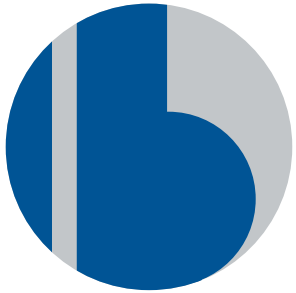


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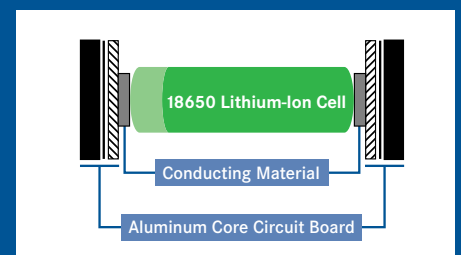
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Front cover - Earlier this year Becker Marine Systems (BMS) opened a branch office in Kobe, Japan.

The company said that it had been receiving an increasing number of orders from Japan in the past few years and had formed a partnership with propeller manufacturer Nakashima some 30 years ago.

"Since we have recently been receiving significantly more orders from this region, we would like to continue to expand our knowledge of the market and our presence on the ground in Japan," BMS said.

Initially, two employees are located at the new Kobe office. They primarily act as a technical support team, but will also undertake commercial tasks.

As of the end of July, BMS claimed that almost 4 mill tonnes of CO2 had been saved by the use of its Mewis Duct.

Is there a game changer out there?

In something akin to turning a negative into a positive, Maersk Tankers is holding what it calls a 'Tankers Hackathon' between 23rd and 25th August in Copenhagen.

With a first prize of DKK25,000 on offer, this is not to be sniffed at.

The company is inviting innovators, coders, designers, entrepreneurs, data scientists and business geeks and anybody else, to join in to create new solutions for the tanker sector's future.

Apart from the prize money on offer, Maersk Tankers said that this is an opportunity to collaborate with the company to disrupt the industry and meet and work with 'awesome people'.

On a more serious note, the large tanker company said it was also an opportunity for participants to build, test and receive feedback on ideas in real time.

It is fully sponsored by Maersk Tankers. Participants will be 'fed and watered' with no doubt copious amount of coffee on hand for those working well into the night. However, the company was at pains to point out that accommodation would not be provided.

The advice was to just bring a laptop, a sleeping bag, a lucky charm, maybe talented friends and be prepared to kick a**** - Maersk's words not mine.

The three-day session aims to cover fuel procurement, engine recommendations, automatic voyage prediction, crewing, predictive maintenance, a cargo identification system, a position list and what Maersk calls a 'wild card' in other words, participants' own ideas.

Any other ideas will be encouraged with participants asked to let the organisers know in

a few words what they have in mind when they sign up.

Both start up teams and individuals will be welcomed but Maersk stressed that any participants need not be a shipping, maritime or any related sector expert.

Mentors and Jurors

There are three senior people taking the role of mentors and the jury.

These are Christian Ingerslev, Maersk Tankers CEO, whose key priority is leading the business strategy and the safe operations of Maersk Tankers, enabling customers and partners' businesses while generating income for the company.

He has also been a key player in the strategic development of Maersk Tankers' digital platform, making the company an industry front runner on digitisation.

Before taking up the reins as CEO, he served as Chief Commercial Officer and Head of Business Development, responsible for the customer portfolio, trading activities, portfolio strategy and sale, purchase and building of new vessels.

Ingerslev is an active player in OCIMF, and he holds an Executive MBA from Columbia Business School and the London Business School.

Another juror is Johan Rosengreen Kringel, managing partner at KRING Group. He is described as a senior leader with an international profile and diverse experience from corporate, management consulting, investment and start-up.

Finally, the third member of the team is James Scully, COO of CargoMetrics Technologies.

CargoMetrics Technologies is a quantitative

hedge fund that builds systematic trading models based on its unique maritime trade data and other macro-economic fundamentals.

The CargoMetrics platform incorporates advances in data science, scalable computing and real-world sensors.

Prior to this, he was senior vice president of operations and CFO of Interactive Supercomputing, which was acquired by Microsoft in September, 2009.

It would be easy to dismiss this as just a 'gimmick' or a reaction to the problems the Maersk Group experienced after its recent systems meltdown.

However, there just could be a game changing idea ready to be unearthed, as often company employees, including senior management, cannot see the 'wood for the trees', as they have been indoctrinated by company traditions and policies down the years. It often takes an outsider to come in to identify ways of changing working methods to gain efficiency and cut costs.

I think Maersk Tankers should be applauded for this initiative. Apart from the kudos in helping out one of the world's largest and most innovative shipping companies, the prize money will be an incentive for budding entrepreneurs, engineers and computer geeks to have a go.

I have not entered, as my days of lying in sleeping bags have long gone. Now if Maersk was offering a 5* hotel with a champagne breakfast, I might be persuaded.

However, I have consoled myself with the thought that at least the company is trying to get the younger generation involved in the shipping industry and fortunately, in Denmark, shipping has a higher profile than in other countries I could name.

TO

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Spate of VLCC orders a worry

In what could be interpreted as a worrying trend, the total number of VLCCs ordered in the first six months of this year reached 38, compared to just 13 for the whole of 2016.

Around 20 were ordered in May and June alone, Gibson Shipbrokers, said in a recent report.

There were also several owners considering ordering, either speculatively or as direct replacements for their older units. This VLCC ordering spurt prompted BIMCO to warn recently of a potential “fundamental imbalance that would take years to overcome.”

In addition, 16 Suezmaxes were ordered in 1H17, compared to 18 in the whole of 2016. Aframax orders amounted to 35, thus far this year, compared to just six in the preceding 12 months, plus 12 LR2s - two in 2016.

Similarly, MR orders have already overtaken last year's total of 30.

Almost half of all the orders this year were placed in June alone. Delivery dates indicated that only a few slots were available for late 2018 deliveries, suggesting that shipbuilders are rapidly filling their forward orderbook.

Price was still a driver, according to Gibson, but the influx of new orders has appeared to put a stop to the downward spiral of newbuilding prices seen recently.

Owners may also be betting on the potential recovery of the tanker market by placing orders for 2019/20 deliveries in anticipation of firming rates. The latest deliberations at the IMO on ballast water is unlikely to have any real impact on newbuilding orders unless tonnage is required to trade in US waters.

With the US regulators operating a different set of rules to the IMO, coupled with the Tier III requirements, some owners will be paying a higher newbuilding price to comply. The US authorities are seemingly toughening up ballast water waivers since they started approving systems. However, the IMO has agreed to extend the deadline, which could potentially lead to a slower pace of tanker scrapping in years ahead, Gibson said.

