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Front cover

At the end of last year, Videotel was granted UK MCA approval for a new training suite designed to meet the 1st January, 2014 STCW rules on Ship Security Training.

These three training courses are among the latest releases from the company.

In the last six months of 2013 alone, Videotel produced and launched over 15 training programmes and courses, which are provided in up to 29 languages.

The subjects range from addressing COLREGS & IALA buoyage to essential knowledge on leadership & management.

You get what you pay for!

At a tanker conference last month, the predominant themes were vessel efficiency, coupled with the 'Eco-ship' concept and what to do about the forthcoming low sulphur regulations.

Speakers and delegates alike were trying to second guess what will happen in 2015 and 2020, or 2025, when the sulphur fuel caps kick in.

During the evening on day one of the conference, *Tanker Operator* dashed over to the Royal Festival Hall on London's South Bank where Lloyd's Register unveiled a study on global marine fuel trends to 2030, which had been put together with the help of the University College London's Energy Institute (UCL).

This coincided with several papers given by industry experts at the annual IPTA/Navigate Chemical and Product Tanker conference, which has been addressing this problem, or trying to, for a number of years.

Listening to the speakers plus LR and UCL's presentation, it very much became apparent that it was a case of 'horses for courses'. There is no one solution that fits all.

Shipowning has become such a diverse industry that the supporters of the use of distillates, or scrubber technology, or LNG as a fuel, all have a case. The main problem areas for shipowners and operators (charterers) are the US and Europe where ECAs have already come into force, or are soon to come into play with probably more to come.

There were some who said that with vessels attaining greater efficiency resulting in the burning of less fuel and the emitting of less harmful gases, there won't be a need for as many ECAs as previously planned.

However, nations will be keen to be seen to be doing something about climate change now

and in the near future in a sort of political gesture, so I don't see this argument gaining ground, as sound as it might seem.

It seems that each major shipping organisation has its own favourite answer with INTERTANKO coming out strongly in favour of distillates a few years ago, while not surprisingly, DNV GL went for LNG as a fuel, due to its experience gained with local ferries and a growing list of passenger and offshore support vessels opting for LNG burning engines, operating in and around Norwegian waters.

Conversions

We have seen a couple of tanker conversions to gas engines, but these were backed by the Norwegian NOx fund, as they were long term chartered to Statoil. Termtank has ordered gas burning chemical carriers, while methanol burning dual fuel engines were specified recently for a series of MRs.

You cannot avoid the phrase 'Eco Tankers' today and there are many different opinions as to how you achieve this. At the conference, Ardmore's Mark Cameron described his fleet as being split between 'Eco Mod' and 'Eco Design'.

'Eco Mod' refers to the older vessels in the fleet, which were purchased on the secondhand market and enhanced by the fitting of Mewis Ducts, propeller boss cap fins and other energy saving equipment, which would bring a reasonably quick return on investment.

The 'Eco Design' vessels are Ardmore's recent deliveries from the yards and its newbuilding programme. However, Cameron had a word or two of warning about the tankers on offer at the yards. He said that the shipyards tended to sell their designs to a company's operations people, rather than the

technical people.

He quoted the case of efficiency calculations being worked out at the design draft rather than at the scantling draft. He advised the tanker industry to opt for the scantling draft every time when calculating the design's operations.

Warranted speed and consumption figures, as stipulated by the owner in a charterparty, can vary from the shipyards' initial design figures. He quoted the case of being offered a 2008-built MR on the secondhand market, which burned almost six tonnes more fuel per day than one of his 2004-built 'Eco Mod' tankers.

He also said that shipyards were still keen to quote a potential client for a standard design rather than an 'all singing, all dancing' version. This view was also born out by MAN Diesel & Turbo who told *Tanker Operator* that the shipyards will normally buy the main engines, generators, propellers, rudders, etc as separate items and not as a package, unless specifically demanded by the owner.

There is not much you can do with a tanker's general shape, but there are enhancements to be made at the bow and stern areas, including the rudders and propellers and the main and auxiliary propulsion machinery. There is also the question of hull coatings and for vessels in service, you should ensure that the hull, rudders and propellers are clean to avoid unnecessary friction.

A package approach at the design stage will cost that little bit extra, but in the medium to long term, significant energy savings can be made, resulting in lower fuel costs and thus lower emissions. Charterers are waking up to the idea of 'Eco' vessels, especially when acting as operators, as they are paying the fuel bill.

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VLCCs- a contango market developing?

Observations on the price of VLCC assets would suggest a contango market is developing, McQuilling Services said in a recent industry note.

A contango market implies that prices of an asset will be higher in the future than today. For example, in the oil markets, a contango exists when future oil prices are expected to be higher than current prices. This is typically illustrated through the futures market whereby prices for future delivery are more than the spot levels.

In the VLCC asset market, we believe the recent rise of newbuilding prices, compared to their five-year old counterparts, may also be demonstrating a contango market, McQuilling said.

Prices for VLCC newbuildings have been on an impressive upward swing during the last few months after remaining relatively flat for

most of 2013.

The current price for a VLCC newbuilding is about \$97 mill, a healthy \$10 mill more than the average price for 2013. At the same time, prices for five-year old vessels dipped last year only to recover in the last couple of months.

Newbuilding prices represent the futures market for asset buyers, due to the required construction period, while five-year old asset values correspond with the spot market.

In order to better understand the correlation, we displayed the asset price divergence by plotting the newbuilding and five-year value side-by-side with a starting base of 1.0 for each.

By adjusting the base factor of 1.0 for the

percentage increases/decreases on a monthly basis, we

can clearly show the deviation that began in the summer of last year (Figure 2).

While there may be several factors behind the uncoupling, which began in July, the implication is for improving crude transport markets in the long-run, compared to the short-term.

Given the current VLCC deliveries scheduled for this year (19) and in 2015 (32), we concur with this view, although rates have recently shown strength helping five-year old values accelerate in February of this year, the consultancy said.

In Figure 3, we plotted the VLCC earnings during 2013, which may explain the weaker performance for five-year old vessel values for most of the year.

During the summer months of 2013, we witnessed a drop in TCE levels, which was duly represented in the prices of five-year old

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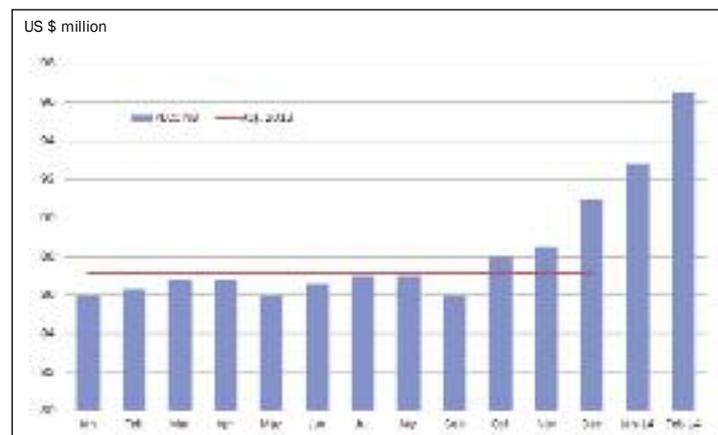


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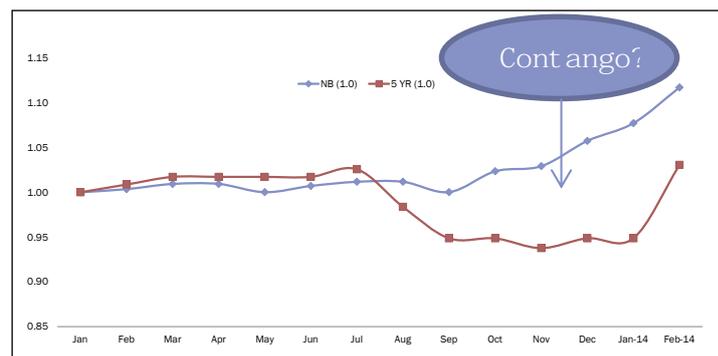
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Figure 1 - Newbuilding Prices VLCC



Source - McQuilling Services.

Figure 2 - 5-YR vs. N/B Asset Values Jan 2013 - Feb 2014 (1.0-Base)



Source - McQuilling Services.

INDUSTRY - MARKETS

vessels during the same period (Figure 2). However, sustained improvement in the TCE levels during the last four months provided initial support and a boost in values as displayed for February (Figure 2).

Our outlook is consistent with the asset buying behaviour just discussed, although in absolute terms, higher rates may be required, McQuilling warned.

In our recently published *2014-2018 Tanker Market Outlook*, we used proprietary data to project the earnings for vessels across eight classes. While we expect earnings to be pressured this year, a gradual rebound should transpire.

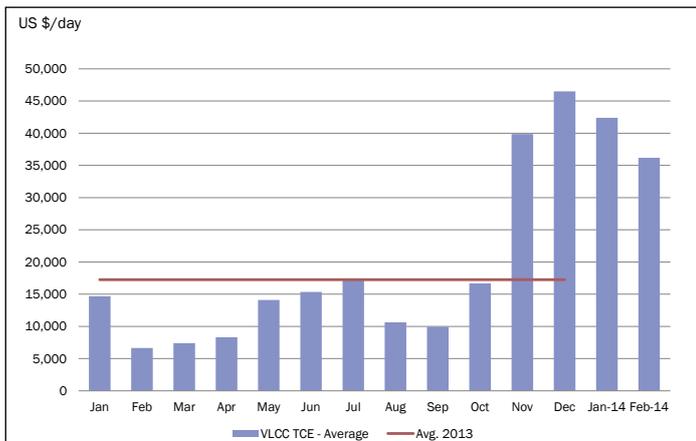
Using the current purchase price of a five-year old VLCC (\$60 mill) and our projected value for a 10-year old VLCC in 2018, we illustrated the required TCE rates for an owner to achieve a 10% IRR (Figure 4). If the market can sustain the momentum that began late last year, smiles may once again return to the faces of VLCC owners.

In conclusion, we highlighted what may be a market indication that brighter days may be ahead for the crude tanker market, but probably not immediately. The recent contango development may be an early sign of an improving longer term trend.

However, we remain cautious about the short-term fundamentals within the industry, particularly on the supply side. Continued ordering of new tonnage may reverse the sentiment at the back end of the forecast period, McQuilling said.

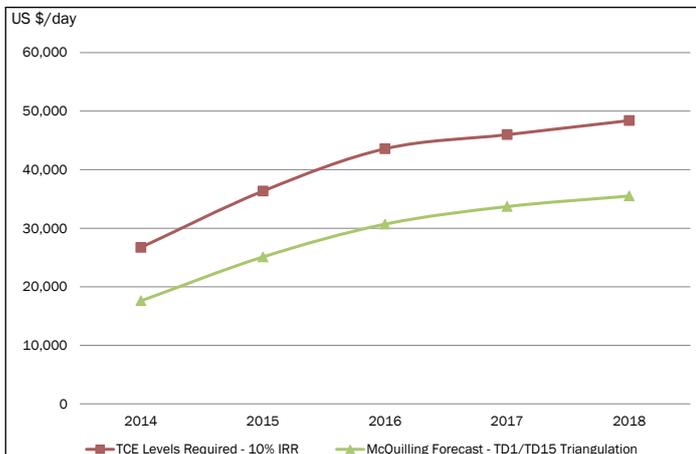
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Figure 3 - TCE Earnings - VLCC Jan 2013 - Feb 2014 (US\$/day)



Source - McQuilling Services.

Figure 4 - TCE Sensitivity - 10% Discount Rate 2014-2018



Source - McQuilling Services.

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Tanker deliveries' roller coaster

Tanker deliveries in 2013, both in terms of numbers and deadweight, were the lowest recorded since 2002, a recent report claimed.

The final total of 21 mill dwt was 10 mill dwt lower than 2012 and considerably down from the 45 mill dwt delivered in 2009, Gibson Research said.* Not surprisingly, crude tanker tonnage accounted for three quarters of the 2013 total at 15.2 mill dwt.

The graph illustrates the dreadful result of the over-ordering of both crude and product tonnage during the burgeoning tanker market in the years in the run up to the financial crisis in the autumn of 2008.

Despite delays and cancellations, deliveries from the Far Eastern shipyards continued to flood the market with unwelcome tonnage. Between 2009 and 2012, the annual average tonnage hitting the water was 38.7 mill dwt, which arrived into a market offering little hope of recouping the high investment costs, or making any inroads into the repayment of debt.

Moving on from this period, we can see that the tanker market emphasis is clearly showing a shift

towards the clean products market in terms of the surge in orders placed last year, Gibson said.

Scheduled product tanker tonnage for delivery this year is set to increase by 3 mill dwt to around 8.8 mill dwt, climbing to around 12.3 mill dwt in 2016.

In comparison, crude deliveries will be slightly higher this year than seen in 2013 at 15.4 mill dwt, but will fall dramatically to just 8.2 mill thereafter before moving up again in 2016 reflecting the recent surge in VLCC orders.

Slippage inevitable

Gibson said that its analysis for 2014-2016 was based on no cancellations, or delays. However some slippage will inevitably occur, including negotiated delays and of course the failure of some shipyards to fulfil their orderbook.

Orders placed now are generally for delivery in 2016 and beyond, so the profile will be somewhat lower than shown in the graph.

However, next year's product tanker deliveries will overtake crude tonnage.

