," a service to enable the ships to monitor whether or not they have all the necessary costs and updates.

Data can often be sent more economically over the ChartCo system than over standard Inmarsat channels because ChartCo has negotiated a specific amount of satellite bandwidth at fixed cost to broadcast data rather than paying by the minute.

Transas Navimonitor

Transas has launched Navimonitor, a receive only system for ports to monitor vessel traffic as a security device.

Transas has launched Navimonitor, a receive only system for ports to monitor vessel traffic as a security device.

Under the terms of the ISPS code, ports are required to monitor their "port facility," including anchoring and berthing areas.

Data is fed into the device by a radar and also an AIS receiver. By comparing the two pictures the port authorities can quickly learn about any ships coming into the port which do not have AIS.

The system can be configured to set off for example automatic alarms if ships are in places they shouldn't be or exhibiting unexpected behaviour in other ways.

"It helps port authorities meet the ISPS requirements in an efficient and cost effective manner," says Transas.

The cost of the system is Eur 30,000 and upwards.

Iridium

Maritime satellite communications company Iridium is focussing its energies on the maritime market more than it has done in the past and has defined the maritime industry as a "key vertical industry" which it wants to chase. "Maritime has been the largest growth area for us," says a spokeswoman.

It is keen to throw away its old image, trying to be, as the company puts it itself, "all things to all people with a telephone that would not work inside," and demonstrating how the system can help shipping companies improve communications and reduce costs, with completely global satellite

communication calls at \$1 to \$1.50 per minute.

The satellite constellation is expected to last until 2013-2014, giving at least 10 years of life, which should be enough to make it worthwhile investing in Iridium terminals. The company hopes to be able to launch replenishment satellites when the current ones expire.

The company is currently claiming a 99.6 per cent uptime and a 99 per cent call completion rate defined as the percentage of phone calls which are finished when the user wants them to, rather than cut off due to problems with the system.

The company is also keen to expand its data products and improve the perception of Iridium as providing

a data service.

There is a low cost SMS text messaging service, for taking messages from one Iridium phone to another. The company is gradually interfacing with GSM networks enabling messages to be transmitted between GSM and Iridium phones.

It also has an Iridium ship security alert system, produced by partner company MVS.

Nauticast

Fledgling automatic identification system (AIS) manufacturer Nauticast claims that it has conquered around 15 per cent of the total world market for AIS equipment so far.

Executive director Peter Martin notes that the estimation of the market are still not clear.

Personally he believes that the market share is close to 20 per cent, but to say that it is over 10 per cent is certainly correct.

The company has already installed over 1000 units, it says, and has an order backlog. It is currently building up its distribution network. It also produces units for maritime electronics giant Raytheon as an original equipment manufacturer (OEM).

"People get more and more attracted by our unit," he comments. "Its easy to install and operate, and very competitive."

The company has been selling AIS systems for around a year now, he says, which has given it time to fix all of the bugs.

There are other developments in the pipeline. The company will shortly produce an AIS system with a graphical display, showing the AIS targets clearly with the position relative to the vessel, rather than just listing them.

However he notes that AIS is absolutely a commodity market, similar to cellphones. Shipping companies are turning to the supplier that can provide a type approved AIS system and install it for the cheapest price.

In the future, he says, the price for AIS will fall further, but "not significantly." Maybe shipping companies can save \$200 if they wait 5 or 6 months. But there might be no-one there to install it, as the installation deadline looms.

The company was recently acquired by Chelton, which is an aviation electronics specialist, which also owns ACR Electronics and SeaTel in the maritime field. The original investors in Nauticast, a venture capital fund, saw the prices of AIS falling and wanted to get out of the business.

Mr Martin notes that he is happy with the new company ownership, which retained the original Nauticast management. "The least complaints you will have from us," he says.

Conrac

Maritime flat screen manufacturer CONRAC reports a growing business as flat panels come more into use onboard ships.

The industry is gradually coming round to the idea of flat panels; many bridge system manufacturers are starting to display them at trade shows, notably the Manta bridge used on the Queen Mary II, developed by Kelvin Hughes and which uses CONRAC flat panels.

The company is still making CRT displays because many ships still have them and they need replacing. Although it notes that some ships with CRT displays are replacing them with flat panels. "This is an interesting 2nd market," says Conrac's Petra Olhoff.

For the moment though CONRAC is still keen to develop more conversations with bridge system manufacturers. "We are looking for the bridge manufacturers to come and talk," she says.

SES Vardarkis

Greek maritime software company SES Vardakis has developed "SMART", a software package which enables shipping companies to get going with maintenance and procurement system in just a few hours, at a fixed cost of \$2,000 per vessel, including support, which, SES believes, is the "most competitive price on the market."

For the moment though CONRAC is still keen to develop more conversations with bridge system manufacturers.

Virtually every ship built in the last two years uses flat panel displays in the bridge, which are lighter, more reliable, easier to maintain, last longer, have a lower power consumption and soon to be cheaper than traditional cathode ray tube (CRT) displays.

The software includes a training CD, which shows, for example, how requisitions can be generated.

The ship shore communications is made automatically, with communications hourly, daily or weekly, sent as e-mail attachments.

A special feature is how the back-up is organised. A master software system runs in the shipping company office, which can produce CDs of software which can then be installed on the shipboard computers.