Perhaps the most interesting development in June was the announcement by Trafigura that it is to order up to 32 crude and product

tankers, with a potential value in excess of \$1.35 bill. Contracts were reported to have been placed by China's Bank of Communications Financial Leasing against bareboat charters to Trafigura with purchase options.

Official confirmation of the initial 22 (Suezmaxes, Aframaxes & MRs) split between Hyundai and New Times were sketchy by early July, as some of the finer details were undisclosed at the time of writing.

Order swap

Cido Shipping also seemed to favour the products market, having recently announced the swapping of an order for two car carriers to MRs. The two vessels involved were originally ordered in September, 2015 and as such, were not recorded as fresh orders.

The recent orders were placed by ‘blue chip companies’ who seemed to have access to huge credit lines or have been very creative with their funding. Lack of ‘easy money’ is something, which has kept a lid on ordering in the recent past, Gibson said.

Turning to the OPEC production cuts,

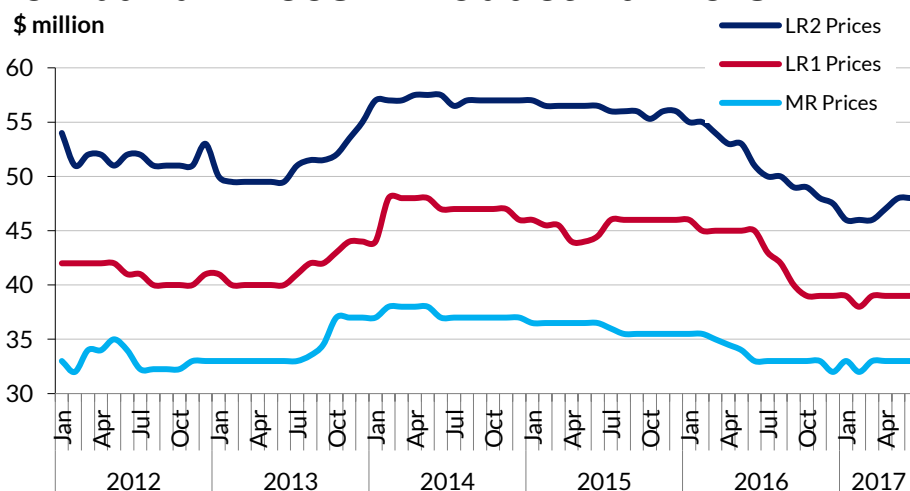
Gibson said that they are having negative implications for crude tankers, particularly VLCCs.

Although no major changes have been seen in the absolute volume of spot VLCC fixtures out of the Middle East by the middle of July, this coupled with the ongoing rapid expansion of the trading fleet, forced spot earnings down to around \$17,500 per day in recent months, from over \$40,000 per day at the start of the year.

In contrast to the developments in the crude tanker segment, thus far the impact of production cuts on oil markets has been rather muted. Although global OECD oil stocks have moved to lower levels relative to the five-year averages, they still remain at highly elevated levels.

The biggest challenge to OPEC's strategy is recovering US crude oil production. According to the EIA, US crude production averaged 9.2 mill barrels per day in June, up by over 0.65 mill barrels per day from the lows seen in September, 2016. Crude output is anticipated to rise by a further 0.55 mill barrels per day by December, 2017.

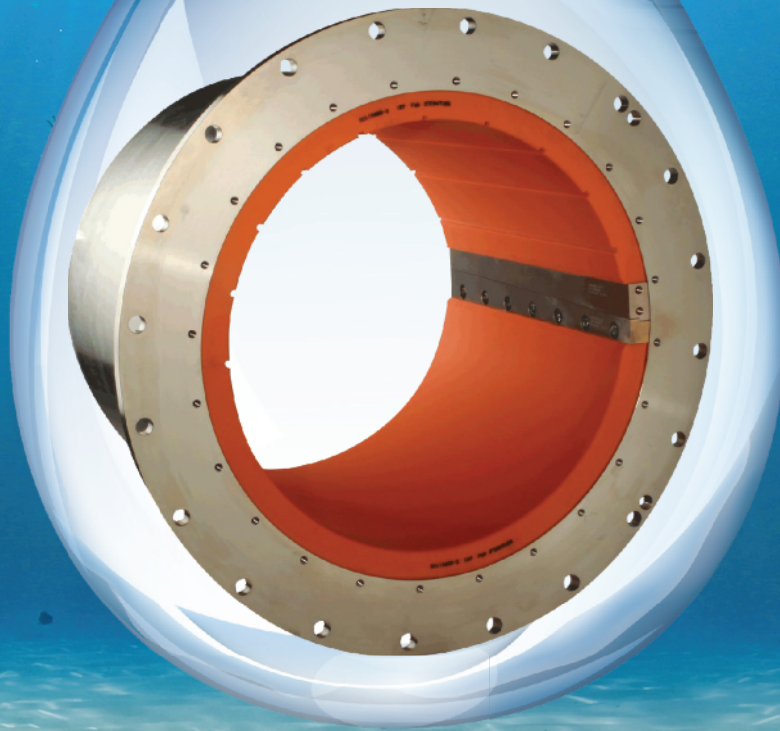
Newbuild Prices - Product Tankers



Source - Gibson Shipbrokers.

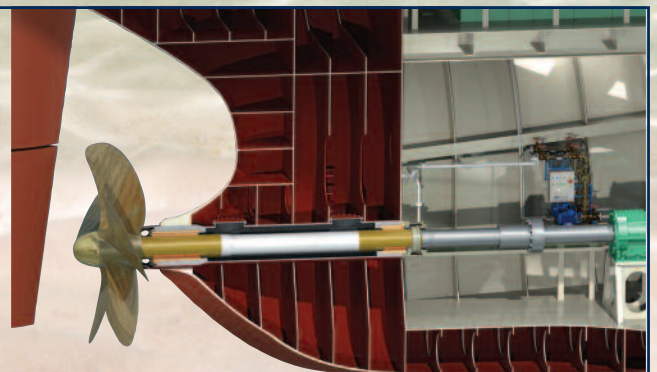
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Recovering Libyan and Nigerian production were also diluting OPEC's effort to rebalance the market. Last month Libyan output was assessed by the IEA at 0.82 mill barrels per day, up by nearly 0.55 mill barrels per day from the lows seen in August, 2016.

The latest indications for the country's production are around 1 mill barrels per day, while the Libyan National Oil Corp targets a further 0.25 mill barrel per day gain to 1.25 mill barrels per year.

Gains in Nigerian crude output were also impressive. In June, production climbed to almost 1.6 mill barrels per day, a rise of around 0.45 mill barrels per day on August, 2016 levels.

