

ELECTRONICS

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 relevance 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

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.

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.

regulations concerning ECDIS - "ECDIS may be accepted as meeting the chart carriage requirements".

When this was being drafted many 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 ENCs 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 ENCs 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 ENCs 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 ENCs 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 member 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 ENCs 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 ENCs may help but it is unlikely to make a significant difference without structural alterations to the ENC 'system'.

So, what should be done?

A potentially successful route would be to reunify Primar and the IC-ENC and relaunch 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 directly 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.

Dr Andy Norris



Dr Andy Norris

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

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.

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

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

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 HOs 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

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.

Pix to be supplied

Caption

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 requirements 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 or 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 possible 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.

Current simplified 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 Simplified 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 administrations, 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 Simplified 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.

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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ELECTRONICS

Radio Holland's new direction

Since the management buyout of Radio Holland almost two years ago, the company has taken on a completely new direction, says CEO David Slager

RADIO HOLLAND is probably one of the best known brand names in maritime electronics, with its numerous subsidiaries around the world. It has provided services to some 20,000 SOLAS ships on a yearly basis, around half the world fleet. It is hard to avoid the name Radio Holland.

The company had a management buyout from previous owners EuroMarine in 2002, led by David Slager, its current CEO. The company is now 60 per cent owned by Dutch bank ABN AMRO Capital and the remainder is owned by members of the management and a group of informal investors, of which Mr Slager is the majority shareholder.

Since the buyout Mr Slager has been streamlining the company internationally, enabling work which has been begun at one office to be completed at another.

Mr Slager says that the company now has a clear direction, "We know exactly where we are going."

The company is offering services to shipbuilders and class societies as well as shipping companies, and signing contracts to look after all of the electronics maintenance for ships wherever they are in the world.

The strategy is to entice shipping companies by offering top quality service, getting the shipboard equipment working, and then following it up with sales, or vice versa.

"Service is often the driver of the business - if you provide first class service then the sales will follow," says Mr Slager.

Radio Holland was originally founded in 1916 by a number of Dutch shipping companies with the purpose of installing, maintaining and operating maritime radio stations.

The company specialises in supply, installation and service of satellite and radio communication, automation, observation and navigation systems.

The company has sales agreements with many manufacturers, including Furuno, C.Plath, Radio Zeeland, Tokimec, Jotron, Sailor, Broadgate, Transas, Tresco, Nautronix, Marimatech, Seacos, Nera, Phontech. It also provides service on behalf of many of these manufacturers.

"We don't want to be tied up with just one manufacturer," says Mr Slager. "We want to offer a complete and varied product range and we look for manufacturers who can give us a special position."

The company's expertise is firmly established in the knowledge of its employees - knowing how to get stuff working onboard ships and how to fix it, without being restricted to equipment made by a specific manufacturer. The company claims to be employing the top five radar technicians in the world.

This knowledge is backed up by a computer system, with databases of the problems faced by technicians around the world in the past and what has been done to fix the problem, thus providing quick solutions. The system can be accessed by technicians around the world.

International network

The organisation currently has 49 branches around the world and has plans to expand the network with additional, new branches during 2004, with the next scheduled to open in Malaysia. RH already opened a series of new offices since the management buyout, amongst others in China, Canada and Curacao.

The company plans to expand the business through its existing network. "We want to expand our business by entering activities we are fully familiar with in market areas that show growth potential," says Mr Slager.

The names of the offices have been streamlined; for consistency, the office in the Netherlands for example is named Radio Holland Netherlands. Just recently, in January 2004, the Norwegian subsidiary Skanti Radio changed its name to Radio Holland Norway.

In general, all representative offices are required to act as part of a global corporate entity, not as autonomous companies.

This makes a big difference to the service the company can offer to shipping companies, because a job started at one office can be completed at another.

There are no problems with different regional offices claiming "ownership" of clients and expecting sales commissions when shipping companies need services from a different Radio Holland office.

Since the buyout, the company has tightened up its quality control. The aim is worldwide compliance with ISO9001:2000 in 2004.

New services

An important new area of service Radio Holland is providing is installing, fixing

and maintaining PCs and IT networks on board, a major headache area for shipping company IT managers.

If shipping companies sign a full maintenance contract with Radio Holland (rather than only commissioning the company when something goes wrong), then the company can perform important tasks on the shipboard computers such as cleaning out the fan and replacing hard drives before they break, up to the maintenance of a total IT Network on board.



David Slager, CEO, Radio Holland

Another new area is flexible, performance related maintenance contracts, where the company agrees to take over all of the tasks related to keeping the shipboard equipment running.

Before agreeing to a service contract with a ship, the company collects all data about the equipment on board and looks at the condition of it.