The continuous communications with the ship, synchronising the shipboard database with the shore, can be made whenever the company likes (hourly, daily or weekly), sending the data as an e-mail attachment. The communication is to send 4kilobytes a day, costing around 13¢ on Inmarsat Fleet MPDS (\$4 a megabit).

The software is delivered with a database of 5,000 spare descriptions, 750 planned maintenance jobs with full instructions. This data can be adjusted to meet the shipping company's specific needs.

SES has been producing shipmanagement software for 16 years, with the software originally being developed for use of its owner, Achilles Vardakis, on his own ship. There are over 100 companies using it, running on over 800 vessels. It is ISO9001-2 certified.

EMS SATCOM

EMS Satcom, the new entrant to the maritime satcoms field with its \$15,000 Fleet 55 terminal, reports that it has shifted 160 to 170 terminals by November 2003, which it believes is a third of the market share of all activated Fleet 55 terminals.

"We are going to fight very hard to maintain that position," says Nils Helle, managing director of EMS Satcom.

"The yacht market has been our first main success," he says. "A lot of systems have gone to Florida."

"We expected to see a bit more activity in the commercial market. The

ramp up in the commercial sector is going to take a bit longer."

EMS Satcom believes that one of the driving factors for the SOLAS fleet to start using Inmarsat Fleet is the increasing maintenance costs of their old Inmarsat -A terminals and expensive service calls.

EMS is appointing a distributor in Spain, to sell the terminals to the fishing markets, he says. "Fishing might turn out to be a bit more serious than we thought."

Another interesting market has been the newbuild market for high speed ferries in Australia

Another interesting market has been the newbuild market for high speed ferries in Australia, he says.

The Fleet 55 service is of special interest to maritime sectors which don't need global coverage, such as workboats and patrol boats. It provides voice and data communications whilst under the mini-M spot beams, which covers most areas of the world's maritime economic activity, but not all areas of the world.

The system was trialled on 2 V.Ships vessels, and V.Ships decided to keep the system.

This is the bulk carrier "China Pride", which typically sends around 4 Mb a month, and the Ocean Cruise Liner "Saga Pearl" which has a much higher data requirement. The China Pride used the MPDS almost exclusively throughout the trials. Whilst the Saga Pearl made good use of the high speed data service over ISDN.

The "China Pride" is now the

"cheapest ship in the fleet as far as data communications are concerned" said Neil Sayce of V.Ships

EMS Satcom notes that several shipping companies have fitted mini-M terminals for voice calls but are increasingly using them for data, for which mini-M is actually extremely expensive. Data over Fleet 55, using the MPDS service, is extremely cheap by comparison.

"If you are using data on mini-M, you should really consider going to

Fleet," says Gregor Ross, Maritime Business Manager with EMS Satcom.

Users of fleet terminals have been very slow to appreciate the enormous cost savings which can be achieved by using MPDS,

"Your typical shipmanagement company sends 10s of kilobytes of data a day from ship to shore - mainly via Email," says Mr Ross. "Sending small amounts of data by MPDS can be up to 10 times cheaper than using dialup. It is now proven in practise."

"You don't need an "always on" connection. Bring up a MDPS connection, do your downloads, take it down again."

"We need people to know more about MPDS," he says.

Marlink

Ship shore satellite communications company Marlink has developed Marlink online, www.marlinkonline.com, a tool shipping companies

and even individual seafarers can use to analyse their satellite phone calls, manage costs, analyse who is making the most calls and review invoices.

They can unbar crew scratchcards and also order more scratchcards.

SeaTel

Maritime satcoms company SeaTel has launched Wave Call, a new satellite communications service which uses Globalstar and Eutelsat satellite services satellites.

The WaveCall Model 3000 has a 10 inch antenna, priced at \$2,695 without remote display and \$2,995 with remote display, which can carry

The service is offered in European waters.

The Wave Call 4003 service is multi-regional, and works around American (North and South) and European waters. The terminal costs \$36,995.

There are a number of service:plans i.e Euro 2,500 per month for unlimited data communications at speeds 512 kbps to 1 mbps to ships, 128 kbps to 256 kbps from ships.

Alternatively Euro 1,250.00 per month plus Euro 1 per every megabyte over 1 gigabyte per month.

Then Euro 5,000 per month for 1 mbps to 2 mbps to ships, 256 kbps to 512 kbps per second from ships,

in Valdez, Alaska and the Prince William Sound.

To avoid radar blackspots caused by the ship funnel, Rutter recommends that the radar should be fitted higher than the ship funnel.

Germanischer Lloyd

German class society Germanischer Lloyd has some interesting information technology tools for ship operators.

It has an Environmental Passport system which builds up an electronic database of all dangerous materials onboard the ship.

The company has developed Fleet Online, a tool to help shipowners manage their surveys, which is currently used by 200 shipping companies every day. 87 per cent of all GL clients are using the Fleet Online system altogether.

They can see if they have surveys overdue, the last time surveyors came onboard, the period the class certificate is valid for. The can look at the different surveys.

You can book a surveyor to visit the ship and make a survey.

If a survey is overdue for 7 days, GL will inform IACS (The International Association of Class Societies), the flag state and the shipowner. Class then becomes suspended and the vessel is not allowed to trade. This is also shown on the Equasis online system which the public can access.