If the relative stability in the country continues, further gains could be seen in the second half of this year, Gibson said.

The ongoing rebound in Libyan and Nigerian production has prompted discussions as to whether supply caps should be introduced for these countries, or alternatively, whether a flexible approach should be

employed by other producers participating in output cuts to accommodate rising production from the exempt countries.

A question of cuts

However, both Libya and Nigeria indicated their unwillingness to introduce a cap, while further cuts would require a great deal of co-operation. Yet, if additional cuts are agreed and implemented, this will serve another blow to crude tanker demand this year.

An equally important question is what will happen in 2018 when the current deal expires? Gibson asked. Will we see a rebound in the Middle East crude exports, so much needed by the weak tanker market? The IEA expects to see a healthy growth in world oil demand at 1.4 mill barrels per day; however, further gains are projected in non-OPEC supply.

By far the biggest increase is anticipated in US oil production, which is forecast to rise year-on-year by 1.05 mill barrels per day. Smaller gains are also expected elsewhere, most notably in Brazil, Canada and the UK,

together accounting for a further 0.6 mill barrels per day increase.

Although output in a number of other countries is expected to see a minor decline, the overall picture is that all the predicted increase in demand is likely to be met by increases in Non-OPEC supply (crude, NGLs, biofuels, processing gains).

No scope

If this forecast is correct, this leaves almost no scope for increases in OPEC crude output in 2018 from current levels. If OPEC decides to abandon its restraint, there is likely to be another build-up of global inventories and further downward pressure on oil prices.

The dilemma faced by OPEC does not inspire much optimism for the crude tanker market, hoping to see increases in Middle East crude exports. If production cuts are extended through 2018, the only hope for owners will be continued strong gains in long haul trade, persistent floating storage and slowing fleet growth, Gibson concluded.

TO

VesselsValue/ViaMar launch future market values service

VesselsValue (VV) has teamed up with Oslo based shipping advisory firm, ViaMar, to produce Future Market Values (FMVs) for around 40,000 vessels, including tankers.

This will enable clients to instantly predict future sale prices of individual vessels, fleets or user defined portfolios until the predicted end of each vessel's life.

ViaMar was established in 1996 to provide objective analysis of shipping markets using a fundamental model. Viamar and VV said that they both strongly believe that all analysis must be backed up by robust and transparent automated models.

For example, all forecasts are compared against VV market values in real time to produce live accuracy statistics, a feature no other provider offers, VV claimed. See the attached image 'Aframax Future Values'.

VV has been receiving requests from clients who want to use FMV as an input in their analyses, with many also using DCF, linear depreciation and demolition values, as other

inputs.

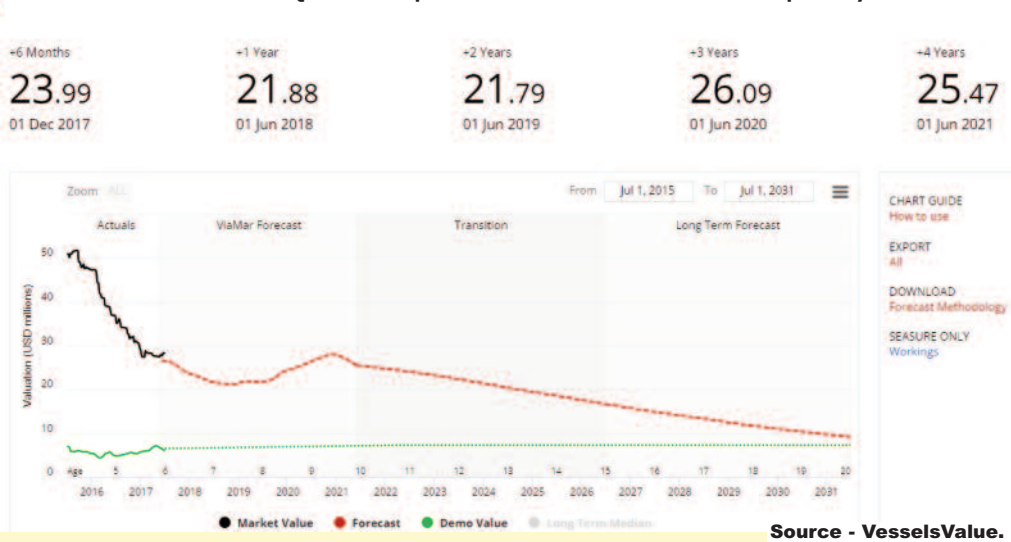
Separately, VV's core banking clients compliance departments are also actively using this new function to check values over the tenure of their loans.

Following the launch of FMV, VV now provides a complete suite of values, over the lifetime of a vessel. These values include market, demolition, DCF, linear depreciation,

book and FMV, which are all supported by other analytical modules, such as VV Trade and VV@ Mapping.

VV was launched by shipbroker Richard Rivlin in 2011. The idea for an automated valuation system came about during the financial crash of 2008, when traditional valuation methods were withdrawn from the market.

The LR2 'Abu Dhabi III' 2017 Q3 forecast published 20th June 2017 and revised quarterly



Source - VesselsValue.

Seminar highlights ECDIS operational problems

ECDIS Ltd has come a long way since it was founded in 2008 to offer the IMO 1.27 Generic ECDIS course.

It has since evolved into the largest global independent company in its field, offering over 30 STCW courses.

The company's original IMO 1.27 Generic ECDIS course is now delivered worldwide every week to thousands of seafarers, however this only amounted to 2.4% of ECDIS Ltd's turnover (fiscal year 2013/2014), due to customer driven expansion, the company said.

Earlier this year, the eMaritime Group (eMG) was launched, which is claimed to be the world's first single website and mobile app to include all maritime discounts and services as a 'one stop shop'.

The website took three years to design, reflecting its diversity and wide range of services offered; from cost effective on-line training to heavily discounted simulators and MCA approved STCW courses, on-line only distribution of cost competitive S57 ENC charts and a free social network for seafarers offering hundreds of jobs, regulations, plus the latest breaking news, new videos, relevant articles, media releases and white papers, the company said.

ECDIS operations still remain a key component of the company's training and consultancy services. Thus far, there are 39 ECDIS type approvals issued with more to come with no standardisation among the OEMS, according to eMG and ECDIS Ltd's managing director Mark Broster, speaking at a seminar last month.

The seminar was organised by eMG to highlight the forthcoming mandatory ECDIS upgrade, due to come into force on 1st September, this year. From that date, all vessels will be expected to have upgraded their ECDIS software to the International Hydrographic Organisation (IHO) Presentation Library edition 4.0 within the S-52 display specification standard to remain compliant.