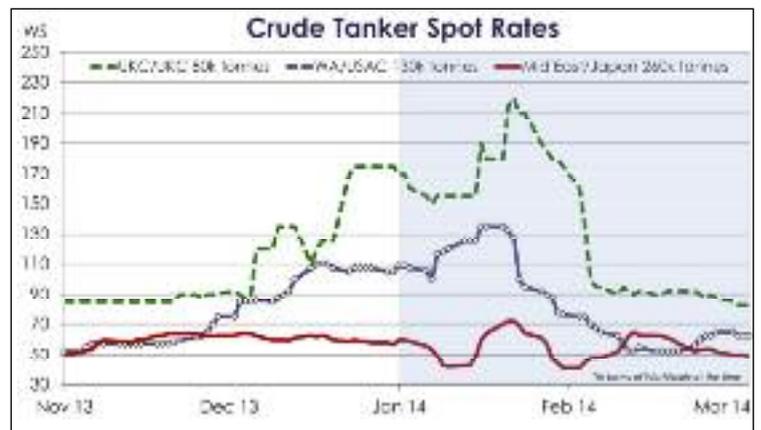
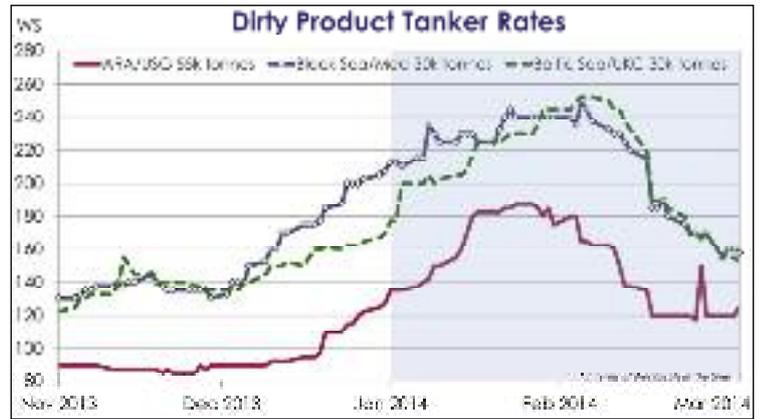
Owners may still be tempted into a fresh wave of investment on the back of the recent temporary rebound in several of the tanker sectors.

Inevitably newbuilding prices have started to rise and there could be an element of buying before prices gain too much momentum.

Of course statistics can be misinterpreted. The forward orderbook for product tankers (in tonnage terms) is still much lower than the peak deliveries, 14.1 and 14.9 mill dwt in 2008 and 2009, respectively, but these high figures came on the back of replacement tonnage.

Today's investment is firmly based on the belief in the future prospects for a sustained long-haul products trade. The new investment coming into shipping through hedge funds and private equity may do a better job in managing to keep a tighter check on any over-investment, Gibson concluded.

**Gibson's figures include all tankers of 25,000 dwt and over.*



Chemical/product tanker thoughts

At the recent IPTA/Navigate Chemical/Product Tanker conference, there were several papers given on the chemical and product tanker trades.

Taking chemical tankers first, at present, the chemical trades amount to 114 mill tonnes per annum. This sector has seen a growth pattern of 5% per annum over the past 20 years, a leading consultant said.

Charles Lawrie of Richardson Lawrie Associates said that Middle East exports account for 36% of the trade. However, these cargoes are primarily commodities, but specialist cargoes are growing out of the region. Europe accounts for less than 20% of the trade and here the cargoes are of a more specialist nature.

Asia accounts for two thirds of the demand in commodity cargoes, while in 10 years. Europe could see its chemical industry decimated by the predicted refinery closures, leading to more petrochemical imports. China is investing in more petrochemical plants with 30 mill tonnes of new capacity planned.

However, not all of this could come on stream.

It is estimated that 17.6 mill dwt of tonnage is habitually employed in the chemical trades. The orderbook accounts for another 1.7 mill dwt as a base case, or 2.8 mill dwt as a maximum case, Lawrie said. Scrapping potential is limited.

Partial, or fully stainless steel fitted vessels still dominate the trades across all age brackets and all size ranges, except for vessels of above 40,000 dwt. Coated vessels amount to 41% of the fleet of which 70% are over 40,000 dwt.

Vessel demand has remained remarkably robust even during the past 10 years, Lawrie said. However, the extent of future US exports was still uncertain, while further European plant closures could boost imports into the region.

Turning to the products tanker trades, **Jeff McGee** of Makai Marine Advisors said that the start up of Arabian Gulf refineries coupled with increased European gasoil imports should boost tonne/mile demand this year. He also thought that US exports to Latin America would stabilise.

Tighter vetting standards and the cost of soon to be mandated ballast water management systems represented threats to older clean tonnage resulting in the potential for scrapping ages to come down. For example, scrapping vessels at 20 years of age would raise the near-term removal prospects to 2-2.5 mill dwt per year, or 2% of fleet, he said.

Due to the current orderbook, discipline in contracting is required. However, with the increase in earnings, this could encourage still more orders.

He thought that the clean tankers trading in the dirty segment represent a potential overhang, but the increasing supply should keep them in the dirty markets. Improving clean tanker trades demand should allow utilisations to recover and push earnings higher before the next wave of deliveries hit the market.

Both the spot and period rates could surge later this year, before the influx of new tonnage in 2015-2017, he said, explaining that gasoil cargoes would remain the key driver of product carrier demand.

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Cyprus- heading back from the brink

In January of this year, the Cyprus Shipping Chamber started to celebrate its 25th birthday having been established on 26th January, 1989.

The main purpose of the Chamber is to promote the interests of Cyprus Shipping and to continuously further the reputation of the Cyprus flag.

The Chamber currently ranks as one of the largest national shipping associations in the world, due to several large shipmanagement concerns, who are headquartered on the island.

Within the framework of the various events that will be organised to mark its 25th birthday, the Chamber will be the hosting of the International Chamber of Shipping's (ICS) annual general meeting, which is due to take place in Limassol in June.

At the same time, in co-operation with the Cyprus Maritime Administration and exploiting the presence of the international shipping community, the Chamber will host a summit of shipping ministers from different countries.

In another move, the EU ministerial committee for the Integrated Maritime Policy (IMP) has endorsed the Cypriot draft strategy, which aims for the full utilisation and sustainable economic exploitation of the maritime areas of Cyprus.

The Chamber said that it had prepared and submitted its comments on the draft strategy to the Cyprus Minister of Communications and Works. The submission identified gaps, or missing elements, that were not taken into consideration and made specific recommendations, giving particular attention on the section concerning shipping.

"We anticipate that through our comments and recommendations, a clear message will be sent to the Government that shipping, as one of the main supporting pillars of the Cyprus economy, must be supported and promoted as much as possible," the chamber said in a statement.

It was agreed at the EU minister's meeting held in Limassol on 8th October, 2012, to adopt a marine and maritime agenda for growth and jobs – the Limassol Declaration.

At this meeting, which came five years after

the launch of the EU IMP, the member states and the EC re-affirmed that a dynamic and co-ordinated approach to maritime affairs enhances the development of the EU's 'Blue Economy', while ensuring the health of the seas and oceans, the EU said in a release.

Despite the island nation enduring considerable problems during the financial crisis, primarily due to being linked to the Greek banking system, none of the large shipping companies domiciled in Cyprus has pulled out.

The only one discussing a move away from the island, known to *Tanker Operator*, is Ravi Mehotra's Foresight Group, but this was thought to be for business reasons, rather than any fear of being caught up in the country's debt crisis.

Vindication

During the difficult years, the shipping world wondered if the likes of Bernhard Schulte Ship Management, Columbia Shipmanagement, Interorient, Unicom and others would relocate, as they all have considerable presence in other countries. However, they have remained and with calmer winds now blowing across Cyprus' economy, their decision to stay looks to be vindicated.

With oil and gas deposits found offshore, exploration is on the horizon and talk of re-unification has returned, appeasing the oil companies' fears. Once production is underway, the economy could be given a much needed boost quite quickly. However, the proposed privatisation of state-owned organisations, such as electricity, telecoms and port authorities, was recently thrown out of Parliament by the narrowest of margins and has had to be re-submitted.

Talks between the Greek and Turkish communities resumed a couple of months ago, backed by the US. However, this will be a tough nut to crack as opinion is divided on both sides of the so called 'green line' in Nicosia, which marks the boundary.

Illustrating the efforts made to shore up the

economy, Standard & Poors recently raised its long term sovereign debt rating on Cyprus, saying that the immediate risk of debt payments not being made has receded, taking into account the refinancing of the banks.

This statement followed a second inspection by the European Troika last November to assess the state of the island's economy.

Standard and Poors said: "The stable outlook reflects our view that the implementation risks remain, as the end of the three-year European Commission, International Monetary Fund, and European Central Bank programme approaches, balanced against the upside potential we see coming from Cyprus' economy".

The Chamber considered that this positive development constitutes the "beginning of the end" of a series of downgraded ratings and which will initiate the re-entry of Cyprus in the international financial markets, according to local reports.

It is not without some irony that Greece has assumed the EU Presidency for the first half of this year. Making changes to the EU strategy on maritime affairs is just one of the items on the agenda. Come July, Italy takes over.

Among the many shipping companies, including subsidiaries, domiciled on the island, several have tanker interests.

These include Ahrenkiel, Ambra Shipmanagement, Bernhard Schulte Shipmanagement, BW Gas, Chemikalien Seetransport, Columbia Shipmanagement, Donnelly Tanker Management, Eastern Mediterranean Shipmanagement, FRS Shipmanagement, Interorient Navigation, IONA Shipmanagement, OSM Group, Petronav Ship Management, Reederei Nord, SCF Unicom Management Services, Seatankers Management, Stena Holding, UPT Pool and V Ships, plus others.

There are also many full international members and associate members, including those from the service, ship agency and supply sector, plus equipment manufacturers and repair & maintenance concerns.



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Cyprus concern launches web-based bunker transaction tool

What is claimed to be the world's first real time buying and selling marine fuel platform was launched by Cyprus-based newly formed company Bunkering at Sea (BAS) last year.

BunkeringAtSea.com is designed to act as a mediator, connecting bunker suppliers, brokers and traders to bunker buyers around the world allowing them to manage the bunker bidding process completely online through an 'always available' and transparent system.

The shipowner, or shipmanager, is able to view all platform-registered suppliers and their selling fuel price, thus make an offer and negotiate the best possible closing rate. From the beginning to the end of the negotiations, all the documentation involved is created and available online through the platform, eliminating the time and bureaucracy involved in conventional trading, the company claimed.

By using the platform, all the parties involved can achieve a more efficient and cost-effective business. For example, the shipowner can achieve the lowest possible prices and thus save on operating costs, considering that bunker fuel forms one of the most cost daily expenses in commercial shipping.

The benefits to the physical supplier are that the company has a broader customer pool from around the world, thus increasing volume while reducing management costs. And finally, the broker has the advantage of counter offering competitive prices with increased sales and clientele that pass through his 'supply zone.'

However, simplifying the bunkering process is not the only advantage to using the online live platform. Transparency is ensured, thus minimising disputes and cancellations between suppliers and owners, BAS said.

In addition, www.bunkeringatsea.com offers online information on oil prices and supply costs at various ports worldwide, giving users the opportunity to strategically plan their bunkering needs for cost effective transactions.

BAS said that its vision was to provide, through electronic auctions, reduced/optimised bunker costs, as well as lowering administrative costs while consuming less time while undertaking a purchase.

The web-based purchasing tool operates in a secure electronic environment to minimise the time required for ordering, or offering bunkers. Registered companies have the

ability to address a greater number of providers/customers. Throughout the entire bidding process, the user is in control since he, or she will be able to monitor the order process from start to finish.

The system is designed to facilitate day-to-day bunkering business while providing flexibility and the ability to manage multiple orders/offers simultaneously.

Advantages and benefits claimed

Advantages claimed include -

- Bunkeringatsea.com provides the first real time integrated platform for bunkers.
- It connects physical bunker suppliers, brokers and traders to shipowners, time and bareboat charterers for all vessel types worldwide.
- Constant updates are available on average selling prices and fuel trends for each bunkering port through platform data base.
- Creation and management of bunker offers/requests.
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- Evaluation and referral of companies.
- Effective monitoring of bunkering cases.

The benefits claimed are -

- Reduces bunker supply final cost.
- Simplifies the process.
- Improves transparency of transactions throughout the procedure.
- Minimises the likelihood of disputes and claims between shipowners and suppliers regarding bunkering.
- Cuts administrative costs and improves collaboration among platform members. Simplifies procedures and minimises time spend.
- Supports users in their decision making.
- Advances future strategy development in bunkering.
- Allows for implementation of custom needs.
- Provides statistics that allow better future planning.
- Evaluates transaction process and its users.
- Improves remote decision capabilities for end users and management.
- Provides rapid shared access to information from anywhere.
- Contributes to the adaptation of new market conditions.
- Low cost of use.

Fight piracy – intelligently!

The face of global piracy is constantly changing. E-Navigation technology offers a proactive complement to armed guards, by providing information that can prevent a confrontation. But what kind of information is actually required?*

Modern piracy is here to stay. The latest hotspot is West Africa, where the oil-rich Gulf of Guinea is seeing a spike in the number of attacks. Vulnerable areas include the waters off Nigeria, Ivory Coast, Ghana, Benin, Togo, Cameroon and Lagos.

However, pirates are not shy of extending their roaming to Angola and Congo and seizing opportunities arising from political instability in Syria, Egypt and Libya. Beyond these areas too, from India and Indonesia to Peru and the Philippines, piracy is still a threat.

Pirates have had to change their tactics in the last few years and the geographical expansion is just one reaction to the presence of naval task forces around the Gulf of Aden. Another is their use of ‘mother ships’ operating from calm and open sea areas such as in the South Atlantic.