Many banks and insurers are starting to make demands on shipowners that they can have a Fleet Online password, the company says. The shipowners control access to the information, but banks and insurers can say that they will only finance or insure

The board separates "clutter" from waves and make it easier to see pirate boats, fishing boats, ice, land and other ships.

up to 56 kbps data speeds. Also Wavercall model MCM3, which has a low profile radome, priced at \$10,295.00 and offers data transfer speeds up to 144 kbps. Both use the Globalstar satellite system and works in the Globalstar coverage area.

The 4203 Model terminal costs approximately \$40,000 depending upon configuration; there are various pricing plans available. Pay as you go services start at 1 euro per minute voice and 3 euro per minute for 64 kbps data. Or you can pay from Eur 1,000 per month for unlimited voice and Eur 3,000 per month for unlimited voice or data.

The service is for satellite bandwidth and, not per ship; you can share the data communications between a number of ships if you like.

alternatively Euro 2,500 per month plus Euro 2 per megabyte over 1 gigabyte per month.

Sigma radar processing board

Rutter Technologies of St Johns, Canada, has launched the Sigma radar processing board which can analyse radar information so that it can be more useful.

The board separates "clutter" from waves and make it easier to see pirate boats, fishing boats, ice, land and other ships.

The technology, the company says, can work with the signal from any SOLAS radar system (although it recommends a revolution speed of 120 rpm).

The system has already been used

the ship if they can make sure all the surveys are being made on time.

Germanischer Lloyd has put systems together enabling a bank or insurer can check all the survey status of all the vessels he is involved with on a single screen, if they are classed by GL and if the respective shipowners have given permission.

Totem Plus

Maritime electronics company Totem Plus of Israel is building its business to supply shipboard automation systems, recently building automation systems on 10 car carriers built in Gdynia, Poland, each with a 6,500 car capacity.

The system enables all aspects of the vessel to be controlled from the ship's bridge. It also includes full engine remote control and a voyage data recorder.

Another project is with Samsung in

South Korea, building automation systems and two projects in Greece.

Totem Plus is also selling voyage data recorders; it developed its own hardened data capsule which is DNV type approved.

KVH

Maritime satellite equipment company KVH has launched TracVision G8, a maritime satellite TV antenna, which, it claims, is over 35 per cent smaller than other satellite TV antennas on the market of similar reception strength.

The antenna is 82cm and works

with Astra, Arabsat, Hispasat, Hotbird, Nilesat, Sirius, Thor, Turksat, Optus, DIRECTV, DISH Network, Express VU, DIRECTV Latin America, picking up both TV and radio.

It has also launched TracNet 2.0, an internet by satellite service, available over Europe, the Mediterranean and parts of the North Sea, Black Sea and Northern Africa. Internet download speeds of up to 512 kbps are possible.

KVH is supplying the whole range of Inmarsat Fleet products and recently won tenders for the Greek, Portuguese, Dutch and Spanish Navy.

WEBSITE ADDRESSES

Sperry Marine www.sperry-marine.com

Kelvin Hughes www.kelvinhughes.com

Transas www.transas.com

Iridium www.iridium.com

Nauticast www.nauticast.com

Conrac www.conrac.de

SES Vardakis www.vardakis.com

EMS Satcom www.emssatcom.com

Marlink www.marlink.com

Seatel www.seatel.com

Rutter www.ruttertech.com

Germanischer Lloyd

www.germanlloyd.de

Totem Plus www.totemplus.it

Getting electronic charts moving

Reunifying Primar Stavanger and IC-ENC would be a good way to get electronic charts moving onto ships, Dr Andy Norris argues

The professional maritime world has got itself into a tangle in introducing electronic charts.

One day its history will make a fine how-not-to-do-it text book for future generations.

'What should have been done to ensure success?' is perhaps an interesting question

But right now the important question is 'what is happening now to get things really moving?'

Probably one of the main reasons for the difficulties we are in is the overriding need to derive systems

that are 100% safe.

It is relatively easy to enhance safety standards for existing equipment and systems as a result of experience. With new safety related systems the standards must be evolved before much actual experience has been gained.

This has been a particularly difficult problem for ECDIS, not least because data generation and distribution is also part of the equation.

The technical, political, commercial and logistical issues in this area are immense - and all have rele-

vance to safety.

Today, the technical standards for ECDIS hardware and ENC data definition are under control and appear satisfactory for safe navigation. Over the years improvements will be made but they are no longer the main issue.

This leaves only the political, commercial and logistical issues to be sorted out!

Singapore conference

A major attempt to get interested parties together to talk about the present situation and see what needs to be

done was the 2nd International ECDIS Conference and Exhibition, held in Singapore in October 2003.

It was organised jointly by the Maritime and Port Authority of Singapore (MPA) and the United Kingdom Hydrographic Office (UKHO).

Many participants were stunned by a hard-hitting but accurate appraisal of the present situation in the keynote address by Admiral Sir Nigel Essenhigh.

Problems

A presentation by Bob Moss of the UKHO at the end of the conference highlighted the main issues that had been debated and explained what the UKHO and MPA would do in order to help the situation.