Basically, as well as ensuring greater

consistency in the display of ENC data across all ECDIS, the new standards deliver other benefits for the mariner, the UKHO said at the seminar.

For example, the latest Presentation Library addresses the number one complaint levelled at ECDIS - constant audible alarms. By providing clear guidance to ECDIS manufacturers on ENC objects that will raise an alarm, it was claimed that the issue of bridge alarm fatigue had been tackled.

In addition, information such as fairway and anchorage area names now appear on screen, with landmarks, lights and buoys viewable via a 'hover-over' function. Both initiatives reduce the time-consuming need to find information buried in a pick report.

The seminar speakers - UKHO's Thomas Mellor, Head of OEM Technical Support and Digital Standards and chairman of the ENC

maintenance working group, UK MAIB's Richard North and ECDIS Ltd's Mark Broster all found that the current ECDIS operations were causing seafarers problems.

Despite the UKHO producing Admiralty charts for more than 200 years, the responsibility for the ENC portrayal on an ECDIS screen is controlled by the ECDIS standard S-52, which is authored by the IHO.

The UKHO has a laboratory of different ECDIS set up to test ENCs. It was found that some ECDIS were fitted with old software and even the upgraded software was missing certain information streams. Thus the IHO S-64 standard for test data has been updated.

Speaking about the problems with alarms, Mellor said that certain crew had asked for the alarms to be disengaged and some shipowning company had agreed to the request.

Taking the case of the grounding of the



Three separate seminars were offered with participants moving between the seminars once finished.

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chemical tanker 'Ovit' on the Varne Bank in September, 2013, MAIB inspectors found that the vessel's ECDIS alarm had been disabled. "This is the biggest problem we face," Mellor said, continuing that the new Presentation Library would address this problem.

According to Broster, some 16 OEMS had yet to confirm their 4.0 compliance and he thought that around 25% of ECDIS won't be compliant by the 31st August cut-off date.

He highlighted the fact that for example, V.Ships and BP Shipping operate vessels fitted with many different OEM ECDIS. He was also worried about cyber security and said that nobody understood it. "Maybe we should pause now due to the cyber risk," he said.

Questions asked

North suggested that an ECDIS display panel should be as big as a chart table it was meant to replace, especially when used for route planning purposes. He called for a more human centric equipment design - a more systems approach to the problem. North also asked why weren't seafarers asked for their opinion as to their expectancy against the actual ECDIS operations and why didn't organisations engage with OEMS about how they are being hampered by regulations.

In recent months, eMG auditors have been travelling around the world conducting on board bridge team ECDIS audits. The aim is to provide the Master, management company or operator an objective assessment of the state of the bridge team and associated administration and equipment.

This intense one day procedure can be conducted worldwide, either alongside or underway and includes the whole bridge team highlighting every aspect of navigation.

One company spokesperson said; "We were pleasantly surprised to find that as part of the audit service, we received a thorough health check of our overall bridge procedures, documentation and company policy regarding ECDIS."

eMG is able to arrange audits at short notice anywhere in the world on any day of the week or even weekends. Broster explained; "We appreciate ships need us to work around their schedule and accommodate them to allow the standard work flow. As such we are more than able to accommodate such demands.

"We don't hold any punches with our audits, we have a lot of ground to cover in the single day and so crew tend to be quite overwhelmed by the end of the day. However, our clients are always appreciative afterwards and have time to take in the information and always proves to be beneficial," he claimed.

The group is currently working on several other initiatives to enhance the training services on offer. For example, 24/7 live simulator seetime training has been developed and a shipping company client is currently in negotiations to start the training courses very soon.

The idea is to run the courses on a full four hours on and eight off rotation with the crew staying in a nearby hotel and training staff will be working directly with them the whole time.

A new simulator project -Live Constructive Simulation (LCS) - is also underway, incorporating live AIS data, as well as photo-realistic graphics, on which, the early development work has been completed.

The company is awaiting the 'green light' go to ahead with the first project, Mike Backhouse, ECDIS Ltd's head of marketing

told *Tanker Operator*.

ECDIS compliant

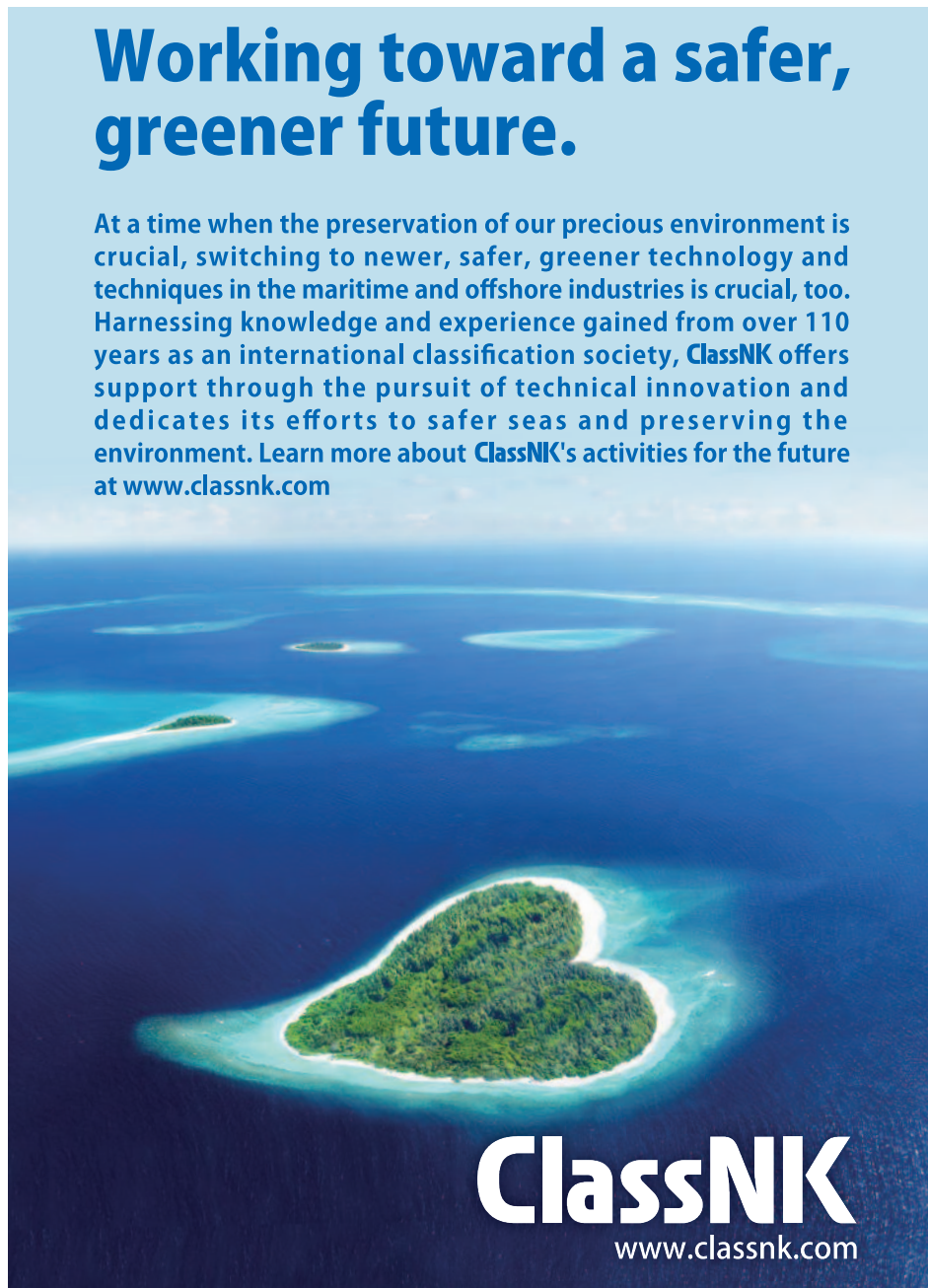
In a separate announcement, early last month, the UKHO said that almost three-quarters of commercial vessels of over 20,000 gt were already compliant with the SOLAS-mandated ECDIS deadline of 1st July, 2017.