Neither do pirates limit themselves to hostage taking and ransom anymore but are also stealing high-value cargo from oil, or gas, tankers. Offshore installations around Nigeria for instance, have also become an attractive target, as have support vessels. Many platforms and small vessels used for crew transfer remain unprotected and can be easy prey.

However, while piracy has evolved, so have its countermeasures. Beside armed guards and navy protection, which are still an effective deterrent, e-Navigation solutions can provide valuable information to help seafarers avoid confrontation entirely.

Research and the use of piracy data can go a long way towards avoiding these situations. This is well proven by Jeppesen’s Piracy Update, an electronic chart overlay available for ECS and ECDIS, that helps identify, understand and manage the risks associated with crime at sea. Based on intelligence from recognised and authoritative sources on global sea piracy, it is used by seafarers, shipowners and operators, insurers and several national navies to reduce the likelihood of vessel

attack.

As pirates rely on certain sea states to operate, weather information is an essential element of anti-piracy data. Jeppesen OceanView is a marine planning software combining navigational charts, weather information and automatic route planning to create a more comprehensive picture for decision support in high risk areas.

That said, we have to keep in mind that too much information can sometimes be as harmful as too little. Feedback from Piracy Update and OceanView customers helped us to optimise and streamline the voyage planning process within our free-to-use NauticalManager software, which aggregates both weather and piracy data into a lean and user-friendly interface.

Advanced intelligence tools

As a second officer on board an offshore platform support vessel/tug, I was charged by my Master and towing master to undertake voyage planning for the tow of a jack-up rig from Ammenam field in Nigeria to Ghana.

At the time, we had no electronic planning means – except for an ECS -planning had to be done on paper charts. I had to take into account the latest intelligence report shared orally by the towing master and look for certain weather and wave patterns. The weather forecasts came in the shape of Internet printouts.

During the planning stage there were sudden indications that piracy activities were extending beyond a ‘safe offshore distance’. This meant that I had to re-plan the whole voyage and the entire process ended up taking two days.

Today, with a tool like Jeppesen NauticalManager – I can incorporate daily piracy activity notices with up to date weather information. In Oceanview, I can also set ‘alarm limits’ for weather conditions (eg wave height). This would reduce the time required to create a complete voyage plan from two days down to 20 minutes and adapting to new



Jeppesen’s Geir Lyngheim Olsen.

circumstances would take minutes instead of hours.

In my experience, the integration of electronic nautical charts (ENCs) with information, such as weather and piracy and e-Navigation software yields significant benefits for the seafarer. It not only optimises voyage safety and fuel efficiency, but also streamlines the entire voyage planning process. **TO**

**This article was written by Geir Lyngheim Olsen, a product manager at Jeppesen Marine. He specialises in voyage, operations and disruption planning solutions. He has had 11 years’ experience as a seaman and officer on Search and Rescue and offshore vessels (Anchor Handling Tug Supply (AHTS) and Subsea), including two years operating in volatile maritime regions of Nigeria, Ghana and Angola. Olsen was instrumental in the Singapore Marine Electronic Highway ‘S100’ sea trials, has served as a delegate and speaker on e-Navigation to the IMO and International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).. He has a Masters Degree in philosophy and ethics from the University of Bergen and a Bachelors Degree in nautical science from Stord/Haugesund University College specialising in offshore technology and project management.*

Safeguarding Seafarers worldwide

Piracy and armed robbery is one of the foremost threats facing the international shipping community today with over 2,700 seafarers attacked last year alone.

While the number of incidents in Somalia has seen a sharp decline, attacks in West Africa have escalated in the form of cargo and bunker theft and crew kidnap. The number of crew kidnappings- crew taken off vessels and held on land for ransom – quadrupled between 2012 and 2013. The IMB Piracy Reporting Centre said that the range of the attacks was extending and the level of violence against the crews was “dangerously high.”

The safety of crew, coupled with the crippling financial implications of each attack means investment in anti-piracy measures is crucial. However, this is difficult to balance – the need to protect crew while maintaining the safety of the vessel.

For example, the use of razor wire for vessel hardening creates a number of issues in itself. The risk of injury to crew, threat to the environment, expense in continual replacement and alarmingly on some vessels, its installation effects the use of life saving equipment – blocking access to life rafts and fire hoses, infringing on the SOLAS convention.

There can be no doubt that the use of armed guards has proved a controversial decision. Although not an option for every flag state and tanker owner, for those that are able, or have chosen to use armed guards, issues with



GUARDIAN in situ.

ongoing costs, admin, political connotations, coupled with the potential escalation of the use of force, proves a heavy burden.

So what is the alternative? Guardian Maritime has spent a year developing a solution to the problem of unwanted boarding while underway, at anchor, or in port. The first real alternative to razor wire, the patented GUARDIAN ship protection system acts as a highly visible, robust and simple way of making access to ship or rig virtually impossible.

GUARDIAN units are quick, simple, safe to install and prevent boarding equipment being secured to the vessel, with the equipment profile making it virtually impossible to climb over even if a grappling hook was to be secured on deck.

Proof of the effectiveness of GUARDIAN was shown during an attack on a containership by pirates of the coast of Nigeria in May of last year. The attack was unsuccessful - due mainly to the installation of GUARDIAN.

Teresa Stevens, owner and designer of GUARDIAN, said that the system works effectively alone, or as part of a layered defence system “The hardening of vessels is an absolute priority. GUARDIAN is perfect as part of a layered defence system, working well alone, or in tandem with the armed guards, acting as a shield for the guards to get into position unseen. Using both systems together in extreme high risk areas is the only way to go.”

Guardian Maritime- whose motto is “Safeguarding Seafarers worldwide” – believed that crews’ safety must be a priority. By ensuring the safety of the ship from pirate attack, the crew are protected from the threat of kidnap imprisonment and torture, enabling their safe return home at the end of their rotation. “The crews of ships worldwide do a great job supplying us all with what we want; they have the right to do their job in as safe an environment as can be provided. We are proud that our clients have chosen GUARDIAN to help provide that environment,” Stevens said.



Installing the equipment.

GUARDIAN is a Best Management Practice 4 (BMP 4) compliant installation, environmentally friendly, recyclable and saves operating costs by lasting three to five years. The units can also be swapped between vessels and tailored to suit any colour, or type of seagoing vessel.

In product testing, two ex-Royal Marines tried to board a ship protected with GUARDIAN anti-piracy barriers. Following the trials, the commandoes concluded it was impossible to breach GUARDIAN’s defensive barrier - despite perfect conditions and assistance given to them.

The system is currently fitted on board vessels belonging to some of the world’s biggest fleets, including CMA-CGM, Maersk and BW Tankers.

Anti-piracy barrier

Following on from the success of the product over the last 12 months, the GUARDIAN brand of anti-piracy barriers has been restructured under a new company name.

The barriers are now marketed and sold by Guardian Maritime Limited.

In taking the whole operation back in-house, the original inventors and owners, David and Teresa Stevens, plan to expand the company, adding to the team and increasing worldwide representation, as well as further developing a range of additional anti-piracy products, they said.



On board training is set for growth

On board training has been around for several years, but has this method increased in recent times with the advent of more sophisticated communications packages? Tanker Operator spoke with Seagull's managing director Roger Ringstad to gain his views on the subject.

He explained that for transferring CBT type training programs to vessels, owner and managers still preferred to use physical media, such as DVDs, hard discs, or pre-installed on a PC. Some are even asking for web-based programs.

"Our experience is that when several hundred MBs of data, which is what we are talking of for new CBT programs, as well as revisions and updates, is to be transferred to a vessel, our customers prefer a physical media shipped to the vessel.

"We do, however, think that this will gradually change as an increasing number of companies will install Fleetbroadband and VSAT. The main advantages we see with increased download capacity are that our customers can download updates to training modules much more frequently than today using physical shipments," Ringstad explained.

He said that due to the flood of new regulations recently adopted and more soon to come, the total number of training requirements is increasing year-by-year and as

a consequence, Seagull's library of training programs will continue to grow.

"Up until a couple of years ago the main target groups for our training programs were crew on board vessels. But with some of the new regulations, for example MLC2006, we have developed training programs specifically for office staff. These programs are mainly delivered online/web based only for office staff," he explained.

Educational

CBT has been a natural part of the blend of training activities in many shipping companies for more than 10 years, he said. Seagull is also delivering its CBT products to many colleges and universities where the programs are used as an integrated part of the education.

The typical usages can, for example be within navigation, where the students are lectured on the various topics, as well as undergoing simulator-based training. In addition CBT modules are used as exercises and home work for the students to supplement the lectures and give practical examples on the theory.



Seagull's Roger Ringstad.

As for specialist tanker and gas carrier certification courses, Ringstad said that the company offers specialist certified tanker training courses for oil, gas and chemical.

"One of the main training products which Seagull offered when we established the company in 1996 was the classroom and

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simulator-based courses for tanker safety training following the IMO Model courses on these topics.

“More than 10 years ago, we developed a distance course concept of these courses, such that the candidate could perform the courses

by themselves on board during their working contracts. During recent years, we have used several of our CBT modules to support these courses,” Ringstad said.

Turning to certification in general, he said: “Our ‘Onboard Courses’, which offer a

combination of CBT modules covering theory combined with practical hands-on training on board the vessel, are a good example of approved courses which give the seafarers a certificate.

“Many of these courses replace shore-based classroom courses, which mean the seafarer doesn’t need to spend his holiday on a course and the shipping company saves the travel/accommodation cost for shore-based course - so a win-win situation. Our most well-known approved on board courses include Ship Security Officer, Security Awareness and Duties, Tankerman Safety, ECDIS, etc,” he said.

To deliver the courses to the vessels, the company has been

working with Palantir on several projects over the last three to four years. Ringstad explained that Palantir specialises in delivering server/network installation and maintenance of vessels’ network and all the software applications on board.

Seagull can deliver its entire software suit, including administration, assessment and all CBT modules pre-installed on Palantir’s main product KeepUp@Sea. “This makes it very easy for vessels to receive updates to Seagull software, via Palantir services,” he said.

As for Seagull’s future, Ringstad said that the company was determined to continue its growth pattern “.....because we believe this is needed to continue to deliver and maintain a large library of training programs and courses, as well as the market leading software for training administration and competence management.

“The growth will primarily be organic, but also by acquisitions when we find companies that add value to the Seagull group of companies,” he concluded.

As part of its growth pattern, Seagull has acquired all the shares in e-learning specialist MindIT Solutions, based at Kristiansand, Norway.

The company is a specialist provider of web based learning to the offshore industry.

“The MindIT team is a reliable and high quality supplier of e-learning services to the offshore market and represents a basis for Seagull to enter the offshore segment,” said Oscar Johansen, Chairman of Seagull Holding at the time of the acquisition earlier this year.

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Tsakos' academy wins its spurs

Tsakos Columbia Shipmanagement (TCM) Maria Tsakos TCM Academy has recently been accredited as an Approved Training Provider by Lloyd's Register, as well as being certified to the BS EN ISO 9001:2008 Quality Management System Standard by LRQA.

The academy has obtained approval for two courses - Operational use of electronic chart display and information system and Oil Record Book, while the quality management system ISO 9001 is applicable to the 'Provision of Training Services to Shipping Company Personnel and Seafarers'.

On 7th February during a ceremony held at the TCM premises and attended by Capt Panagiotis Tsakos, Nikolaos Tsakos and managers and staff of the Tsakos group, the LR chairman Thomas Thune Andersen presented the certificates to Vassilis Papageorgiou, Tsakos Group deputy chairman, George Vassiliades, TCM deputy managing director and Nikolas Themelaras, the academy's manager.

"My sincere congratulations go out to the management and staff of the Maria Tsakos TCM Academy for this significant achievement and we look forward to supporting the further development of the

academy in the future with the key objective of enhancing standards of training and competence in the maritime industry and promoting safer and cleaner shipping," said Andersen.

The LR Approved Training Provider scheme provides third party assessment and certification of the ability to provide training to a recognised standard and deliver courses which meet their stated objectives. It provides a benchmark for the marine industry when selecting courses for staff development and training.

"It is our duty to provide the best training facilities to our seafarers and shore personnel and to continuously develop and improve their competence in order to ensure operational excellence, both in terms of safety, as well as efficiency and performance towards our clients.

"The reason we invested in simulators was the opportunity for our crew to operate and react in a virtual, yet fully realistic, environment where mistakes become lessons learnt, without risking damage to environment, equipment and people" Capt Tsakos said.

Kongsberg equipment

The Maria Tsakos TCM Academy occupies about 500 sq m on the fifth floor of the Tsakos headquarters in Athens and it is fully equipped

with the latest Kongsberg simulators including;

- K-Sim Polaris – DNV class A ship's bridge simulator with 240 deg visual field of view for complete navigation and ship manoeuvring training.
- Four K-Sim Polaris, desktop simulators with ECDIS.
- Four K-Sim Neptune Cargo, where the cargo, ballast, inert/venting, washing and associated sub-systems are presented as interactive mimic diagrams.
- Four K-Sim Engine Neptune, desktop simulators, which are fully integrated with the bridge simulator for full crew training.
- Big View touch screen system – an interactive schematic mimic of all relevant engine room compartments, ideal for full system understanding.

The academy's training will not only be restricted to certification and statutory training, but will also be expanded to cater for the specific needs of the officers and the operational requirements of the vessel the officers are assigned to.

In addition, it will provide training to shore personnel, covering new regulations, analysis of incidents, loss prevention and familiarisation of new equipment to be fitted on board vessels.