It was not surprising that the issue heading the list was 'coverage'. It is clear that ENC's will be mainly ignored by the shipping industry until this problem is properly sorted.

saw that 'may' was at the prerogative of the user but a number of administrations have decided that 'may' allows them to say whether and how ECDIS can be used on their flagged vessels and possibly in their own national waters.

Among other concerns was the need for a global catalogue of ENC's and the high cost of ECDIS training. The latter is becoming an ever growing problem for the shipping industry in general. The situation perhaps worsened by the vast difference in the operation of ECDIS equipment from different manufacturers.

The conference organisers agreed that they would identify priorities and timescales and communicate the concerns to the International Hydrographic Office (IHO) and other 'relevant bodies'. They also both agreed to increase their interaction with users.

IHO

All this is well-meaning enough - but is it going to get results? Can the IHO really get ENC's moving?

The IHO has been informed on many occasions of the issues that the UKHO/MPA letter will highlight.

Many of the problems are directly attributable to the IHO's handling of the introduction of ENC's and they still appear to be unable to rectify matters in appropriate timescales.

Of course they are not responsible for all of the issues but many of the problems with ENC's lie with them:

- The lack of ENC coverage and the slow rate of increase in their availability.
- By implication promising a lot, without ensuring that their mem-

It was not surprising that the issue heading the list was 'coverage'. It is clear that ENC's will be mainly ignored by the shipping industry until this problem is properly sorted.

Sir Nigel is in a good position to make knowledgeable statements on the situation as he relatively recently retired as being 'No 1' in the Royal Navy (First Sea Lord and Chief of Naval Staff), was chief executive officer of the UK Hydrographic Office from 1994-96 and was a navigation specialist in his earlier sea-going career.

"I find it extraordinary that, in the 7 years since I left the UK Hydrographic Office, the electronic charting debate and the production of a genuine world wide ECDIS database has advanced so little", summed up Sir Nigel's view of the present global situation.

Sir Nigel left few out of his criticisms but he was speaking passionately on behalf of ECDIS users.

However, he was equally passionate about the benefits of electronic charts and cited, with analysis, several accidents that would have been almost certainly prevented had electronic charts been in use by the vessels concerned.

Users were also rightly concerned with issues on the presentation of data on the ECDIS screen.

Different hydrographic offices, for instance, use different depth contours. This presents a confusing picture on the screen at the 'HO' boundaries, especially with the display of the vessel's safety contour.

Also, on zooming in and out at these boundaries different application by HO's of the 'scale minimum' parameter causes different degrees of detail to be displayed on other side of the boundary.

The third major issue was on the interpretation of the ECDIS carriage requirements by different maritime administrations.

This mainly involves the use of the word 'may' in the revised (2000) SOLAS regulations concerning ECDIS - "ECDIS may be accepted as meeting the chart carriage requirements".

When this was being drafted many

ber countries could properly finance the operation.

- Data presentation 'inconsistencies' at boundaries.
- A confused distribution process.
- Lack of a global catalogue and planned coverage schedules.
- Lack of meaningful tie-up of their members with their corresponding maritime administrations.

For much of the last decade when ECDIS and ENC's were being defined, the IHO did not have a proper dialogue with users and relevant commercial bodies. It was made clear that they alone defined the

ENC and its processes. This meant that many of the practical and commercial realities of the marine world were ignored.

"Routes to market" was apparently an unheard phrase and theoretical models of distribution, which ignored commercial realities, were proposed.

It is good, however, to see a change in their attitude to industry. Vice Admiral Alexandros Maratos, president of the IHB Directing Committee said at the Singapore Conference:

"Industry is a very valuable technical partner of the IHO. The procedures for a more efficient and effective

formal cooperation have been identified and actions are in place".

Primar and IC-ENC

Unfortunately the problem is probably too complex for the IHO to resolve.

To be fair, international bodies of this type have huge problems in decision making because of the diverse view of their members and the need to have consensus.

The very recent IMO resolution, A.958(23), encouraging governments to promote ECDIS and further the production of ENC's may help but it is unlikely to make a significant difference without structural alterations to

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the ENC 'system'.

So, what should be done?

A potentially successful route would be to reunify Primar and the IC-ENC and re-launch the new body as a truly international organisation, with IHO (non-financial) backing.

Through some form of additional funding (perhaps organised at UN level), together with licence income, this body would become responsible to oversee the standards, production and update of a global ENC database.

In areas with weak national hydrographic support they would get direct-

ly involved with data production.

Much of the ENC data production services would be outsourced by this new body to industry, as would the distribution to end users, in a variety of acceptable formats and media.

This would ensure that a reasonable split of public and private investment and risk was involved and that commercial competitiveness would evolve ever-improving added value services for the end-user.

The non-executive board of this new body should perhaps have a majority of IHO-appointed members.

This would enable the IHO to oversee the operation without it getting bogged down in the IHO decision making process.

Also it would ensure that the European roots of the new body were rapidly internationalised and made acceptable to all IHO members.

Other non-executive board members would be from a commercial background.

We really do need something radical to get ENCs with their undoubted safety benefits into real use. The dialogue for change must continue.

Simplified VDRs

The main difference between standard voyage data recorders and "simplified" voyage data recorders is the cost of the recording medium, but this makes little difference to the total price, argues Ian Bowles of VDR manufacturer Rutter

Proposals are circulating for a simplified voyage data recorder, which all ships will be required to fit (not just passenger ships and new ships). The real differences between the fundamentals of the VDR and S-VDR are minimal.