It has also branched into satellite airtime, with a new service Radio Holland Connect, which supports the existing services providing satcom equipment with airtime services for Inmarsat and Iridium.

Radio surveys

An interesting development is carrying out radio surveys on behalf of class societies. All Radio Holland branches are recognized by the major IACS classification societies to perform radio surveys. For example, since July/August 2003 the new Curacao office of Radio Holland is already recognized to perform radio surveys for Lloyds Register and Det Norske Veritas. The Radio Holland Group is keen to further extend these radio survey services internationally.

It is very difficult for class societies to provide a radio surveying service internationally. Ships are required to take radio surveys every year, but the surveys need to fit in with the port calls and not hold up the ship.

This means that in order to provide a radio survey service, class societies need to have recognized radio experts in every major port of the world with the necessary skills to perform expertised radio surveys on behalf of these class societies.

Radio Holland already employs large numbers of radio experts around the world and so is very well placed to provide an outsource service to class societies handling their radio services.

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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



The first licensee built MAN B+W electronic engine, delivered by HSD, South Korea, in July 2003

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 typi-

cally 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. **DS**

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ELECTRONICS

V-MAX P-MAX

What does it take to make super-safe tankers and what technology do they need? Barry Parker tells the story of Concordia Maritime of Sweden and its V-MAX, C-MAX and P-MAX tankers

THE "MAX" CONCEPT is the brainchild of Stena-Teknik, an in-house technical design group at Concordia Maritime. It represents a new paradigm for shipping where a combination of environmentalism and built in durability also represents good business.

The MAX concept involves built in redundancy throughout the propulsion and maneuvering systems, including two main engines in two completely separate engine rooms (with a watertight firewall in between), double rudders and steering gear, two propellers and duplicate control systems.

The vessels are completely double hulled with extra deep hopper tanks (where sides meet bottom), an additional measure towards accident prevention.

The vessels were designed to be wider, allowing for shallow drafts (relative to other vessels w/ comparable dwt), giving the benefits of greater cargo deliverability on a given draft. The V-MAX transport VLCC cargo on a Suezmax draft.

The VMAX story began in late 1998 when Concordia / Stena signed a contract with the Hyundai shipyard for the construction of two 314,000 dwt VMAX tankers initiating a design phase that lasted eighteen months. Construction on the first unit began in July 2000, with a launching in January 2001.

The "Stena Vision" delivered in April 2001, followed by the "Stena Victory" during Summer 2001, both moving crude oil from West Africa into the Delaware River area (near Philadelphia) under three year charters to Sunoco (formerly Sun Oil Company).

The V-MAXes were followed by two 10,000 dwt. "C-MAX" chemical carriers (Polish built, in Caribbean trade), and six 49,900 dwt. "P-MAX" vessels set to deliver in 2005 - 2006 (to be built in Split, most likely for loadings in the Black Sea and Baltic Sea).

Concordia's background

Concordia's background in extra high specification tankers goes back to the last great tanker boom, lasting from 1967 to the oil embargo of late 1973, was an era when great shipping fortunes were made.

D.K. Ludwig's Universe Tankships, built in that period, gave new meaning to the word supertanker, developing a reputation for infusing both advancing technology and first class operation into tanker shipping later in conjunction with Gothenburg-based Stena. In the quality leagues at that time, large deadweight and thick steel were the differentiators.

Twenty years after Universe's pioneering practices, the words "quality shipping" joined the industry's lexicon, as the Exxon Valdez

grounded at Bligh Reef in March 1989.

Five years prior to the shipping equity boomlet occurring at the same time, Stena had floated the listed entity Concordia Maritime.

In 1989, Concordia (floated in 1984), continued to coalesce around the purchase of six immaculately maintained Universe vessels (renamed "Concordia" series) that had traded under charters to oil major Texaco, plus two ULCC's originally designed by Universe in the 1970's.

The Exxon Valdez fundamentally changed shipping. By the mid 1990's, when Concordia purchased Universe Tankships, the Oil Pollution Act of 1990 (OPA 90) and analogous IMO actions, memorialized notably in Regulation 13G, single hulled VLCCs, not designed with protective ballast spaces, were slated for phase-out by 2005. Charterers saw more double hulled tonnage availability in the 1990's, as many early 1970's single hull units were scrapped.

Concordia's vessels continued to trade, with their hefty steel thickness affirmed by top ratings in the Condition Assessment Programs (CAP) introduced by major Class Societies. As the OPA 90 and IMO 13G timelines were ticking, Concordia looked in two directions- life exten-



Double rudders: The Stena V-MAX

sions and fleet renewals.