The UKHO estimated that a further 3,828 cargo ships of over 20,000 gt were yet to make the transition to using an ENC service and therefore do not yet meet SOLAS regulations on ECDIS carriage.

The amendment to SOLAS Chapter V regulation 19.2 requires ships engaged on international voyage to be fitted with an ECDIS no later than the first survey on or after a date based on the type of ship and its size in gross tonnage. Only ENCs supplied

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from official hydrographic offices can be used in ECDIS to meet SOLAS requirements for nautical charts and to be considered ECDIS ready.

Just over 12 months ago, the SOLAS regulations on ECDIS carriage were extended to cover cargo ships of over 50,000 gt. Today (early July), 90% of these larger vessels are now considered ECDIS ready.

Emphasising the importance of compliance, Mellor said in the announcement: "The latest data indicates that the category of cargo ships over 50,000 gt is close to being the first to complete its transition to ECDIS, with only a few hundred ships remaining, which is positive news. Progress is also being made among cargo ships over 20,000 gt, with almost three-quarters already using an ENC service.

"However, it is important to be aware of the implications for the several thousand of cargo ships and any others whose ECDIS deadline has passed without having yet adopted ECDIS.

"For example, if a ship is detained by Australian Port State Control for non-compliance, the only way of lifting that

detention is to first become compliant. Whilst ships have until the first survey after their deadline, in some cases this may mean fitting an ECDIS and training crew at considerable cost and delay," he warned.

Chris Berkley, UKHO's senior product manager, outlined the support that the UKHO continues to offer to shipowners and operators to help them achieve the safe, effective and compliant use of ECDIS: "As well as UKHO producing AVCS - the world's leading ENC service - our latest 'Living with ECDIS' seminars continue to offer guidance that reflects the considerable progress made by shipowners and operators in their use of ECDIS over the last three years.

"We address the latest challenges faced by shipping companies by offering free practical advice, answering questions on ECDIS management and updating them on the latest IHO ENC standards," he said.

Since the ECDIS mandate was introduced, the UKHO claimed that it had highlighted the importance of understanding that having an ECDIS fitted does not guarantee compliance or constitute its effective use. In addition to

subscribing to an ENC service, shipping companies have also been encouraged to ensure that they have revised bridge policies and procedures in their ship's Safety Management System (SMS) to reflect the requirements of safe, effective and compliant ECDIS operation; that ECDIS software is upgraded to comply with the latest IHO ENC standards and that its bridge teams are competent and confident in using ECDIS to its full potential.

With the Australian Maritime Safety Authority (AMSA) taking a zero-tolerance approach to breaches of these regulations, having gone as far as to require compliance with SOLAS under Australian law, this is legislation that cannot be ignored.

For example, between January and May this year, AMSA recorded 142 deficiencies under 'safety of navigation', which resulted in 15 vessels being detained. Many of these deficiencies related to ECDIS and with ECDIS-awareness campaigns planned by the Paris and Tokyo MoUs for the end of this year, there will be an increasing focus on safety of navigation, the UKHO warned.

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German marine equipment suppliers see ray of hope

German marine and offshore equipment suppliers have continued to make considerable efforts this year in response to the weak demand from other countries and growing competition in global shipping markets.

Companies will definitely benefit from developing new markets, product innovations and digitalisation and networking as opportunity for the future, the Verband Deutscher Maschinen- und Anlagenbau (Mechanical Engineering Industry Association) (VDMA) said in a presentation in Hamburg last month, recorded by the Port of Hamburg from whom this article has been taken.

“Our high-tech sector with its more than 65,000 employees has still not seen the end of the decline in incoming orders, but there is a ray of hope on the horizon. We can say this because of the flexibility of marine and offshore equipment suppliers, as well as the good economic data from the German machinery and plant engineering industry that is now becoming apparent,” the chairman of VDMA – Marine Equipment and Systems, Dr Alexander Nürnberg, said.

“Overall mechanical engineering increased its forecast for machine production in real terms to plus 3% in 2017. However, this certainly does not apply to the maritime area on average. Although last year sales declined only slightly to €11.1 bill, incoming orders slumped significantly by 14%. We predict that there will be no major improvement for the sector as a whole in 2017,” he said.

However, individual maritime markets and segments showed signs of optimism, for example, electrical engineering systems and components, which with the ongoing process of automation are absolutely vital for the smooth, efficient operation of ships and plants.

“It is to be hoped that in the medium term the gratifying economic developments in the mechanical engineering industry will also have a positive effect on the entire maritime sector,” Nürnberg added.

Meanwhile, the shipping market is continuing to consolidate, new business models are changing the supply situation and established models are losing significance. “The growing digital possibilities have to be intelligently used in the interaction between operators, shipyards, equipment suppliers and beyond,” explained Martin Johannsmann, VDMA executive board member for Marine Equipment and Systems. ‘Learning from one another across sectors’ is the way ahead for equipment and system suppliers. Their solutions are in demand in shipbuilding, as well as associated areas in the maritime environment, such as logistics, port

technology and energy.

There is currently a great deal of discussion about Industry 4.0, but implementing and profitably applying networked production and services involve considerable hurdles for many companies.

This process is proceeding fast and continuously in the maritime sector. “Today we supply, from the data generated by a whole variety of sensors on board, vital information for the entire shipping sector,” Johannsmann said in describing a new business model from his company environment.