T

ECDIS Ltd to open up in Asia

UK-based training concern ECDIS Ltd is expanding its empire by opening up in Singapore.

This move comes some four months after the company visited the country on a UK Trade & Investment (UKTI) trade mission.

ECDIS Ltd said that it hoped to open the new training centre in Singapore later this year, creating an estimated 12 new local jobs.

The new centre will house some of the latest training technology, similar to that used daily and displayed in the ECDIS Ltd UK headquarters in Whiteley near Fareham.

Since opening in 2008, ECDIS Ltd has doubled in size every year and is now established as an independent ECDIS training company, offering generic and type specific courses for most of the 34 leading system manufacturers.

The reason for the new centre is to create a

centre of excellence in Asia, the company said.

Complex

Nick Lambert, ECDIS Ltd's non-executive director, said: "The transition to digital navigation is a complex and challenging technological and HR issue for shipping companies, so the training we provide is in demand. The Far East is widely regarded as the fastest growing region of the shipping industry and Singapore is an excellent regional hub.

"UKTI has been very supportive throughout the planning process in Singapore and the UK; we've gained great benefit from their advice, funding regimes and international network – the tools we need to progress our aspirations," he said.

Although a relatively new company, ECDIS Ltd claimed to have produced the world's first

independent ECDIS manual for operators and the world's first comprehensive ECDIS procedures guide for digital ships.

Today, the company provides advice to about 100 shipping companies for ECDIS purchasing, training and charting support, owns one of the world's largest independent websites on ECDIS regulations and has liaised with just under 4,000 people and organisations, including leading shipping companies and governments.

Both managing director Mark Broster and Lambert had several meetings planned during their visit to Singapore last month with local companies and businesses to discuss the opening of the new centre.

ECDIS Ltd is holding an open day on Friday 16th May at its UK headquarters, at which guest speaker, UK MAIB's Richard North, will be addressing inadequate training and an over reliance on electronic aids to navigation.

T

INTERTANKO heads for New York

This year's INTERTANKO's Annual Event takes place in New York from 6th-9th May 2014.

Taking the usual format, it brings together INTERTANKO members and associate members, plus a high level group of top-level industry figures.

They will discuss how the tanker industry can adapt for survival and also to work through a number of crucial issues at a practical level in workshops.

As with past INTERTANKO events, there will be many opportunities to network with colleagues and peers to compare notes on how the industry is developing.

The programme kicks off on Tuesday 6th May with an Executive Committee meeting and the Council Dinner for members and their invited guests.

On Wednesday 7th May, it is the turn of Intertanko's Council to meet, which is followed by the Annual General Meeting and then the Annual Dinner.

The following day sees the traditional seminar day, which has been given the theme-Sustainability – Moving the Story On.

This day is split into four sections. The first takes in the big picture by analysing trends with players involved in trade flows, markets and finance.

The second session looks at – Ethics and



INTERTANKO's managing director Katharina Stanzel.



INTERTANKO's chairman- GasLog's Graham Westgarth.

Tanker Chartering – which will investigate tanker chartering practices, while the third session is devoted to assessing risk – what stakeholders look for when vetting and how they go about it. The fourth and final session will focus on proposing solutions for a sustainable tanker industry.

At lunchtime an official signing ceremony will take place of the INTERTANKO Code of Conduct.

During the evening, INTERTANKO will be hosting a social/drinks reception enabling the delegates, speakers and exhibitors to network in a convivial atmosphere.

Workshops

On Friday 9th May there are a series of interactive workshop days and a parallel golf event.

One workshop addresses shipping's air emissions asking the question – Can the Requirements be Achieved? This interactive session will address the complex set of air emissions regulations for shipping - both already adopted and new regulations under debate - looking at SOx, NOx and CO₂.

Another will concentrate on giving an environmental overview focusing on US and IMO ballast water rules.

A third will cover the threat of sanctions under the title of 'How to stay out of jail and save millions of dollars' and will look particularly at the Iranian situation.

Security at sea is the subject of another workshop taking into consideration piracy, the Gulf of Guinea and emerging threats.

As with the other events, there are alternative social days organised for partners.

Alfa Laval adds to PureBallast system

Alfa Laval has added a 600 cu m per hour reactor to the PureBallast 3.0 series, enabling new configurations with fewer components and considerable energy savings.

In addition, the system has formally received IMO type approval from DNV GL.

Since its launch in April 2013, Alfa Laval said that its PureBallast 3.0 has enjoyed tremendous success. Offering space savings of 50% and energy savings of up to 60% over previous versions, the system has gained a high acceptance among customers worldwide, including both Asian and European shipyards.

A key reason for this is the system's flexibility, which has now been increased by the release of the reactor.

"The intermediate PureBallast 3.0 reactor complements our existing 300 and 1,000 cu m per hour sizes, enabling even more compact and energy-efficient ballast water treatment," explained Per Warg, the Alfa Laval business manager responsible for PureBallast.

Further flexibility is provided by Bollfilter, a new alternative to Hydac for the PureBallast 3.0 filter.

The new 600 cu m per hour reactor is slightly smaller than the 1,000 cu m per hour reactor already in use. The main difference is not the reactor's size, however, but the smaller treatment systems it allows. The reactor makes possible the following configurations:

- PureBallast 500, comprising one 600 cu m per hour and one 500 cu m per hour filter.
- PureBallast 600, comprising one 600 cu m per hour filter and one 750 cu m per hour.
- PureBallast 1200, comprising two 600 cu m per hour reactors and one 1,500 cu m per hour filter.

The key advantage of the PureBallast 500 and PureBallast 600 configurations is the reduction in system components. Previously, two 300 cu m per hour reactors were needed for these flow rates. When the two are replaced by a single 600 unit reactor, installation is further simplified and more space is saved in the engine room, the company said.

For owners, whose flow needs are greater than 1,000 cu m per hour but not up to 1,500 cu m per hour, there are substantial energy

savings in the PureBallast 1200 configuration. Built with two of the new reactors, the system has a maximum power consumption of 125 kW. This is a major reduction compared to the 201 kW of the PureBallast 1,500 system, which up to now has been the next available step.

Streamlined

"A more streamlined solution for 1,200 cu m per hour is in keeping not only with our development strategy for PureBallast, but also with Alfa Laval's overall focus on energy efficiency," said Warg. "Our aim in all areas is to minimise oversizing, so that energy consumption stays aligned with actual needs."

IMO has awarded Alfa Laval type approval for the system, which was announced by DNV GL on 14th February. Although PureBallast 3.0 uses the same core technology as its predecessors, a new approval was necessary, due to the huge advances between versions 2.0 and 3.0.

"Alfa Laval is pleased to have formal IMO type approval for PureBallast 3.0, even if our customers have been confident all along," Warg said of the approval. "It confirms what our data has always shown, namely that PureBallast 3.0 performs as well or better than previous type-approved versions."

The tests forming the basis for DNV GL's decision were conducted at the DHI testing institute in Denmark. Since these were conducted according to both IMO and ETV protocols, they also lay the groundwork for future US Coast Guard approval.

USCG Closer

While USCG approval for PureBallast 3.0 is still some time off, it appears closer due to a potential resolution of conflicting treatment definitions. In contrast to IMO legislation, the USCG Ballast Water Discharge Standard defines treatment as effective when no organisms survive the treatment process. This has been a problem for UV-based systems like PureBallast, which kill many organisms



Alfa Laval's Per Warg.

outright but render others non-viable by making them unable to reproduce.

"In principle, the US authorities have been willing to accept a broader definition of effective treatment, since organisms that cannot reproduce pose no threat to their host environment," explained Warg. "However, the USCG has questioned the reliability of methods for measuring non-viability. Together, we've been working to remove those doubts."

A team, comprising representatives from the USCG, test institutes (eg DHI) and suppliers of UV-based ballast water treatment systems has been appointed to evaluate the available testing procedures. Thus far, the results indicate that non-viability can be reliably verified, which gives UV-based systems a better footing with regard to USCG legislation.

"Alfa Laval is engaged in regular dialogue with the USCG, and we are confident that the issue of definition will be resolved in the near future," Warg said. "In the meantime, we are pleased to have IMO type approval for PureBallast 3.0 and an extremely strong position in today's ballast water treatment market."

Polish shipyard to convert Jones Act product tanker

OSG Ship Management (OSG), has passed the first hurdle with the USCG National Vessel Documentation Center's (NVDC) determination, in its plan to convert the Jones Act Veteran Class MT-46 product tanker *Overseas Tampa*, at a Polish shipyard, writes Brian Kershaw.

The letter saying that modifications in Poland will not jeopardise its eligibility to engage in US coastwise trades was issued in early March.

The 46,666 dwt *Overseas Tampa* was built at the Aker Philadelphia Shipyard as a Jones Act vessel and delivered to the American Shipping Co (AMSC) in April 2011. She was then leased to OSG. She has six pairs of cargo tanks with a combined capacity of 52,650 cu m and can load and discharge at a rate of 3,500 cu m per hour.

The conversion work will be undertaken by Gdansk-based Remontowa shipyard to enable the vessel to shuttle crude oil from the Shell Stones field, according to industry sources. When asked if there was a contract between Shell and OSG for the use of *Overseas Tampa*, Shell declined to comment.

Initially, the Stones field will have two subsea production wells tied back to an FPSO and will have a daily production rate of 50,000 barrels. The *Overseas Tampa* is capable of

taking on board six days production in 15 hours. The FPSO is located around 320 km southwest of New Orleans, which is within a day's voyage. Phase I of the development is planned for completion in 2016 and this will be followed by a further six wells, which will be drilled at a later stage and connected to the FPSO.

OSG already has experience of transporting oil in the Gulf of Mexico. It commenced a timecharter in mid-2011 using the *Overseas Cascade* and *Overseas Chinook* shuttle tankers to lift oil from a Petrobras America operated FPSO located at the Chinook and Cascade ultra-deepwater fields some 250 km from Louisiana's coast.

In reaching its preliminary decision, the NVDC examined OSG's proposal for certain work on the *Overseas Tampa* to be undertaken overseas, to determine if it would result in a loss of the tanker's eligibility for a coastwise endorsement under the Jones Act.

The work proposed by OSG included:

- Addition of a bow loading system consisting of a bow loading platform at about frames 95 to 110 with associated supporting systems and cargo pipe line.
- Addition of generator set for auxiliary power to bow thruster and bow loading equipment.
- Addition of single electrically driven bow thruster with tunnel (not previously fitted) at around frames 95-105.
- Conversion of main engine fixed pitch propulsion to controllable pitch propulsion and related upgrades; addition of main engine damper.

Other related work includes the high-tech automation of these components.

The sections of the regulatory standard, US Code Title 46 – Shipping, used to evaluate whether a coastwise vessel that is rebuilt outside the US will retain the privileges, are

the 'major component test' (46 CFR, Section 67.177 [a]) and the 'considerable part test' (Section 67.177 [b]).

Difficulties arise because there is no regulatory definition of the term 'major component test', however, it has been deemed to relate to changes to the hull or superstructure. The Court (Shipbuilders Council of America v. US Coast Guard, 578 F. 3d 234 (4th Cir. 2009)), further defined this as a new, separate and completely-constructed unit, built separate from and added to the vessel, which weighs more than 1.5% of the steelweight (or discounted lightship weight) of the vessel.

The 'considerable parts test' as defined says 'a vessel is not considered rebuilt when the work performed on its hull or superstructure constitutes 7.5% or less of the vessel's steelweight prior to the work'. The NVDC letter added that any separately constructed components to the hull or superstructure, whether or not deemed 'major' under the 'major component test', would count towards this 7.5% threshold.

The examination of the proposed modifications to *Overseas Tampa* was referred to the US Coast Guard's Naval Architecture Division (NAD). Its report concluded that the OSG calculations for steelweight had included several non-structural components, such as piping and certain internal bulkheads and added 168.6 tonnes of weight. NAD, focusing on the items that formed part of the structural integrity and flotation envelope, such as underdeck reinforcements and thruster tunnel extensions, found that additional steelweight amounted to only 22.9 tonnes.

Using the OSG calculations, the combined steelweight and discounted lightship weight resulted in a 2.14% weight increase. The NAD evaluation produced a lower weight increase of 0.3%. In both cases the results were well within the 7.5% threshold.



The *Overseas Tampa* is a product of Philadelphia Shipyard.

How to make your VLCC efficient

Following Tanker Operator's article on MAN Diesel & Turbo's (MDT) propulsion systems for MRs (see March issue, page 34), we look at VLCCs.

Thus far this year, there have been a spate of VLCC orders reported but are the designs following the path of the so called eco-tankers?

Tanker Operator asked MDT about increasing large tanker efficiency given the new regulations in place, or about to be put in place.

All new tanker designs are under pressure to fulfil the IMO EEDI rules and all the tools in the shipyards' boxes are utilised, such as hull and bulb optimising (scantling, design and ballast drafts), propeller optimising, etc, in order to keep the ships service speed unchanged, MDT said.

New technology for energy saving, such as larger propellers, pre-swirl stators, propeller boss cap fins and latest generation of ultra long-stroke engine designs, are to some extent specified in order to minimise the required propulsion power for the service speed needed and the maximisation of the engine's efficiency, MDT said.

MDT and its network of representatives worldwide offer help and technical assistance to the shipyards designing and building VLCCs in the selection of the most suitable propulsion unit for any given large tanker project, taking into account fuel economy analyses based on the vessel's operational profile.

Engine choice

The company markets its engine types to both the shipyards and the shipowners, MDT explained. For VLCCs, the traditional engine of choice has been the S90ME and S80ME types. However, more recently, the G80ME types have become the dominant engine selected.