New life was brought to a number of Concordia Class vessels, by conversion into Floating Production Storage and Offloading vessels (FPSO), rather than scrapping. Always in tune with broader industry trends, Concordia's fleet renewal strategy recognized that customers, along with other stakeholders in the movement of crude oil and products, were demanding heightened avoidance of risk.

Planners in the Stena organization also realized that simply building vessels with the now mandated double hull standards would not form a complete solution. Indeed, the mission of operating companies Stentex and Stenabulk (with vessels under the Universe technical management banner) addresses issues of safety, environmental friendliness, and competitive cost.

Computer based training

Two years before delivery of the V-MAX vessels, owners (Concordia) / manager (Universe) and the charterer (Sun Oil) joined with the Delaware River pilots to organise a training program for managing port calls of these vessels.

It was conducted on the advanced 360 degree simulators at the RTM-Star Center, in Fort Lauderdale, Florida, best known for training cruise ship crews and pilots, led jointly by a Delaware River pilot and a Ship Master.

The actual training sessions, using a bespoke computerized model of the vessels dimensions/ shape/ and propulsion, against a background depicting the very narrow Delaware River, began in December 2000.

Shipboard IT

The V-MAX's CAE Hitec bridge system is probably "the most advanced found on any VLCC in the world", according to Mr. Bjoern Sodahl, Concordia's Quality and Safety Manager, who says that its specialized design draws on Stena Teknik's experience in bridge systems for Stena's High Speed ferries.

The vessels feature an integrated bridge where multiple information is available on large screens in the bridge, including ECDIS with ARPA radar and AIS overlay.

Especially noteworthy is the integration of cargo control and machinery monitoring, directly from the bridge. The C-MAX vessels are fitted with Siemens / Raytheon navigation / automation systems.

The mantra of accident prevention through redundancy extends to bridge resource management where two consoles may show the same views, perhaps to a ship's officer and to the pilot. The computer network itself is redundant, with dual uninterruptible power supplies. The consoles' dual display capability also facilitates training of crew, or working out resource management issues with pilots.

Valmarine, also a division of CAE Corporation, provided the Damatic II ship automation system, where disparate systems can be linked. On the smaller C-MAX vessels, fiber optic cabling provides the glue.

CAE is known for automation and integration of complex military shipboard systems and systems on cruise ships such as the newly launched Queen Mary II, but Damatic systems are also on vessels for Stolt, Ceres Hellenic, MISC and BHP, in addition to the Stena High Speed craft.

The engines, from manufacturer MAN B&W as "intelligent engines" represent technological advancement while offering environmental friendliness.

The V-Max vessels are equipped with Nera Sat B, complemented by a Nera Mini M which the crew uses for prepaid calling. Messaging is handled using MS Outlook, with data routed to the Sat B through the Rydex RMX package. The advanced technology of the V-MAX's is evidenced by Hitec's ability to connect through the Sat B, for remote diagnostics and trouble-shooting.

Risk Alert

The V-Max vessel paradigm extends to proving a recurring theme presented in The

Digital Ship, that security and supply chain have many indistinguishable elements.

Delaware River Maritime Enterprise Council (DRMEC), a non profit group based in Philadelphia, conducted "Risk Alert", a demonstration project during 2003 funded largely by the Transportation Security Administration's Round 1 of Port Security Grants.



Inside the V-MAX bridge

In the "Risk Alert" implementation, the Transentric portal, originally developed by Union Pacific Corp. to provide shippers with visibility into railway supply chains, was adapted to feed security related information to local police, but also to the Federal Bureau of Investigation, US Customs, US Coast Guard and local police, as a voyage progressed.

The Philadelphia area, a hub for military shipments, also contains multiple refineries and chemical plants, and the security vulnerabilities associated with such facilities.

The participation of the V-MAX vessels was not accidental, given a long term contract and frequent port calls at two Sunoco facilities south of Philadelphia: the terminal complex at Fort Mifflin and the refinery at Marcus Hook.

The Transentric application supported multiple inputs concerning inbound voyages, and it also enabled alert information to be sent to recipients (in this case Federal agencies and local law enforcement), if a specific milestone occurred, such as the shipment moving within 50 miles of downtown.

The RISK Alert screen included an embedded tracking record using the PurpleFinder application (borrowing from fleet management and CRM practices at Oldendorff, P&O Nedlloyd, and many others).

Technology will continue to play an important role in commercial shipping. Maritime security can only sharpen the focus of outsiders on vessel operations, with the V-MAX vessels showing both insiders and outsiders the new definitions of "quality shipping". As shoreside interests such as DRMEC place themselves into information loops previously reserved for fleet managers or logistics managers, charterers may be looking much more closely at each vessel's communications capabilities, and the ability to easily interface a vessel with a land-based hub application.