The proposed simplified voyage data recorder is supposed to be "significantly" cheaper than the standard voyage data recorder.

Looking at the proposed requirements, there are two main areas where changes have been made with a view to reducing costs.

The first is with data items to be recorded. Under the proposed S-VDR requirements, if there is no serial signal in the correct format, then those items need not be recorded. IE no extra interface is required.

The second is with the relaxing of the Final Recording Medium (data capsule) specifications. With the simplified VDR, the data capsule does not need to withstand such a tough penetration test as the standard VDR; there is an option for a float free version in line with the current GMDSS EPIRB specifications.

Interfaces

The big expense of the standard VDR installation that sometimes gets forgotten is the labour involved interfacing the unit to all the shipboard equipment and doors. This should be considered to be in the region of 25% of the overall VDR installation price.

However fitting a voyage data recorder system on a new vessel is generally much easier than a retrofit on an existing vessel. For a new

building today, most of the equipment that is required to be recorded by the VDR comes as standard with correct serial outputs, and because the installation is taking place during ship construction, the same installation issues do not apply.

On existing ships, much of the equipment will be of an era where standard serial outputs were not available, (even as an option from the manufacturer), and require electrical interfaces to convert analogue and contact outputs to the necessary serial format.

Most VDR retrofits performed so far have been on passenger ships which are very complicated. The numerous fire doors, watertight doors and hull openings commonly associated with a passenger vessel meant even more interfaces and more importantly, many more labour hours. There is misconception that to retrofit a VDR on an existing cargo vessel will be equally complicated to passenger vessels and in a similar price range. Significant reductions should be easily achievable for the existing cargo vessel owner.

Reducing the interface require-

ments is a cost saving for a ship owner and a commercial advantage for a VDR manufacturer that does not have the expertise and economical interface solutions.

Data to be recorded

At a minimum, a S-VDR will be required to record date and time, ship position, ship speed over ground, ship speed through water, heading, bridge audio, communications audio and radar data.

The date, time and position can be generated directly by the GPS. The heading will come from gyrocompass, which should already have an interface from the preceding AIS installation requirements.

If the primary radar is of an age where no commercial off the shelf interface is available, then the AIS data should be recorded. The AIS will have an output in the correct format.

The data sources likely to be missing are engine data, rudder data, depth, wind speed and direction.

Fixed recording medium

The most expensive aspect of the fixed recording medium in the normal voyage data recorder is that it must be able to withstand a high penetration force. This requirement is removed for the simplified voyage data recorder.

With this requirement removed, the costs of a fixed and float free recording medium are similar.

95 per cent of all ship casualties do not sink immediately, but it is these 5 per cent of casualties where the vessel does sink immediately where it is most important to know what happened to the vessel.

The fixed unit is designed to sink with the ship, which means that pos-

sible recovery could be very expensive depending on location and depth. The fixed unit will survive fire and submersion to 6,000m so it is a reliable method of saving the data under numerous circumstances.

The float free unit will float if the vessel sinks, similar to the GMDSS EPIRB, with the same transmission locating life of an EPIRB: 48 hours. Conceivably this may not be enough for data retrieval as the priority after any casualty will be search and rescue of the victims and by the time that the appropriate authorities can dedicate time to locating and retrieving the data, it may well not be possible.

Should the vessel not sink immediately then of course the unit can also be carried off the vessel, however, it

is unlikely to be anywhere near as robust as the fixed unit and so will not survive such disasters as fire.

If the recording medium meets the same requirements as the GMDSS EPIRB, it may be reasoned and approved that this unit could also act as the GMDSS EPIRB and so allow the ship owner to fit just one EPIRB. This may be considered as a definite advantage from a marketing and cost point of view but needs to be looked at closely.

If the vessels EPIRB were now to be incorporated in the float free VDR Final recording Medium, then the annual testing of the EPIRB would have to be incorporated in the annual testing and recertification of the VDR.

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Current S-VDR status

The current status with simplified voyage data recorder requirements is that the IMO Sub-Committee on Safety of Navigation (NAV) has told the IMO Maritime Safety Committee it thinks that retrofitting existing cargo ships with voyage data recorders is "feasible and desirable." The next MSC meeting is in May 2004.

According to the draft regulation, the S-VDR should be fitted to cargo ships above 3,000 gt, with ships over 20,000 gt required to fit them by January 2007 and ships above 3,000 gt required to fit them by January 2008.

There would be an exemption for ships with only 2 years of life in them after the implementation date.

NAV concluded, on the basis of evidence from flag state administra-

tions, that fitting a VDR on existing vessels would be feasible and cost effective so long as the performance standard for standard voyage data recorders could be simplified in some way, by reducing the amount of data which needs to be recorded and reducing the survivability parameters of the data capsule.

NAV decided that the S-VDR would only need to record date, time, position, speed, heading, bridge audio, comms audio and radar data (alternatively AIS data if the radar is impossible to obtain).

The final recording capsule can be fixed or float free, with a possibility of combining the float free data capsule with the EPIRB.

NAV estimated the costs of fitting such a VDR on \$92,000 per ship not including installation labour.