Thus far, some 22 G80MEs have been ordered for VLCCs, while four 7G80ME-C92s have entered service, the company explained. The engines tended to range between 26,000-30,000 kW in power, depending on the required top speed and the vessel's general operational pattern.

As for slow steaming, MDT confirmed that owners are today very focussed on total fuel

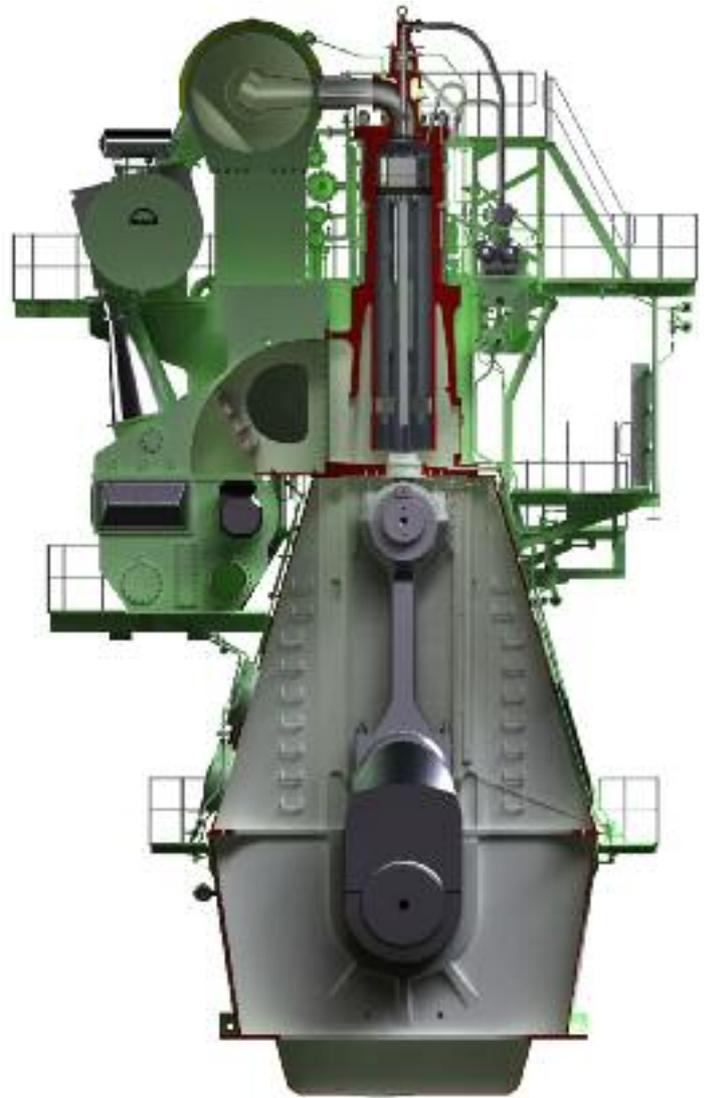
economy taking into account the vessel's operational profile both for scantling, design and ballast drafts; giving running hours and engine loads for the drafts divided over a 12-month period.

The bottom line fuel economy is of high priority for all owners in today's competitive market – so they ask for fuel optimised propulsion systems focusing on the expected operational profile. MDT is able to offer its expertise in assisting in these analyses/evaluations, the company explained.

The auxiliaries stipulated are normally 4-stroke gensets and in some cases waste heat recovery generator systems (WHR) are also selected. This machinery is offered by some of MDT's licensees as a package with the main engine. However, in most cases, the main engine, gensets and WHR systems are purchased by the shipyard as individual items.

Some owners have stipulated that WHR systems be installed in order to save fuel and to lower the tanker's EEDI. The larger shipyards now have the technological knowhow necessary to install such equipment on board ship, MDT said.

Since purchasing the Kappel propeller concern a couple of years ago, MDT can now offer propellers of the largest diameter and in 3, 4, 5 and 6-bladed designs. Normally, the shipyard will purchase the propeller separately



Cross section of the G80ME-C 2-stroke engine.

and not as part of a propulsion package.

Finally, MDT stressed that together with a large tanker's hull and propeller design, the main engine constitutes a prime part of propulsion power optimisation, which will have a significant effect on the vessel's total fuel economy.

By taking these criteria into consideration, plus MDT's latest engines and propeller types, the vessel's fuel economy and emissions can be improved significantly, the company claimed.

'Eco' thinking comes to the fore

Univan Ship Management has outlined what the company calls 'Eco Thinking' in its latest newsletter by offering advice on a number of areas where energy conservation can be achieved.

Taking ship design and modification while in service, Univan said that the propeller design could lead to energy savings of around 2.5% and the installation of boss cap fins could improve the propeller's efficiency by between 3-5%. Becker Marine Mewis Ducts can reduce losses by the same amount even at slower ship speeds.

Regular propeller polishing reduces resistance. A clean propeller leads to about 3-4% power saving compared to a fouled propeller, the shipmanagement company said. Also hull fouling will have a significant impact on the vessel's performance and fuel consumption, while new developments with hull coatings have proved to reduce drag and save fuel by up to 7%.

Each fuel has different combustion properties and engine tuning optimises the combustion and energy saving by adjusting the calorific value and sulphur content of the fuel. Univan said that this can be more precisely managed with electronically-controlled engines, which will enable them to operate with higher fuel efficiency at lower loads.

Integrated electronic monitoring systems to collect and collate data, plus trim optimisation, are other methods used by the company.

Other methods to save energy include closing doors when the air conditioning is in use and switching off unnecessary lights in the accommodation. Cabin refrigerators can also be switched off when not being used and galley provision rooms can be opened less frequently, thus saving energy.

At the IPTA/Navigate Chemical/Product Tanker conference Ardmore Shipping's COO Mark Cameron gave his opinion on the question of tanker efficiency.

Cameron said that the ability to accurately measure down to 1% is essential and for this reason, the company uses a SkySails performance management system, which gives feedback in real time and is able to remove all of the variable components.

The system will empower the crew on the

bridge and engine room to measure very small changes in the vessel's performance.

Automated, electronic reporting eases the administrative burden. More strenuous reporting requirements will need greater transparency, he warned.

Performance critical

He said that 'Eco Mod' vessels were not defined by age but by performance. He cited the case of the 2004-built secondhand MR *Ardmore Seamaster* which at 13.5 knots is warranted at 22 tonnes of bunkers per day, compared with a 2008-built MR offered to the company, which at the same speed was said to consume 29.5 tonnes per day.

It is important to say to the shipbuilders that all assumptions should be stated on a scantling draft and not at the design draft, he said. The sales teams are geared for a company's operations people and most parameters are quoted at the design draft.

Clearly, friction reduction is the area of focus, as this has the biggest impact on low speed vessels. There have been some improvements in tankers' block coefficients, however, the shipyards were not keen to release the information and the bow design 'norms' should be challenged.

Propeller choice is essential for a good performance, so keep it clean, he stressed. Ardmore uses Mewis Ducts and other enhancements. Cameron said that the company passes information gained from using the Mewis Duct back to Becker Marine.

Engine optimisation options need to be specified up front, as there are arguments both

for and against de-rating an engine. He warned that once de-rated, it was very difficult to pick up an engine's speed again. Turbocharger selection also impacts on load optimisation.

Cameron then outlined how to calculate the returns. For example, when negotiating a timecharter contract, the rate can be agreed on realistic fuel consumption. Value versus risks in transparency should be taken into account and there should be performance based incentives on offer. Once this has been taken into account, repeat business and attractive charter extensions should be the result.

On the spot market, the full financial return on all of the strategic decisions should be seen and for joining pools, points will be based on actual performances.

He also said that a vessel's speed plays a large part in calculating any return on investment and the viability of the technical advances installed on the vessel. The worse speed and consumption ratios occur in adverse weather conditions and it was important not to lose sight of this point.

Summarising, he said that 'eco' ships need not only be classified as newbuildings, as with care and attention, a five year old vessel can be improved close to 'best in class' standards, providing you start with the right ingredients.

Measure accurately to cut through the 'hype' as marketing attractive numbers is not the same as warranting those numbers. Cost/benefit calculations need careful analysis, as a 1% saving maybe attractive but hard to measure and beware of the de-rating trap.

It is the right people with the right attitude on board the vessel that make all the difference, he concluded.

'Ardmore Seamaster' enhancements

| | |
|-------------------------------|--------------------------------------|
| Propeller diameter | 7.5% bigger |
| Main engine rev/min | 13% slower |
| Propeller enhancements | PBCF fitted |
| Hull paint system | High performance |
| Engine performance | Engine assessment software installed |
| Voyage performance management | Installed |

‘Global marine fuel trends to 2030’

In a report compiled by Lloyd’s Register (LR) and University College London’s Energy Institute, three scenarios for the future of marine fuels in 2030 were highlighted.

The research found that in all scenarios, heavy fuel oil will remain the main fuel for deepsea shipping; LNG will develop a deepsea bunker market share of 11%; low sulphur heavy fuel oil and hydrogen emerge as alternatives in certain scenarios.

Tanker Operator has taken extracts from the report and from the discussion at its launch in London last month.

The study showed that the combination of growth in trade and reduced emissions would require a reduction in fossil fuel dependency and the commencement of a transition to a zero carbon fuel, such as hydrogen.

Global Marine Fuel Trends 2030 provides an insight into future fuel demand for the containership, bulk carrier/general cargo and tanker sectors - representing around 70% of the global shipping industry’s fuel demands.

If world trade grows then so will seaborne tonne/miles of cargo. The report indicated that we can expect strong growth in shipping. With emissions regulations and rising energy costs, shipping decision makers will benefit from a clearer understanding of the potential scenarios for marine fuel demand, LR said when introducing the report.

The three scenarios are:

Status Quo – The world will continue its current growth momentum with some booms and busts over the next 20 years.

Global Commons – A shift to concern over resource limitation and environmental degradation will see a desire for a more sustainable world being developed and fairness in wealth distribution. Governments will find common ground and accelerated economic growth, within a framework of sustainable development, which will follow.

Competing Nations – States act in their own national interest. There will be little effort to forge agreement among governments for sustainable development and international norms. This is a self-interest and zero-sum world with a likely rise in protectionism and slower economic growth.

So what does the marine fuel mix look like for the three types of vessels by 2030? In two

words - decreasingly conventional. Heavy fuel oil (HFO) will still be very much around in 2030, but in different proportions for each scenario: 47% in Status Quo, to a higher 66% in Competing Nations and a 58% share in Global Commons, the most optimistic of scenarios for society.

Naturally, a high share of HFO means a significant uptake of emissions abatement technology when global emissions regulations enter into force.

The declining share of HFO will be offset by low sulphur alternatives (MDO/MGO, or LSHFO) and by LNG. This will occur differently for each ship type and scenario.

For example, LNG will reach a maximum 11% share by 2030 in Status Quo. Interestingly, there is also the entry of Hydrogen as an emerging shipping fuel in the 2030 Global Commons scenario, which favours the uptake of low carbon technologies stimulated by a significant carbon price.

By 2025, it is forecast that 653 deepsea vessels will be using gas as a source of fuel and further in the future, ethane could possibly be used on some large vessels. In the integration of technology, it is not so easy to commercially optimise solutions and methods to overcome this are currently being worked on.

Competence problems

One of the challenges is the lack of competence at the terminal, the receiving vessel and with the bunkering in general. Where is the competency going to come from - training? There is already a huge need for training with 138 LNGCs on order and more to come. This training is needed to ensure a safety regime for gas bunkering, LR warned.

Bunkering is a challenge on its own, LR said. If the shipping industry grows as forecasts predict, there will be a need for twice as much fuel by 2030. However, there could be a gradual decline in fuel demand from 2025 due to greater shipboard efficiency.

More HFO will be needed in 2030, compared with 2010 in all of the three scenarios, LR said. Emissions will grow-

doubling in less than 20 years. The world’s policy on climate change will be the greatest driver in future fuels, vessel efficiency, etc.

Tom Boardley, LR’s marine director said that the class society is already discussing the future with its clients. In an introduction to the report, he said; “The marine industry is undergoing a transformation. As well as managing today’s rising operational costs and achieving cost effective environmental compliance, ship operators are faced with tomorrow’s ‘big decisions’. Decisions about fuels, technology and whether it is possible to ‘future-proof’ their fleet and assets.

“In addition to providing technical solutions, we are trying to provide the best technical advice to support commercial decision making. It is never just about what is technically possible – decisions have to make commercial sense. The future fuel ‘big decisions’ are not isolated to the marine industry. As a society, we need to consider the risks we want to manage and how to balance future demand for sustainability with our lifestyle ambitions.

“In shipping today, the alternative fuels debate has been dominated by the potential of LNG. But will there be other, potentially viable, options? If we extrapolate the past experience (single engine combusting fossil fuel for the last century) to the future, then perhaps it is not a surprise to anticipate that ships built in 2030 may not be dramatically different than the ships of today.

“If, however, this steady technological progress was to be, somehow, accelerated, or overturned, then some amazing technology could be around the corner. How long will it take for a new technology/fuel to be assimilated and to become ‘business as usual’, or even to replace the current mainstream options?

“The answers are not immediately evident and, as we demonstrated in *Global Marine Trends 2030*, there is never a single and well defined future. The marine industry has before demonstrated the ability to make the right decisions in times of uncertainty – through a combination of past experience, intuition and

talent.

“What is perhaps different today are the rapidly changing environmental challenges, new regulatory policies and the fuel/technology choices available to address the challenge and comply with regulation,” he said.