“In Finland, the autonomous unloading of cargo ships is already beyond the research



VDR's President Alfred Hartmann.

phase and now undergoing practical testing, thanks to integrated systems from our company group,” added Nürnberg.

“Companies that are not alive to this development will be among the losers of digitalisation,” warned Johannsmann. In maritime technology production, competitive advantages are also being realised via intelligent automation solutions. New sensor technology, data evaluation algorithms and interface definitions (OPC UA) have to be integrated.

The digital solutions contribute significantly to the achievement of economic and environment-friendly goals in shipping. This involves the use of electric hybrid propulsion systems, as already deployed on ferries, to reduce environmentally harmful emissions. And in overseas transport the set climate objectives can be realised with the intelligent use of alternative fuels, which can successively replace fossil fuels on ships.

‘E-fuels’ will play a particularly important role in this respect. Manufacturers of large engines and the VDMA are advocating a maritime energy transition. It is important here to think beyond the internal combustion engine in itself and consider the overall propulsion system, the organisation said.

According to a survey by the Fraunhofer CML, nearly all (93%) operators (shipping companies) anticipate a broadly based digitalisation of their maintenance processes in the next few years and expect proposals for solutions from within the industry.

An initial VDMA study found that in particular, successful companies in after-sales business focus on developments from the area of Industry 4.0, namely remote services and condition based maintenance, as well as management of services via management information systems.

“The second study we commissioned, which is currently running, is concerned with digital service. From this we expect specific ideas for our sector,” explained VDMA Managing Director Dr Jörg Mutschler.

For the first time in years, other European countries are the main export market for German equipment suppliers, claiming 37% of exports, compared with 2015’s 31%.

The explanation for this is the stable order situation for leading European shipbuilding companies in their specialised segments. The long-standing frontrunner, Asia, follows with 34%. The most important Asian countries, China and South Korea, roughly retained their shares of German imports, China accounting for 21% and South Korea close to 10%, whereas the share for the rest of Asia in 2016

German shipping’s regional split

Location	No of companies	No of ships
Hamburg	113	1,292
Lower Saxony (Elbe)	62	306
Schleswig-Holstein	58	279
Lower Saxony (Jade/Ems)	54	598
Bremen	30	209
Lower Saxony (Weser)	12	45
Other	10	37

Source - BSH/VDR.

fell significantly from 6.5% to 3.5%, compared with 2015. Trade with North America also declined proportionately, from 11% in 2015 to only 9% last year.

Only 223 ocean going ships totalling 4,951 mill gt were ordered worldwide in the first quarter of 2017 (1Q16 = 172 of 6,759 mill gt), including 19 in South Korea (eight), 66 in PR China (35), five in the Philippines (two), 28 in Japan (53) and 51 in EU-28 (23), including one in Germany (one). The global order book came to 4,840 (5,807) units as at 1Q17.

Digitalisation

Agreeing with these comments was the German Shipowners’ Association (VDR).

Speaking at the 10th National Maritime Conference in Hamburg last April, Alfred Hartman, VDR President said: “Digitalisation is a major opportunity to make ship operations even more efficient and safer, as well as creating top-quality jobs in Germany.”

Using the data delivered by hundreds of sensors on board ship – such as on engine performance and fuel consumption – shipping companies can deploy their vessels more efficiently, identify necessary repairs sooner, plan routes more intelligently and compare performance data. Permanent data exchange between ships, terminals and shipping companies helps to optimise travel speeds and port calls, to spare resources and offer customers greater transparency, he said.

Hartmann added: “Without continuous data transmission between vessels, shipping companies and terminals, numerous digital innovations cannot be used. We need reliable broadband Internet access not only in ports but also on waterways and coastal seas. The public administration also needs a further push towards full digitalisation. Basically, it should be possible for all applications and documents to be sent by electronic channels. Also, data exchange operation must be smooth and standardised.

“Today, only half as many seafarers work on board maritime vessels as was the case 30 years ago – accompanied by a drastic improvement in safety and transport performance. At the same time, tasks on board

have become more sophisticated and challenging. To this end, we need crews of seafarers with excellent training.

“The more autonomously ships can travel, the more attractive and responsible jobs are also created onshore. We need capable staff to monitor and maintain ships by remote control but also for research and further development of technologies.

“We should understand digitalisation as an opportunity and be open to new developments. While shipping companies aren’t exactly Silicon Valley start-ups, we do know best how to put top-quality shipping and maritime logistics to work. Maritime knowhow in the field of shipping is an indispensable element of the strong cluster of the maritime sector, research and development in Germany and a true competitive edge,” Hartmann, concluded.

The VDR has around 200 member companies, representing the German shipping industry with the world’s fourth-largest commercial fleet. As an employers’ association, the VDR conducts collective bargaining and social partner negotiations.

The founders, in 1907, were regional associations of shipowners, with the aim of facilitating common and uniform management of interests.

Global representation

Today, as with many shipowners’ associations, the VDR represents German maritime shipping not only in Berlin and Bonn, but also in Brussels, London, Geneva and on a global scale.

According to figures produced by BSH and the VDR, as of 31st December last year, there were 311 tankers owned by German companies, comprising four bunker barges, 60 chemical tankers, 43 gas tankers and 204 crude oil tankers.

In total, there were 364 shipping companies of all types in Germany, mainly located in the northern part of the country.

As for seafarers registered within the German social security system, at the end of last year, these totalled 9,486 of which 6,269 were German nationals and 3,217 foreign nationals.

TO

Technology - a game changer in the tanker industry

The tanker industry faces many challenges. The growth in fleet volumes, coupled with the global economic slowdown has resulted in excess supply and a fall in demand.*

This has impacted profitability. To remain competitive, the shipping industry has to adapt.

When it comes to operations and management processes, one of the main challenges for companies is the need to handle a variety of tasks, all carried out by different departments. Another issue is that many companies don't have complete operational, systems and data visibility.

They are often unable to really view their management processes and really understand their people.

Having employees, external agencies and crews located at sea means there is often a lack of integration between processes and systems on board fleets and the systems on shore in the office. A very common problem is that companies have no central data source that can be accessed by staff.

This can be frustrating, unproductive and time consuming and it makes it far harder for companies to make informed decisions quickly. For example, the same information might get requested multiple times from the Master by different teams, which forces him to respond manually to each request.

Unless the teams are connected and can communicate on a reliable basis it's easy to see the difficulty in managing hundreds, if not thousands of employees. Antiquated day-to-day processes remain an ongoing challenge in shipping and they are reinforcing inefficient ways of working.