MAN B&W develops electric engines

Engine manufacturer MAN B&W is moving ahead with its plans to develop "intelligent" ship engines with electronic devices controlling the fuel injection rates, exhaust valve timing and other sparks, flows and pressures, all running off a computer.

This electronic control makes sure that the engine is operated in the most optimum possible way, taking into account the speed of the ship, the type of fuel, the emission allowances. This leads to minimum fuel consumption and reduced engine wear, leading to reduced repair, maintenance and lube oil consumption, and longer times between engine overhauls.

It also means that the engine can accelerate more easily (go from low load to high load). There can be improved engine diagnostics systems; because everything is electronically sensed and controlled, it is easier to find out if something is going wrong.

There are also less mechanical parts to go wrong. There is no chain drive, chain wheel frame, chain box, camshaft, roller guides for fuel pumps, fuel injection pumps, exhaust valve actuators, starting air distributor, regulating shaft, mechanical cylinder lubricator.

They are replaced by a hydraulic power supply, electronically profiled injection, fuel oil pressure boosters, a crankshaft position sensing system and electronically controlled lubricator.

Electrical start up pumps maintain hydraulic oil pressure at start up, then the engine driven pump takes over.

The engine is being continuously monitored to make sure that there is uniform load distribution across the

cylinders, preventing heat overload.

The company notes that whilst computer equipment is standard practise on most ships for cargo management, navigation and communication, electronics are generally kept away from ships engines; most ship engines still use mechanical systems.

"We believe that this situation will change over the next few years, as has happened in the automobile industry over the past 10-15 years," says Peter Sunn Pedersen, MAN B&W executive vice president.

MAN B&W first presented a completely finished electronic engine in February 2003, which it considered "The greatest technical step forward in the technology of large marine diesel engines since [the company] introduced turbocharging of such large two-stroke engines in 1952."

The engine was tested on a 37,500 dwt chemical carrier Bow Cecil, owned by Odfjell, with the test running for 2.5 years with over 10,000 hours of operation. Odfjell was so pleased with the trial that it commissioned the very first production line electronic engine which MAN B&W produced.

The company has already been working on the project for 12 years, with some 200-man years, or around 17 full time staff.

The biggest benefit of the electronic engine is the improved control of fuel injection pressure control. This

has typically been managed by mechanical cams (rotating switches). But the electronic control has much more flexibility.

For example, with an electronic engine, the injection pressure can be increased when the vessel is going slowly or is running empty (low engine load), and reduced if the vessel is going fast or laden (high engine load).

The electronic control of the lube oil feed can make sure that only the minimum amount of lube oil is supplied to the engine. This has proven to lead to savings in lube oil of 0.3g / bhph (British horsepower hours) the engine uses.

To reduce the risk of engine failure, it is designed so that no single failure can make the engine inoperative.

There are several different computers. All essential computers have a hot (ready to go) standby. The computers are referred to as engine interface control unit, engine control unit, cylinder control units, and auxiliary control units. But they can all replace each other.

The engine is also designed so that it is easy for shipyards to stop fitting mechanical engines and start fitting electronic engines. The height, engine seating, engine outline are the same. Engine weight is slightly reduced. The engine pipe connection is similar and the lubricating oil system slightly modified.

MAIB recommends watch alarms

In the wake of the grounding of cargo vessel Jambo in Scotland, June 2003, when the chief officer fell asleep, the UK's Maritime Accident Investigation Board is recommending that ships fit watch alarms

The UK Maritime Accident Investigation Board has published its report on the running aground of cargo vessel Jambo, on June 29, 2003 off the West Coast of Scotland, recommending that ships should fit alarms making sure the officers don't fall asleep.

As a result of this, the UK's Maritime and Coastguard Agency (MCA) will be taking recommendations to IMO for compulsory fitting of bridge watchkeeper alarms.

However it notes, "that these devices are an attempt to address the symptoms, rather than the causes of, fatigue in watchkeepers.

The bridge watchkeeper is required to reset a timer on the system at regular intervals, often around 10 minutes.

If the timer is not reset then an alarm sounds in the master's cabin and in the deck officer's accommodation, indicating that the watchkeeper may have fallen asleep, had a heart attack, been taken over by pirates or has forgotten to reset the alarm.

MAIB says that over six groundings a year occur in UK waters due to watchkeepers being incapacitated, for various reasons.

"The only way to establish without doubt that it is safe for the officer on the watch (OOW) to be the sole lookout, is to ensure that should he become incapacitated in any way, this fact is brought to the attention of the remaining deck officers without

delay," says MAIB.

"It is not sufficient to have the lookout 'on the end of a radio', when MAIB experience shows that one of the prime dangers is that of the OOW being unable to call the lookout because he is incapacitated by fatigue or some other reason."

"Therefore, if lookouts are not maintained on the bridge at all times, it is essential that such vessels are fitted with watch alarms."

Jambo was not equipped with any such alarm, although of the 8 vessels operated by Reederei Hesse, only Jambo and a sister vessel did not have such an alarm.

Background

The MV Jambo was Cypriot registered and German owned, carrying 3300 tonnes of zinc concentrate from Dublin, Ireland to Odda, Norway, and sank following the grounding.

It carried 7 crew, but all crew were safely evacuated by coastguard lifeboat. The master was Croatian and he rest of the crew Polish.

The chief officer fell asleep while alone on the bridge and missed his intended change of course. He was woken by the impact of the vessel grounding.