The report’s main objective was to unravel the landscape of fuels used by commercial shipping over the next 16 years, the authors said.

The problem has many dimensions: a fuel needs to be available, cost-effective, compatible with existing and future technology and compliant with current and future environmental requirements.

Included are fuels ranging from liquid fuels used today (HFO, MDO/MGO) to their bio-alternatives (bio-diesel, straight vegetable oil) and from LNG and biogas to methanol and hydrogen (derived both from Methane, or wood biomass). Engine technology includes 2- or 4- stroke diesels, diesel-electric, gas engines and fuel cells.

A wide range of energy efficiency technologies and abatement solutions

(including sulphur scrubbers and selective catalytic reduction for NOx emissions abatement) compatible with the four ship types are included in the modelling. The uptake of these technologies influences the uptake of different fuels.

Regulations include current and future emission control areas (ECAs), energy efficiency requirements (EEDI) and carbon policies (carbon tax). Oil, gas and hydrogen fuel prices are also linked to the three scenarios.

Contrary to common perception, containerships are not the segment with the highest share of LNG - it is the chemical/product tankers, with LNG making up 31% of its fuel mix by 2030 in Status Quo.

Segments with the higher proportion of small ships see the highest LNG uptake. It is also a matter of perspective: from a non-existent share of the marine market in 2010, LNG will have 5-10% share in 20 years.

The authors are not saying that LNG will not be the fuel of the future. But that seeing new ships built with LNG today (many of which in niche markets/short-sea shipping)

and overturning the marine fuel landscape in less than a ship’s lifetime are two entirely different discussions. Methanol does not appear in the fuel mix in any considerable quantities by 2030.

While the fuel mix indicates a declining share of HFO, filled by alternative options, in 2030 the demand for HFO will be at least the same (in Status Quo) if not 23% higher (in Global Commons) compared to its 2010 levels. But, with the overall fuel demand doubling by 2030, other fuels will see a higher rate of growth to meet this demand.

The fuel choice and scenarios are shown to create differences in energy efficiency technology take-up, design and operating speed.

Low technology take-up occurs in Status Quo and Competing Nations, although installed power reduces, due to reductions in design speed. Greater installed power reduction occurs in Global Commons, due to the combination of design speed reductions and greater efficiency technology take-up.

Typically, the installed power in Global Commons is operated at higher engine loads,

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resulting in marginally higher average operating speeds when compared with the other scenarios. This is due to the greater technical efficiency of the Global Commons fleet.

As the most profitable fuel and machinery change over time and between scenarios, this in turn impacts the optimum operating speed, with higher fuel prices and less energy efficient (eg older) ships operating at lower speeds when compared with the newer ships of the same ship type and size.

Despite improvements in design and operational efficiency and current/future policies, CO₂ emissions from shipping will not decrease in 2030. Status Quo will see its emissions doubling, due to the increase in trade volume combined with the moderate carbon policy and the low uptake of low carbon fuels. Global Commons is following a similar trend but then decreasing post 2025, thanks to carbon policy and the uptake of Hydrogen. Competing nations will see the smallest growth in emissions.

Despite the lack of carbon policy, the smaller trade volume, high energy prices and, predominantly, the high uptake of bio-energy, result in the lowest increase of CO₂ emissions than any other scenario (56%).

The lower emissions associated with this scenario seem attractive but come at the cost of lower growth in the shipping industry, higher operating costs and less global trade. Furthermore, in 2030, in Competing Nations and Status Quo, emissions remain on an upwards trajectory and the global fleet remains similar to the fleet in 2010 with the industry poorly positioned to weather any policy or macroeconomic storms in the period 2030-2050.

In contrast, in Global Commons the sector's emissions peak (in 2025) and then start a downwards trajectory that should assist in a more stable and sustainable long-term growth in shipping, trade growth and global economic development.

When discussing future policies and shipping CO₂ emissions, it is worth considering the author's assumptions for calculating them, which is that GHG emissions come from the CO₂ released in fuel combustion activities of the vessels during their operation. However, if LNG, bio-fuels and hydrogen take a greater role in the shipping, it would be important to consider emissions associated with upstream processes and for non-CO₂ emissions, for example methane slip.

This could show that fuels which, on the basis of operational emissions alone, appear

attractive have significant wider impacts. This is important when developing mitigation policies.

The authors use the Global Transport Model (GloTraM) to analyse the role and demand for different fuels and technologies. GloTraM combines multi-disciplinary analysis and modelling techniques to estimate foreseeable futures of the shipping industry. The model starts with a definition of the global shipping system in a baseline year (2010) and then evolves the fleet and its activity in response to external drivers (changing fuel prices, transport demand, regulation and technology availability).

GloTraM undertakes an in-depth analysis of the existing fleet, along with the economics of technology investment and operation in the shipping industry. This approach ensures that the model closely resembles the behaviour of the stakeholders within the shipping industry and their decision-making processes to ensure realistic simulation of their likely response to external factors such as a carbon price.

The decision-making process to determine technical and operational specifications of newbuild and existing ships are driven by the shipowner's profit maximisation and regulatory compliance.

Interaction

An important feature of GloTraM is its representation of the interaction between technical and operational specifications and the inclusion of technology additionality and compatibility. For example, some technologies are optimised for a given 'design speed' but their savings may reduce as operating speed reduces, or increases, or that there could be incompatibilities between certain exhaust treatment solutions (wet scrubbers) and engine efficiency modifications (waste heat recovery).

Other examples include the interaction between speed and wind assistance fuel savings (higher percentage of fuel saved for lower average speeds), or the incompatibility of certain combinations of hydrodynamic devices that might be used to improve the flow through the propeller and over the control surfaces.

These interactions are often overlooked using conventional marginal abatement cost curve based approaches but are taken into account within GloTraM.

Another important element of GloTraM is the attention paid to characterising the fleet's operational parameters in the baseline year. In 2010, a large number of ships were slow steaming due to the conditions in the shipping markets. This affects both energy demands and

the energy and cost savings potentials of technology.

Satellite AIS data is used to produce calibrations of the operational speeds in each ship type and size category for the baseline year and operational speed is modified at each timestep as a function of the evolving market conditions and fuel prices, the authors explained. Drawing the line between conventional and alternative marine fuels is often a matter of interpretation and viewpoint. What is considered alternative today may be conventional in the near future.

For consistency, in this report the conventional marine fossil fuels are represented by one category of marine distillates (MDO/MGO) and two categories of residual fuel of different sulphur contents (HFO and LSHFO). The alternative fuels considered include LNG, methanol, hydrogen and biomass-derived products equivalent, or substitutes for the options mentioned.

Each of the main machinery and fuel combinations are selected by GloTraM by considering their profitability over time. These plots are displayed for a baseline ship design (the technical and operational specification of the 2010 fleet) and therefore these results are only intended to be indicative of the relative advantages of the fuel/machinery options modelled.

There are other differences, as for each timestep the ship's technology and operational specification is also varied. Therefore, the global profit maximisation for all three parameters (fuel/machinery choice, speed and take-up of technical and operational abatement and energy efficiency interventions) can result in a different fuel/machinery being selected than those for the baseline ship.

In these plots, the report displays the competitiveness of four fuel/machinery combinations in Status Quo for chemical/product tankers of two different sizes, to illustrate the evolution of profitability over time.

In the examples provided overleaf, it can be seen that for the smallest ship, MDO/MGO and 4-stroke diesel is initially more competitive but this is overtaken by LNG while the hydrogen-fuel cell combination competitiveness also increases.

On the larger ship, the conventional HFO and 2-stroke diesel combination remains the most profitable, with LNG overtaking MDO/MGO as the second most profitable option.

The profitability changes over time because of the fuel price and carbon price evolution. There are also interesting differences between different ship sizes, due to the different engine sizes (and costs) and the impact of fuel storage volume (eg hydrogen) on the ship's payload. 

Energy efficient technologies considered in this study

▲ Containers ▲ Bulk Carriers ▲ Tankers

| | | | | | | | |
|--|---|---|---|--|---|---|---|
| Superstructure streamlining | ▲ | | | Covering hull openings | ▲ | ▲ | ▲ |
| Wing pods | ▲ | ▲ | ▲ | Speed control pumps and fans | ▲ | ▲ | ▲ |
| Pulling pods | ▲ | ▲ | ▲ | Energy saving lighting | ▲ | ▲ | ▲ |
| Contra-rotating props | ▲ | ▲ | ▲ | Efficient Boiler | | | ▲ |
| Vane Wheel | ▲ | | | Autopilot upgrade/adjustment | ▲ | ▲ | ▲ |
| Prop section optimisation | ▲ | ▲ | ▲ | Trim and ballast optimisation | ▲ | ▲ | ▲ |
| Ducted Propeller | ▲ | ▲ | ▲ | Optimisation of dimensions (fast) | ▲ | | |
| Pre-swirl duct | ▲ | ▲ | ▲ | Prop Hull optimisation | ▲ | ▲ | ▲ |
| Propeller upgrade | ▲ | ▲ | ▲ | Skeg optimisation | ▲ | ▲ | ▲ |
| Propeller boss cap fin | ▲ | ▲ | ▲ | Improved Rudder | ▲ | ▲ | ▲ |
| Asymmetric Rudder | ▲ | ▲ | ▲ | Stator fins | ▲ | ▲ | ▲ |
| Propeller rudder bulb | ▲ | ▲ | ▲ | Solar Power (Hotel dry and wetbulk) | | ▲ | ▲ |
| Waterline extension | ▲ | | | Solar Power (Hotel container) | ▲ | | |
| Hull coating 1 (biocidal) | ▲ | ▲ | ▲ | Optimisation of dimensions (slow) | | ▲ | ▲ |
| Hull coating 2 (foul release) | ▲ | ▲ | ▲ | Air lubrication (air curtain with PTO) | ▲ | ▲ | ▲ |
| Hull cleaning | ▲ | ▲ | ▲ | Air lubrication (cavity with PTO) | ▲ | ▲ | ▲ |
| Propeller polishing | ▲ | ▲ | ▲ | Sails | | ▲ | ▲ |
| Wind engine | | ▲ | ▲ | Shore power / cold ironing | ▲ | ▲ | ▲ |
| Wind kite | ▲ | ▲ | ▲ | Main Engine Tuning Phase 1 | ▲ | ▲ | ▲ |
| Low profile openings | ▲ | ▲ | ▲ | Main Engine Tuning Phase 2 | ▲ | ▲ | ▲ |
| Optimisation of water flow of openings | ▲ | ▲ | ▲ | | | | |

Source - LR / UCL

Competitiveness change of different fuel/machinery combinations between two tanker size ranges

■ HFO and 2-stroke diesel ■ LNG and pure gas/dual fuel engine ■ MDO/MGO and 4-stroke diesel ■ Hydrogen and fuel cell

Competitiveness of fuel/machinery combinations for Chemical/product tanker <5k DWT



Competitiveness of fuel/machinery combinations for Chemical/product tanker >60k DWT



Source - LR / UCL

Off spec! Or is it?

In the current financial climate, rising fuel costs are a significant challenge for shipowners and operators. However, the cost of fuel isn't the only cause for concern.

The quality of the product supplied has a significant impact on the owner or operator and also, more importantly, on the running of the vessel.

Regular analysis of marine fuel is an essential requirement to ensure the suitability of the product supplied and to limit expensive headaches in the form of engine breakdown and unnecessary wear damage.

But examining fuel in accordance with the ISO 8217 Marine Fuel Standard isn't simply a means to look for a potentially hidden horror. It gives owners and operators a clear indication of the quality of the product supplied and provides essential information in relation to any specific handling, or treatment, which may be required before it can be used.

In the majority of cases, issues highlighted during the analysis process are minor and do not render the fuel unsuitable for use.

However, it is frequently argued that the fuel has still been shown to fail the criteria for a particular product or grade and so is deemed 'Off Specification'. But when is an 'off-spec' fuel really 'off-spec'?

There is an awful lot more to consider than simply looking at a defined test limit. When testing in accordance with the ISO 8217 standard, each individual parameter has a specified acceptable maximum, or minimum limit.

On the face of it, any tested value that is above or below the quoted limit would then be stated as 'off spec' for that particular fuel grade. In reality, this is simply not the case.

Any fuel that is purchased in accordance with the ISO 8217 fuel standard is subject to a range of additional conditions extending beyond the test limits imposed. One such condition is the precision and interpretation of test results. When we think about off-spec data, the precision and interpretation section of ISO 8217 points to ISO 4259 for clarification. So it is essential that owners and operators consider the requirements of ISO 4259 when looking at a potentially off-spec fuel.

ISO 4259 states, 'A recipient who has no other information on the true value of a characteristic other than a single test result can consider that the product fails the specification limit, with 95% confidence, only if the test result is such that -

(a) in the case of a max spec limit, the test



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result is greater than the specification limit plus $0.59 \times R$; or
 (b) in the case of a min spec limit, the test result is less than the specification limit minus $0.59 \times R$.

Record high

Test data accumulated by Intertek Lintec ShipCare Services during the fourth quarter of last year showed a record high of around 27% of all submitted samples failed to meet the requirements for one or more tested parameters, based on the limits specified within ISO 8217.

On the face of it, this would appear to be a damning statistic, but is it really as bad as first appears? It is important to note that this figure looks at the limits stated within the ISO standard but does not factor in the requirements for ISO 4259. So how does this value change when we take ISO 4259 into consideration?

If we consider the same data set and apply the requirements laid out within ISO 4259, we see that 9.6% of all submitted samples showed a tested value outside the 95% confidence

interval. On this basis we are able to state that about 10% of all submitted samples can be deemed off-spec based on the supply of a single test result.