Internal improvements

But how can the industry address these challenges? Most economic challenges are beyond the control of any one company to fix, however, companies can make internal improvements to business areas including their commercial division, operations and fleet management, which can improve their performance.

Despite the need for change, tanker companies have often been slow to adopt innovative ways of working. Those who are on the road to making changes and evolving their processes are often held back by legacy IT systems that are preventing them from making the improvements they need.

However, in the last decade, we've seen technology drive significant changes to business processes and working practices in other industries.

As global management consultants McKinsey recently highlighted, 'Over the past few years, rapid technological advances in digitisation and data and analytics have been reshaping the business landscape, supercharging performance and enabling the emergence of new business innovations and new forms of competition and business disruption.'

The tanker industry can learn from other industries and use the technological advances available to them to streamline their business and management processes, which in turn will lead to greater efficiencies and profitability.

One way companies are starting to do this is by using technology to optimise fleet management, automate processes, increase their business performance and reduce costs. We see enormous potential for far greater advances driven by technology.

Already, there's been commitment from the industry to bring the internet on board and make it constantly available. This is a major step forward since it will allow shipping companies to communicate and exchange data with their fleets in real-time.

The internet also gives companies the ability to utilise cloud-technology. Using the cloud, information can be centralised and made accessible for everyone; systems and processes can be integrated and data silos removed - allowing operators to gain a complete 360-deg overview of their fleet and entire operations - often for the first time.

While the real-time exchange of data may still take some time to become established, cloud-based solutions are available today and already help shipping companies to realise great benefits in terms of communications, data access and collaboration.

Companies such as Norddeutsche Reederei H Schuldt, a traditional shipping company with a success story that has been ongoing for the past 150 years, with a fleet of more than 50 vessels is using up-to-date cloud-based software to manage and monitor its fleets.

Having adopted our Cloud Fleet Manager solution, the company now has a single platform through which their entire fleet can be managed. The platform centralises data and information so it can be viewed, analysed and processed in real time using apps and mobile devices.

Cloud-technology will be a real game changer in the industry, allowing companies to transform how they manage their fleet and crews. This will not only reduce costs and improve efficiencies, but it will ensure they are able to future-proof their business.



**This article was written by Alexander Buchmann, Managing Director of Hanseaticsoft GmbH.*

Pools back in vogue on the back of a dire timecharter market

CPP pool operator, Hafnia Management, has moved into third place behind Scorpio and Maersk Tankers, based on the number of tankers commercially managed.

Since the company began trading around seven years ago, the number of pool managed vessels has risen to a total of 106.

The three pools are - Handysize Pool (24 vessels), MR Pool (34) and LR1s (48 vessels). The latter is a Singapore-based joint venture with MOL called the Straits Tankers LR Pool. Straits Tankers was recently boosted by the addition of two larger LR2s - 'Phoenix Dream' and 'Raysut' - both controlled by MOL.

Owning company Hafnia Tankers has 37 vessels in operation in the pools with another two LR1s newbuildings to come around the first quarter of 2019.

Responding to a recent Moore Stephens warning about checking financial, tax and jurisdiction carefully before committing tonnage to a pool, Hafnia Management CEO Anders Engholm said that there were no better jurisdictions than Denmark (Handysize pool and MR Pool operating headquarters) and Singapore (Straits Tankers base) to operate out of, also claiming that the company has proper governance and reporting procedures in place.

Engholm claimed that one of the main selling points was that Hafnia Management charges net fees, rather than gross fees, which can save up to \$500 per vessel per day. He also said that the pools management operate with full transparency and have a 'one owner - one vote' policy, rather than voting rites being calculated by the number of vessels an owner enters into a pool.

Another plus point is vessel utilisation, which is claimed to be running at around 95% as at the beginning of June. The company said that if an owner could improve utilisation by 10% on a daily TCE of around \$15,000, this would increase earnings by about \$1,500 per day, or \$500,000 per vessel per year.

Speaking about pool size and economies of scale, Engholm said the Straits Tankers LR Pool was more or less operating at its optimum

size, but the management company would like to see around 10 more Handies and possibly double the number of MRs, either entering the pool organically or in joint venture partnerships, similar to the Hafnia/MOL tie-up in Straits Tankers.

The pools work on transparent principles and each pool participant receives a seat both on the technical and operation committee, as well as on the 'Executive Pool Board' meetings - both held twice a year - at which the 'one owner - one vote' principle is invoked.

Earning distributions takes place twice per month, based on the individual vessels performance pool points. These are regulated every six months, ie each vessel will earn money based on her actual performance.

Costs covered

The pools cover certain costs, such as regular vetting, armed guards, ocean routing, bunker tests and hull cleaning. For the most part, the required working capital can be financed.

Each pool has an initial nine month lock-up period, after which there is a three month withdrawal notice period to be declared.

Within the Hafnia Group is owning company Hafnia Tankers under CEO Mikael Skov. The wholly-owned tankers are commercially managed by Hafnia Management and are all operated in the pools.

As at the end of June, Hafnia Tankers owned 13 Handysize, 18 MRs and six LR1s. In addition, there are two newbuilding LR1s to come by the end of the first quarter of 2019.

Hafnia Tankers' top six shareholders, which include well known equity investment firms, represent around 75% of the outstanding equity capital in the company.

Another pool player - UPT - has expanded its Handy Pool fleet during the past year by eight vessels, coming from four different partners based in Europe and the Far East.

UPT's Stefan Ciegelski told *Tanker*



Hafnia Management's Anders Engholm.

Operator that the company was looking to expand the pools further and are in talks with different entities, both from the local German market, as well as from international owners.

"While the German market may not support new finance, it offers quite some opportunities to attract additional existing ships into pooling. The timecharter market, once attractive for owners, does not work as an alternative in its present state.

"Contrary to that, a participation in the UPT Pools will allow owners to participate in market upswings immediately instead of locking in dire T/C rates for an extended period," he said.

The UPT Pools comprise product tankers in the 37/42,000 dwt size bracket (UPT Handy Pool) as well as between 70,000 and 85,000 dwt (UPT Panamax Pool)

Pool participants comprise traditional shipowners, as well as financial institutions. These include - Schoeller Holdings/Columbia Shipmanagement, Hartmann/Donnelly Tanker Management, CONTI Reederei, GEBAB, König, Salamon, Blackstone/Tufton and Nordic Shipholding.

TO

Options can cause problems in a charterparty

The recent decision in the ‘Zaliv Baikal’ case is a warning on the need for careful drafting and broad consideration when giving options.

In this article, Nicholas Froude of C Demurrage takes a look at this case and its ramifications.