The AB assigned to the watch was absent from the bridge for "at least an hour" before the vessel grounded, MAIB reports.

The master and chief officer were running 6 to 12 and 12 to 6 watches,

which MAIB describes as being "tiring in any event."

The problem was compounded by regular port visits when the chief officer was required to work, regardless of how it fitted in with his sleep pattern.

The vessel's normal route was between Sweden, the Baltic ports and the North Sea ports, UK and Ireland, with passages of 1-3 days and 1-2 days in port.

Fatigue

In port, the master dealt with paperwork and officials; the chief officer was responsible for cargo operations. This work always disrupted the 6: 6 pattern.

The chief officer's routine was to come off watch at 6pm, have a daily meal, going to his cabin at 2030 for a few hours sleep.

He reported that he was unable to sleep on this day, although his cabin was quiet, his bunk comfortable and there was nothing specific on his mind.

The company's safety management instructions about fatigue state, "The officer in charge of the first watch when leaving port should be adequately rested prior to going on watch to ensure that a safe and efficient watch is maintained. This is necessary from a health, as well as a safety consideration.

The Master is expected to interpret this requirement in a reasonable manner and with the safety of the crew and ship firmly in mind. Masters must make suitable watch arrangements to ensure an adequate amount of rest while maintaining a reasonable momentum of work."

Story in detail

According to MAIB, the chief officer was assigned to sleep 6am to 12 midday, work midday to 6pm, sleep 6pm to midnight and work midnight to 6am. However after his evening meal he had been unable to sleep 6pm to midnight.

The mate had been working for around 12 hours a day for at least the 10 days prior to the incident

While watchkeeping, the chief officer also worked on the bridge computer for a few minutes at a time, completing and printing voyage reports, conducting cargo stability calculations, and doing safety management system paperwork.

According to MAIB, "he thought much of the paperwork associated with the safety management system pointless and a waste of time. He found the printer to be slow and the monitor's screen difficult to read in daylight."

The master's normal practise was to require AB's to be additionally on the bridge from 10pm until 6am, also during periods of restricted visibility or when close to land. There were two AB night shifts, 10pm to 2am and 2am to 4pm.

At 2.20am, the AB on watch, who was a heavy smoker, asked if he could leave the bridge and have a smoke in the mess room during his hourly "rounds" of the ship, which also included checking the accommodation an engine room. The AB returned at 3am.

At 355am, the AB again asked the chief officer if he could go on his rounds. The chief officer agreed and asked the AB to bring him up a cup of Turkish coffee when he returned

because he was starting to feel tired.

While waiting for his coffee the chief officer walked around the bridge to keep himself awake.

The AB completed his "rounds," had another cup of coffee and cigarette in the mess room, and then went to the ship's office to do some maintenance work as discussed with the chief officer at the beginning of the watch.

The chief officer fell asleep between 0405 and 0415, being awoken at 0515, standing at the engine controls, by the grounding.

The master was also woken and was on the bridge within 15 seconds. The chief officer was slowing and stopping the engine. The AB also returned to the bridge.

The master asked the crew to check the hold for water; the chief officer reported that the fore peak tank, bow thruster compartment and double bottom port ballast tank were all flooded, with about 2 metres of water in the forward end of the hold.

The master called the shipping company's "designated person" ashore and was unable to reach him, so he called the vessel's superintendent as designated backup. At 0600 he called Stornoway coastguard by VHF radio to report the situation. Te lifeboat arrived at 0721 and took off the crew. At 0955 the master reported that the vessel has sunk with her bow out of the water.

QinetiQ research

Although the rest patterns are allowable by IMO rules, MAIB contracted the QinetiQ centre for human sciences o study the chief officer's routines and hours of work and comment on his likely level of fatigue.

QinetiQ notes that the shift pattern of working midnight to 6am, midday to 6pm, is the most difficult, because the person has to work at the period where he is most naturally tired (midnight to 6am).

Alertness and performance for anybody tend to be at their lowest 4am to 6am, it states.

The problems become more severe during the later stages of a long period of continuous work.

It also notes that 1800 to 2400 is "not a natural time for sleep." "The mate's inability to sleep during this period is not surprising," it says.

QinetiQ notes that in general, it is better to minimise the number of consecutive night duties to minimise sleep deficit associated with successive daytime sleeps.

The mate had been working for around 12 hours a day for at least the 10 days prior to the incident. However most of the port work had been during the daytime. There was opportunity for a full night's sleep while the vessel was berthed in Glasgow, four nights before the incident.

The continual alternation between night work at sea and short periods in port with day work is "not an ideal work pattern," QinetiQ says.

"There is little time for the body to adapt to the new routine. It is important that some recovery from the night work can be provided in port so that the crew member can be reasonably well rested before setting sail."

"Balancing the potential consequences of fatigue, against the commercial consequences of a delayed departure, demands fine judgment," QinetiQ says.

"It is likely that masters will, probably more often than not, be more

influenced by commercial than by safety considerations simply because the commercial impact is immediately apparent and the risks, by their nature, are only probable."

"The master's judgment would also

be influenced by whether or not he considered that regulations had been complied with. It is not, therefore, surprising that the master made no provision to compensate for the disrupted rest experienced by the chief offi-

cer in Dublin and allowed him to return to the six-on six-off schedule that night."