When we examine this in greater detail and look at the difference in products (residual and distillate), it is clear that there is a sizeable change once the ISO 4259 requirements are applied.

The fact that the application of ISO 4259 has such a profound effect on the figures for residual fuel clearly shows that it is the main product type currently used by vessels the world over. It also highlights the fact that residual fuel is currently under greater scrutiny as far as legislative control is concerned.

These figures go a long way to highlighting how the blending of high-sulphur fuel to achieve a low-sulphur product is one of the key contributors to the increased incidence of off-spec fuels.

As the main debate about off-spec fuels and the application of ISO 4259 centres around high and low-sulphur product and the issue of compliance, it is even more important that the implications of an off-spec result and a real

off-spec result are fully appreciated.



Intertek's Michael Green.

**This article was written by Michael Green of Intertek Lintec ShipCare Services.*

NEAR SHORE DATA GRID

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Low sulphur debate rages on

At the recent IPTA/Navigate Chemical/Product Tanker conference, there were several papers given on the theme of future fuels ahead of the 0.1% sulphur ECA challenge in 2015 and the 0.5% global cap due to be introduced in 2020, or 2025.

PIECA's **Eddy van Bouwel** explained how the world's energy mix is changing, which will require huge investments in new energy infrastructure. At the same time, the global transportation fuel mix is also changing with diesel fuel demand increasing and gasoline demand decreasing in OECD countries. Also increasing is the use of natural gas, ethanol and biodiesel as fuels.

Sufficient lead time is needed for the necessary investments by the refining, fuel supply and shipping industries. Switching marine fuels to distillates will increase the total supply chain CO₂ emissions. He said that there was no single solution and that we needed to keep all options open to compliance.

He thought that demand for middle distillates/diesel from 2015 onward would be 30 mill tonnes per year, due to the need to transit the ECAs. However, exhaust gas cleaning and the use of LNG could impact on these estimates. Following the worldwide 0.5% sulphur cap, the demand for diesel will continue to grow. Some 50-75% of the residual market will have to be met by middle distillates and spare capacity will be needed to meet this extra demand, he warned. There will no doubt be a big drop in demand for residual fuel oils.

There will also be major investments needed in refineries and the IMO needs to fast track its future fuels study to publish the findings by 2018 to give the various stakeholders time to act.

IBIA board member and Marine & Energy Consulting's **Robin Meech** said that the mandation of EEDI will see an increase in efficient ships, as the newbuildings come up to speed with the legislation and older units are scrapped. This will suppress demand for fuel oils as the vessels become more efficient.

He thought that the overall global fleet efficiency will have improved 12% by 2025; 14% by 2030 and 17% by 2035. This will negate the demand for bunkers by over 5% per year, he said.

Once the 0.5% sulphur cap enters into force, there would likely be a slowdown in the number of ECA areas declared. By 2025, the global consumption of HFO and distillates will have peaked. He forecast that by 2025, we would see

around 9 mill tonnes of LNG used as fuel; 1,500 scrubbers installed costing in the region of \$4 bill and around 2,000 LNG powered vessels, excluding gas carriers.

It will also prove to be more complicated to buy bunkers going forward, as the prices for the different solutions become more volatile. He gave the rather worrying forecast that up to 50% of owners and operators could take a chance with higher spec fuels post 2015, due to possible low levels of enforcement.

At present there are the regulatory unknowns, such as the timetable for the development of future legislation, for example on SO_x and NO_x emissions. He asked - will new ECAs be declared, or will the global 0.5% sulphur cap impact on their viability? What rate will distillates be made available in the future? What of in port legislation, especially in the US? Will there be incentives to use cold ironing?

As for scrubber technology, there was still the question of changing regulations, such as the requirements for monitoring equipment. For the greenhouse gas cap what is the schedule and the method of control? When will the regulations for using LNG as bunkers come into play and what of the enforcement regime and penalties?

We have seen a few orders for tankers powered by engines using methanol as a fuel recently. **Ulf Freudendahl**, a director of ScandiNAOS, explained that this fuel is a liquid, which does not require cryogenic or pressure tanks for storage and can be stored in similar tanks to that of oil products.

It is a clean low flash point fuel, which fulfils all the upcoming requirements, he claimed. Rules and regulations already exist to a large extent and are under further development, some of which are similar to the use of LNG.

For bunkering, the barges supplying methanol will be small chemical carriers rather than gas carriers for the LNG. Conversion kits for 4-stroke diesel engines to dual fuel HFO/MGO-methanol already exist.

The HFO/MGO is used as a pilot fuel (5-10%). In addition, 2-stroke methanol fuelled engines also exist today, he said.

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Few new orders in a young fleet

The mild weather in northern Europe has not helped the larger ice class tankers obtain a premium in rates for trading into the Baltic this winter.

Gone are the days where ice class Aframaxes could command up to \$100,000 per day to load at Primorsk during a severe winter – at least for now.

The orderbook has also shrunk considerably for tankers of 25,000 dwt and over with just 16, according to figures produced for *Tanker Operator* by Gibson Research.

These are all Hyundai Mipo type 37,000 dwt Handysize product tankers. There are 14 for Scorpio and the other two were contracted for

Ardmore. They were all ordered last year.

Investment in this sector has been low (even zero) because of the high newbuilding cost, poor ice seasons and by virtue of being disadvantaged outside of the ice season, due to higher operating costs and fuel consumption, Gibson said.

Examining the current operational fleet, of the 502 vessels of 25,000 dwt and over, there are 49 Suezmaxes, 62 dirty Aframaxes, 17 LR2s, 11 dirty Panamaxs, 44 LR1s, 146 MRs and 173 Handysize tankers.

By far the largest number (312) is in the six to

12 year old age bracket, which could also explain the lack of ordering in this specialist sector. Also by far the largest number (225) has a 1A class notation, compared to 131 with a 1B notation.

Of course, there is also a large fleet of products and chemical tankers of under 25,000 dwt, which trade in the Baltic and in the Far East.

This is not to say that the momentum has switched away from this sector. Far from it as we await the IMO's Polar Code and look at the ever increasing number of vessels transiting the Northern Sea Route (NSR).

TU

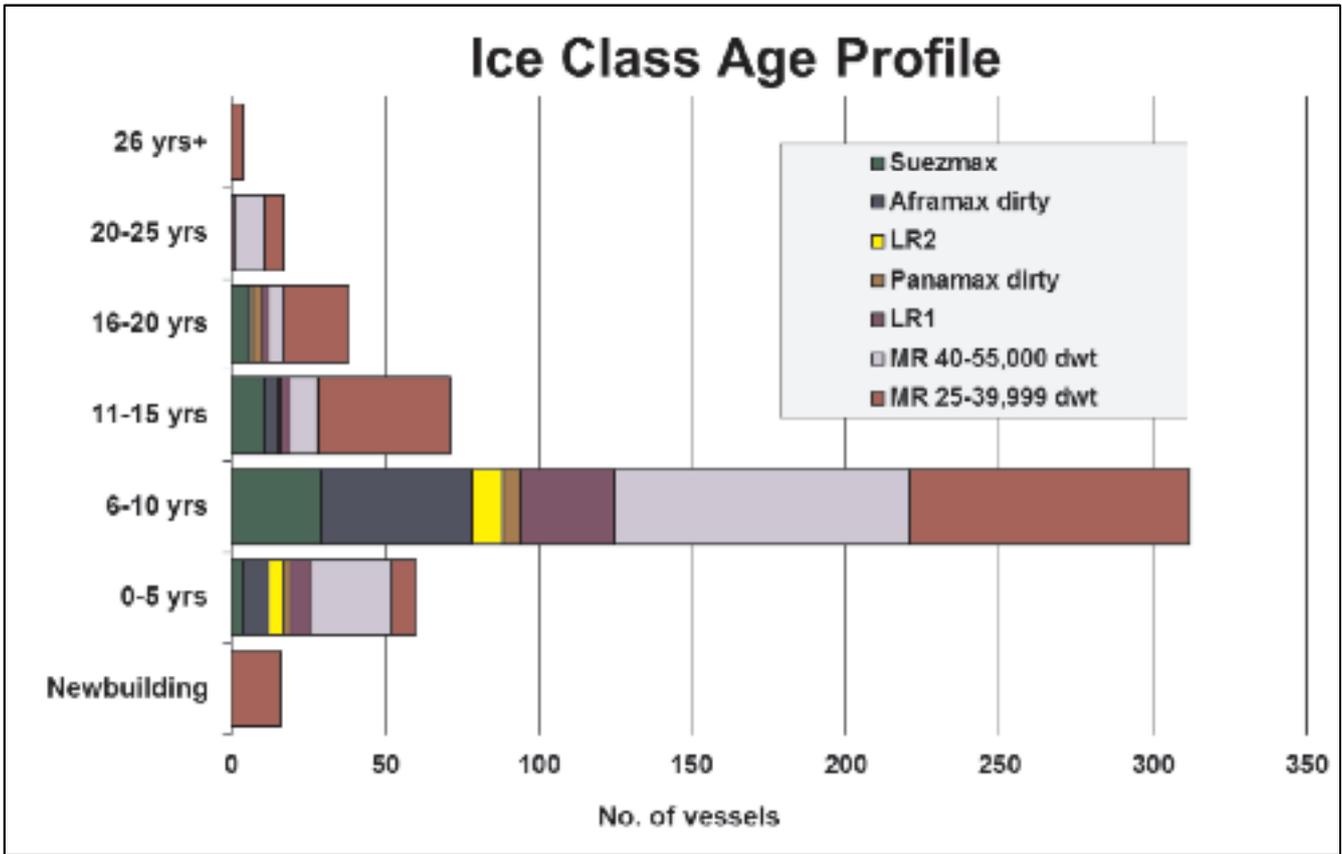
Age Profile of the Ice Classed Tanker Fleet

| | Newbuilding | 0-5 yrs | 6-10 yrs | 11-15 yrs | 16-20 yrs | 20-25 yrs | 26 yrs+ |
|------------------|-------------|-----------|------------|-----------|-----------|-----------|----------|
| Suezmax | 0 | 4 | 29 | 11 | 5 | | |
| Aframax dirty | 0 | 8 | 49 | 4 | 1 | | |
| LR2 | 0 | 5 | 10 | 1 | 1 | | |
| Panamax dirty | 0 | 2 | 6 | | 3 | | |
| LR1 | 0 | 7 | 31 | 3 | 2 | 1 | |
| MR 40-55,000 dwt | 0 | 26 | 96 | 9 | 5 | 10 | |
| MR 25-39,999 dwt | 16 | 8 | 91 | 43 | 21 | 6 | 4 |
| Total | 16 | 60 | 312 | 71 | 38 | 17 | 4 |

Fleet by Ice Class Categorisation

| | 1A | 1B | Other | Total | Newbuilding |
|------------------|------------|------------|------------|------------|-------------|
| Suezmax | 22 | 4 | 23 | 49 | 0 |
| Aframax dirty | 35 | 4 | 23 | 62 | 0 |
| LR2 | 6 | 2 | 9 | 17 | 0 |
| Panamax dirty | 8 | 0 | 3 | 11 | 0 |
| LR1 | 25 | 9 | 10 | 44 | 0 |
| MR 40-55,000 dwt | 71 | 34 | 41 | 146 | 0 |
| MR 25-39,999 dwt | 58 | 78 | 37 | 173 | 16 |
| Total | 225 | 131 | 146 | 502 | 16 |

Source - EA Gibson



Source - EA Gibson

Gibraltar Maritime Administration,
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Polar Code update-draws nearer

In February, the IMO agreed on training requirements for seafarers on board ships in Arctic regions.

Thus, the IMO is following the plan for finalising the Polar Code, which is being developed to enhance safety of navigation in polar regions, the Danish Maritime Authority said.

At the first session of the Sub-Committee on Human Element, Training and Watchkeeping (HTW), the IMO took important steps towards finalising the Polar Code.

As a result, draft specific training requirements for seafarers on board ships navigating polar areas are available. The requirements will be incorporated in the Polar Code.

The new requirements mean that Masters and navigating officers must have special training in order to navigate ships in ice, while engineer officers and the rest of the crew must be trained in how to react in crisis situations, such as rescue operations. In addition, more comprehensive training requirements will be introduced for all seafarers on board tankers engaged on voyages in icy waters.

IMO is developing a draft mandatory International Code of safety for ships operating in polar waters (Polar Code), to cover the full range of design, construction, equipment, operational, training, search and rescue and environmental protection matters.

The work is being co-ordinated by the sub-committee on Ship Design and Construction (SDC) - formerly the Sub-Committee on Ship Design and Equipment (DE).

At its first session (20th to 24th January 2014), the SDC sub-committee agreed in principle to the draft text of the mandatory Polar Code and also agreed in principle to proposed draft amendments to IMO's safety and pollution prevention treaties to make it mandatory.

A draft new chapter XIV 'Safety measures for ships operating in polar waters', of SOLAS, to make the Code (Introduction and part I-A) mandatory was agreed in principle, for forwarding to the Maritime Safety Committee (MSC), which meets in May, for consideration.

Also, proposed draft amendments to MARPOL, to make the Polar Code (Introduction and part II-A) mandatory under Annexes I (prevention of pollution by oil), II (noxious liquid substances), IV (sewage) and V (garbage) were also agreed, in principle, for forwarding to the MEPC, which was due to meet at the end of March/beginning of April.

The draft chapter of the Polar Code relating to training and manning was referred to the sub-committee on Human Element Training and Watchkeeping (HTW), while the draft chapters on fire protection/safety and life-saving appliances was referred to the sub-committee on Ship Systems and Equipment (SSE), which also met in March.