MAIB's full report can be downloaded free of charge from <http://www.maib.dft.gov.uk/>

Being a seafarer

Digital Ship interviewed a group of serving seafarers in Delhi and found that 77 per cent think being a seafarer is enjoyable; 57 per cent are happy to be seafarers; 75 per cent said they would like a shore job given the choice

Digital Ship interviewed a group of serving seafarers at a training center in Delhi to find out how much they enjoy their time at sea.

There were in all, 35 respondents, comprising 20 engineers and 15 deck officers. The respondents were the mariners enrolled in the STCW courses or preparing for the MMD examinations.

The best ways shipping companies could make the life of seafarers more interesting, they said was to let seafarers take their families with them onboard and provide a broader range of career growth opportunities

Being a seafarer

Out of 35 respondents 20 indicated that they liked being a seafarer including 8, who responded that they liked this profession very much.

5 respondents mentioned that they were indifferent to the nature of profession and took shipping as just another profession and a means to earn for a decent living. 2 persons indicated that they did not like being a seafarer.

In terms of determining the career choice, 18 respondents (51%) mentioned that they took to a life at sea

because they considered it a good career choice. 11 respondents (31%) mentioned that they had always wanted to be seafarers.

Some of these respondents also mentioned that they looked up to someone in their family or social circle as role models that acted as sources of inspiration and motivation for motivating them for a career at sea.

There was a general consensus that work is enjoyable on board. Around 27 of the respondents (77%) indicated a score of 3 or above (on a 5 point scale, where 1 signified strong disagreement and 5 signified strong agreement for enjoyable work).

The main reasons given for the work being enjoyable were the varied job responsibilities, the challenging job profile, and travel.

Negatives

Some of the respondents (less than 15%) mentioned that work conditions are not that enjoyable because of hierarchical and formal work conditions.

They mentioned that rigidity / lack of flexibility shown by the senior officers onboard created an unfriendly work atmosphere. The other reasons

mentioned by them were stringent STCW 95 regulations, which have increased the workload of the sailing staff with reduction in work force.

But some respondents also cited that with new regulations coming up and shorter port stay of ships, the career of the seafarer does not offer the same incentives as earlier.

27 of the respondents (77%) cited working in shifts and erratic work hours coupled with missing social and family life as the major reasons for increasing stress and burnouts onboard a ship.

However, some of that this problem is considerably reduced with more number of UMS class ships or on the ships where liberal family-carrying rules are allowed.

Some of the other reasons for stress onboard were less human interactions while working onboard, an uncertain work environment and huge regulatory requirements to fulfill.

Going ashore

When it came to the shore job alternatives 75% of the respondents (27 in number) mentioned that if given an option they would prefer to settle out for a shore-based job.

Some of the respondents in the 26-30 age group mentioned that they are prioritising to clear their Chief/Masters ticket as early as possible hoping that would pave way for better / more shore job options.

Some reasons attributed for going ashore were being cut-off from the social world - family and friends. Also the job structure, though challenging, tends to be monotonous at times. Some felt there were better career options in shore-based industries in terms of job profile, work requirements and remuneration.

They would prefer access to food of their preference and enjoy the freedom to walk along the streets and have days off.

85 per cent of seafarers said they would like to work for a shipping company or agency ashore.

12 of the respondents (35%) mentioned that they were actively looking for options for a career change. They had plans of pursuing studies in ship management, MBA, working for the IT industry as some of the career options.

Most of these 12 respondents were in the officer ranks of 4th/3rd engineer and 3rd / 2nd officers.

A further 15 of the other respondents mentioned that if they were given an option to settle for a shore job, they would take it. But till now they have not thought seriously about it.

Around 60% of the people said that career path was not very well defined.

There was a general opinion that after working for some years on the higher ranks, job responsibilities reach a plateau - a saturation level.

Some of the seafarers attributed working on contractual bases, hired by ship management companies, which place them on vessels of different ship-owners (each having a unique corporate culture) every time, as a primary reason for the above.

Owned or managed

When asked how recognized they feel by their employers, there was a wide range of responses.

The responses were different due to the respondents working for ownership/management companies.

The respondents working under ship-ownership companies said that they perceived their career path as well-defined.

Small aspects, such as scheduled workdays / holidays in a ship-ownership company give them a better opportunity to plan / prioritise their time and inculcate the feeling of belongingness. Moreover, respondents felt that they are better recognised / identified this way with the one organisation they work for.

The respondents in the ownership companies said that company often took care of them on a personal level too.

At the operational level in ship-management companies, lower ranks did not relate to the bond with the organisation very strongly, while at higher levels like that of Chief Officer, Master, 2nd Engineer and Chief Engineer the level of recognition was high because of the company actively monitoring and communicating with them on an individual basis.

Recommending seafaring

When it came to recommending being a seafarer to someone else, 25 of the respondents (70%) said that they would.

Reasons cited include using the seagoing experience as a platform for pursuing other better career options later.

They said that the job as a seafarer provides an excellent opportunity to earn quick money. Also the Experiences acquired onboard help a person to evolve into a responsible and enduring person. Working with people of different nationalities lead a seafarer to be much more adaptive person. There are a wide range of opportunities to travel to different places.

Digital Ship *plus*

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