The draft chapters on Safety of navigation and Communication will be referred to the sub-committee on Navigation, Communication and Search and Rescue (NCSR) in June/July.

All three Sub-Committees will report on their work to the MSC and MEPC.

Certification

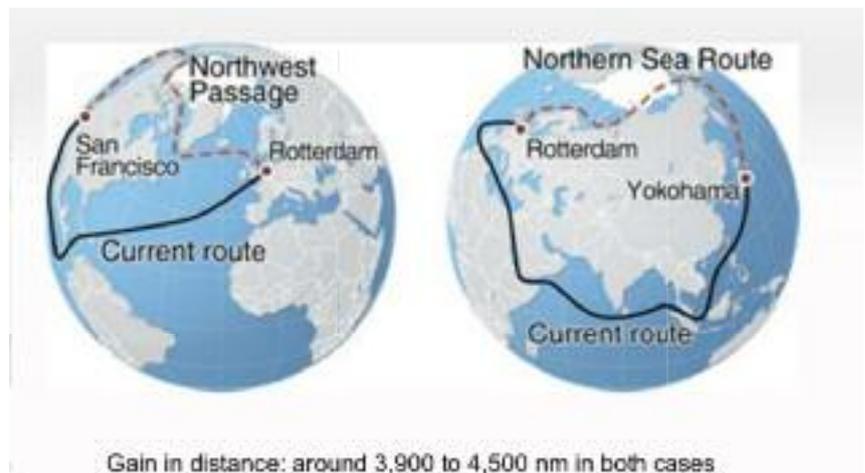
Once ratified, the Code will require ships intending to operating in Antarctic and Arctic to apply for a Polar Ship Certificate, which would classify the vessel as Category A ship - ships designed for operation in polar waters at least in medium first-year ice, which may include old ice inclusions; Category B ship - a ship not included in category A, designed for operation in polar waters in at least thin first-

year ice, which may include old ice inclusions; or Category C ship - a ship designed to operate in open water or in ice conditions less severe than those included in Categories A and B.

Before issuing a certificate, an assessment would be undertaken, taking into account the anticipated range of operating conditions and hazards the ship may encounter in the polar waters. The assessment would include information on identified operational limitations, and plans, or procedures, or additional safety equipment necessary to mitigate incidents with potential safety or environmental consequences.

Ships will also need to carry a Polar Water Operational manual, to provide the owner, operator, Master and crew with sufficient information regarding the ship's operational capabilities and limitations in order to support their decision-making process.

The chapters in the Code each set out goals and functional requirements, to include those covering ship structure; stability and subdivision; watertight and weathertight integrity; machinery installations; operational safety; fire safety/protection; life-saving appliances and arrangements; safety of navigation; communications; voyage planning; manning and training; prevention of oil pollution; prevention of pollution from noxious liquid substances from ships; prevention of pollution by sewage from ships; and prevention of pollution by discharge of garbage from ships



IMO accepts pressure sensors and alarm systems

The question of pressure alarms and sensors has now come to a head.

With the IMO now accepting pressure sensor and alarm systems as a means of protecting cargo tanks from overpressure, installing such systems is not only ideal for retrofit situations, but also the most cost-effective route to compliance.

A complete end-to-end pressure measurement system, delivered by PSM and its partner Tile Marine, is providing an economical solution for shipowners who need to comply with the new cargo tank overpressure legislation, the companies claimed.

In partnership with its UAE based accredited sales and engineering partner Tile Marine, PSM has already helped one vessel owner to conform with the regulations by supplying a complete system of pressure sensors, displays and alarms.

Together, the two organisations can provide a fully integrated service from surveying and

system specification, through to installation and testing, PSM said.

Tile Marine initially carried out a vessel survey to understand the precise mechanical and electrical installation requirements for monitoring cargo tank overpressure. Based on the findings of the survey, UK-based PSM, has designed and supplied the complete turnkey system to address the vessel's specific needs.

Once delivered from PSM, Tile Marine installed the whole system in a UAE shipyard and then carried out commissioning and testing to ensure smooth operation and minimum disruption for the owner.

PSM's ict 1000 pressure transmitters, which are IACS UI SC 140 compliant, are fully protected against positive, or negative overloads and submersion. They are available with a choice of flanged, or threaded fittings for installation directly to the tank top or piping into the venting system.

The MTU display unit located in the cargo



PSM's ict 1000 pressure transmitter now accepted by the IMO.

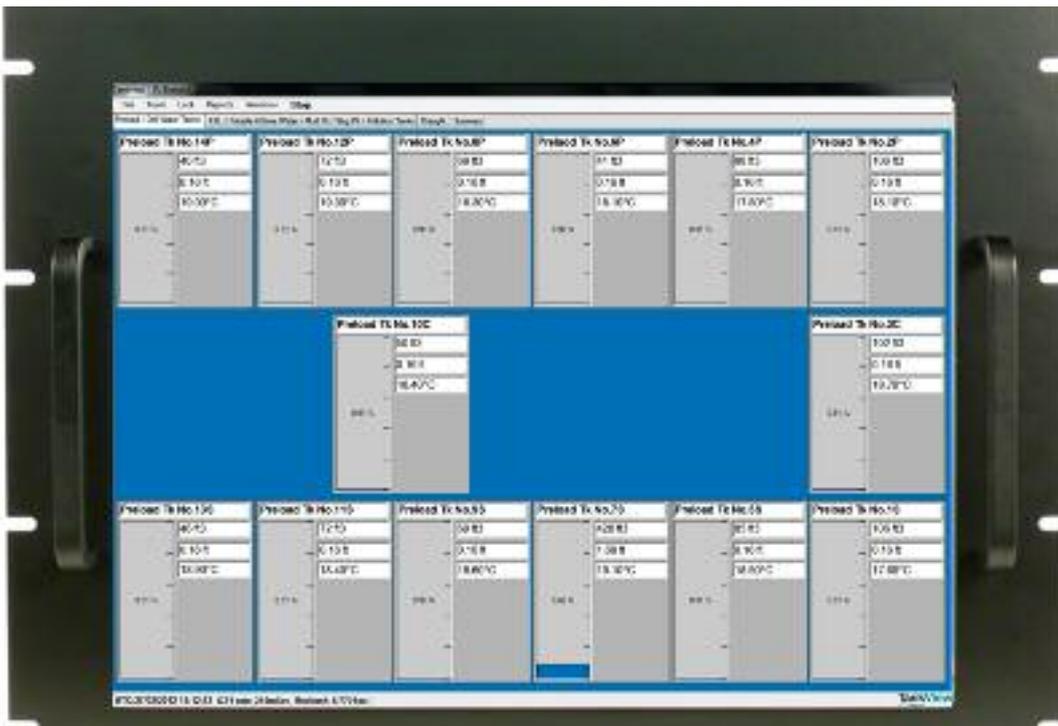
control room provides a monitoring station that gives an indication of normal, or alarm, status for each tank, as well as the actual pressure.

PSM said that it had drawn upon 30 years of global marine experience to develop the ict 1000 series of pressure transmitters; its co-operation with Tile Marine now provides shipowners with a single, co-ordinated source for cargo tank overpressure protection.

Mark Jones PSM sales director, said: "Through this partnership with Tile Marine, PSM is able to deliver an even greater, cost-effective, service to customers. Tanker owners throughout the UAE region can benefit from a complete end-to-end system of surveying, system design, engineering, installation, commissioning and testing."

About PSM

Established for over thirty years, PSM Instrumentation is a specialist in the design, manufacture and supply of



The BilgeSafe Tank Watch display can interface with other systems on board.

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BLS 2000 bilge level switch.

advanced marine control instrumentation and marine protection systems for the marine transportation industry. PSM offers a range of application solutions for designers, shipbuilders and end-users, to ensure vessels operate efficiently and reliably and are compliant with legal, safety and environmental regulations. Main application solutions include:

ClearView: Award winning monitoring and control systems for oily water separators, oil record book automation and bunker fuel management

TankWatch: Marine tank level monitoring and supervision systems for ballast, cargo, service and bunker fuel oil tanks

BulkSafe: Water ingress detection systems and water level alarm systems to protect bulk carriers in accordance with SOLAS regulations

PSM products carry all required type approvals from the main leading marine societies, in addition to many country specific approval standards. PSM is approved to BS EN ISO 9001:2000.

PSM has also launched the BilgeSafe flood detection system, which identifies and alarms water ingress in bilge, void and watertight

spaces.

The system provides a robust flood monitoring and alert package for commercial vessels and offshore installations.

Delivered as a complete flood detection package, each BilgeSafe system comprises PSM's BLS 2000 bilge level switch, along with a PSM TankWatch graphical display unit and software to provide a constant, clear status of all spaces being monitored.

Claimed to be simple to install and operate with only one switch required per watertight space, the system is scalable for multiple detection points.

Switches can be easily tested without external tooling or services required and, in accordance with the SOLAS requirements, the system is configured to be failsafe. Any loss of power, or communications to any detector will

result in an immediate bilge alarm warning.

The BilgeSafe switch is also fully submersible to IP68 and resistant to all common marine fluids, such as sea water, fuel oil and hydraulic fluid. The switch is tested and approved for marine duty by Lloyd's Register, Bureau Veritas and DNV GL.

To provide maximum flexibility in monitoring and reporting, the TankWatch display and alarm software can also interface to other shipboard monitoring systems, or remote annunciators.

"Whether you need to comply with regulation, or are simply installing flood detection systems as good practice," said Mark Jones, PSM sales director, "we are pleased to offer BilgeSafe as an approved, simple to operate system that provides a vital marine safety function in one complete solution." 

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A number of books and videos have come into our possession of late.

Among which is **Bridge Team Management - Pilot Onboard!**

KVH Media Group, formerly Walport, has released this video as a training tool for any crew on navigational watch.

This latest KVH TRAININGlink film addresses the four key elements of good teamwork when the pilot is on board - communication, co-operation, monitoring and intervention.

The film is 16 minutes long so provides a concise reminder to those involved in this important role. It is produced in English language with subtitles covering several key nationalities, including Tagalog, Chinese, Russian and Hindi, for cost-effective training across a fleet.

All of KVH's films are purchased outright so there are no recurring subscription charges, the company pointed out.

Adlard Coles Nautical, under the guise of Reeds, has recently published two books -Ship Stability, Powering and Resistance* and 21st Century Ship Management**.

Ship stability, Powering and Resistance was written by Jonathan Ridley & Christopher Patterson and covers essential topics, such as flotation and buoyancy, small angle, large angle and longitudinal stability, water density effects, bilging, ship resistance, and advanced hydrostatics.

Each chapter has a comprehensive list of aims and objectives at the start of the topic, followed by a check-list at the end of the topic for students to ensure that they have developed all the relevant skills before moving onto the next topic area.

The book features over 170 worked examples with fully explained solutions, enabling students to work through the examples to build up their knowledge and develop the necessary key skills. These range

in difficulty from very simple one-step solutions to SQA standard exam questions and above and are predominantly based on a hypothetical ship.

The student is supplied with extracts from a typical data book for the ship, which replicates those found on actual ships, enabling the reader to develop and practise real-life skills.

Jonathan Ridley is principal lecturer of operations at Warsash Maritime Academy (WMA), Southampton Solent University, UK, while Christopher Patterson BSc is senior lecturer of merchant vessel engineering and teaching and learning fellow also at WMA.

Reeds **21st Century Ship Management** by Captain John W Dickie addresses the key areas where shipmanagers must be both knowledgeable and adaptable, including ship types, legislation, documentation, inspections, insurance, budgeting, emergency response and personal issues, such as teamwork, effective communication and fatigue.

Shipmanagement is in a constant state of evolution, driven by the demands of the shipping industry, new legislation and advancements in technology.

Over the past 30 years the emergence of large multi-national shipmanagement companies has changed how business must be conducted and shrinking profit margins have changed how these companies must operate to survive in a competitive industry.

The focus is as much on the people who manage ships as the theory and practice of shipmanagement; people are the most important asset of any organisation.

As such, the book asks the reader to look at how things are done and if there is a way to improve. It is highly recommended for professionals in the marine industry to review where they are and where they want to be, the publisher said.

Captain John W Dickie is secretary general of International Federation of Shipmasters'

Associations, course director for the Diploma in Ship Management (LMA) and Certificate in Maritime Safety Management (LMA).

He is also managing director of Joint Development Associates, a consultancy company specialising in maritime education and training.

Passage Planning Guidelines -2nd Edition*** was recently unveiled by the Witherby Published Group.

This second edition has been completely rewritten, expanded and transformed with the emphasis on the appraisal and planning stages of the voyage planning, the publishers explained.

The book contains a comprehensive section on passage planning using ECDIS. It takes the navigator through the appraisal and voyage planning stage using an electronic chart.

In addition, its expanded set of appendices contain checklists for passage planning, parallel indexing, examples of passage planning notes and a plan pro-forma.

Fully illustrated, this second edition takes the principals of Captain Salmon's original text to deliver a new standard of guidelines for the modern bridge team, the publishers claimed.

**Reeds Vol 13, Ship Stability, Powering and Resistance, by Jonathan Ridley & Christopher Patterson, published by Adlard Coles Nautical, February 2014, paperback - £50. ISBN 9781408176122.*

***Reeds 21st Century Ship Management by Captain John W Dickie, published by Adlard Coles Nautical, 13th March 2014, paperback-£30. ISBN 9781472900685.*

****Passage Planning Guidelines 2nd Edition, published by Witherby Publishing Group, January 2014, 86 pages, £25. ISBN 9781856095839.*

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