Operational flexibility to match changing commercial requirements is very common in modern carriage contracts. So, in a voyage fixture from x to y, charterers might be allowed to call at one or more interim ports to load and/or discharge, to alter voyage instructions (so transit time similarly increases, and more bunkers are used), or simply to have the vessel stop somewhere and await orders.

Such things enable charterers to make the best use of the vessel, according to logistics, such as what cargo is to be sourced and delivered where, and wider considerations for example, possible lack of port facilities, and even contractual transfer of cargo ownership when the vessel reaches a particular position.

Subject to safety and scheduling issues, owners frequently agree options that allow charterers to move or stop the vessel pretty much as they wish, provided increased bunkers and other costs are paid for and additional time is covered at a suitable rate. Voyage charterparties sometimes contain elaborate

terms saying what charterers can do and what it will cost them.

This was the case in *Gard Shipping AS - v - Clearlake Shipping Pte Ltd* [2017] EWHC 1091 (Comm) (the ‘Zaliv Baikal’), where the English High Court gave a decision that should remind parties (a) to be clear in their drafting (b) to analyse the scope and possible effect of options and (c) that the courts will not easily help them avoid a result that they probably did not intend.

A recap with an amended BPVOY4 form provided for loading at Ust-Luga, additional port options and discharge in a range that included Rotterdam. After several interim calls, the 2009-built LR2 arrived at Rotterdam on 26th January, 2016, tendering NOR such that time started soon after.

For their own reasons charterers gave no discharge instructions until 31st March, and owners’ claim for nearly \$1 mill depended on what rate applied to 64.7 days of demurrage.

Under the terms of the charterparty, ordinary demurrage was \$32,500 per day pro-rata, but owners claimed an enhanced rate under additional clause 11 (AC 11), which said: “... Charterers [may], at any stage of the voyage,

[instruct] the vessel to stop and wait for [orders] for maximum three days ... within the ranges agreed. In particular ... , Charterers [may] instruct the vessel not to tender [NOR] on arrival at or off any port or place or to delay arriving at any port [or] place until Charterers give the order Time to count as used laytime or time on demurrage, if vessel is on demurrage. [All] ... bunkers consumed to be for [Charterers’] account.” AC 11 also said that after the first five (not three) days waiting for orders or discharge instructions “at sea” the vessel was to be considered as being used for storage, and the demurrage rate was uplifted by amounts, which escalated as more time passed.

The judge identified various demurrage regimes, each covering different circumstances and with its own particular trigger.

These included (a) the interim ports clause, which had been invoked by charterers’ orders to make additional calls (b) the standard regime, beginning with owners’ tender of NOR, and (c) AC 11, whose options could only be activated by a positive order from charterers - to stop and wait, not to tender NOR or to delay arrival.

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Risks still prevalent despite a drop in incident numbers

Combined Maritime Forces (CMF) has warned that the recent attacks against merchant shipping in the Gulf of Aden and Bab-el-Mandeb highlighted the risks associated with sailing through these waters.

Daylight attacks by small boats using small arms, rocket propelled grenades, and waterborne improvised explosive devices (WBIED) have been conducted against the LNGC 'Galicia Spirit' in October, 2016 and the LR1 'Muskie' in May 2017.

While these attacks were both unsuccessful, and the identity of the attackers and their reason for the choice of target remains unknown, they potentially demonstrate a non-

piracy related threat to the maritime community, CMF said.

The risk of the conflict in Yemen spilling into the maritime sector also remains. Even though merchant vessels are not expected to be targeted by the forces fighting in Yemen, the risk of collateral damage to commercial shipping is present and should not be ignored.

Based on analysis of these risks, CMF has recommended the following:

■ Vessels transiting the Gulf of Aden to the

Red Sea are advised to pass through the area between 44.00 East in the Gulf of Aden and 13.00 N in the Southern Red Sea during the hours of darkness and exit the traffic separation scheme to the West of the Hanish Islands in daylight hours.

■ Vessels transiting the Red Sea to the Gulf of Aden are advised to pass through the area between 13.00 N in the Southern Red Sea and 44.00 E in the Gulf of Aden during the hours of darkness.

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■ All vessels transiting the Gulf of Aden and Bab-el-Mandeb should follow the BMP4 guidelines to the maximum extent possible. Finally, the threat of piracy, long present in the Gulf of Aden region, experienced a spike in activity during March and April, 2017. Recent piracy attacks were all unsuccessful but they serve to emphasise the importance of robustly following BMP4.

Maritime security firm, Control Risks said in a maritime security incident analysis of the first half of this year, that maritime crime continued to fall, despite a spike seen around the Horn of Africa.

Overall, there was a 15% decrease in worldwide maritime incidents in 1H17 compared with the same period last year. Highlighting the dangers off West Africa, the company said that 22% of piracy incidents occurred in the Gulf of Guinea, despite a decline in maritime piracy in the area, which in 2016 experienced the highest levels of piracy and armed robbery ever recorded in the region.

Around 38% of the reported incidents in 1H17 involved cargo vessels and tankers.

Southeast Asia decline

In addition, there was a 20% decrease in global kidnap incidents and a 33% decrease in incidents reported in Southeast Asia, compared with the 1H16 figures. The decline in Southeast Asian incidents was said to be in part due to

the successful efforts of the Philippines military against the militant Abu Sayyaf Group on land, reducing their capability to kidnap victims at sea.

Cormac McGarry, Control Risks maritime risk analyst, commented; "The Gulf of Guinea has seen a substantial decrease in piracy this year, as Nigerian pirates groups, who typically dominate regional statistics, have not shown the same intent to venture far offshore or beyond Nigerian waters like they did in 2016.

"However, there is no sustained trend yet pointing to a substantial reduction in piracy in the Gulf of Guinea, compared to the years before 2016 and we expect increased activity from mid-July as the seas become calmer.

"It is promising to see a continued decline in global maritime security incidents, which have been decreasing over the past three years. However, this trend should not allow for complacency. We are recording global levels similar to 2013, which also followed a three year downward trend, largely due to the decline of Somali piracy. But that global trend did not last. Often, as one region sees less activity it picks up in another," he warned.

Southeast Asian piracy watchdog ReCAAP also reported that piracy incidents had fallen by 22% in 1H17.

Some 36 incidents of piracy and armed robbery against ships, comprising 30 actual and six attempted incidents, were reported

during January-June, 2017, the organisation said.

Of the 30 incidents, 13 occurred on board tankers.

ReCAAP said that a major concern remains crew abductions from ships while underway in the Sulu-Celebes Sea and waters off Eastern Sabah.

Seven incidents, including four attempted crew abductions, were reported during the first four months of this year, with no incidents in May and June. As of 30th June, 18 crew are still being held captive out of the 59 crew abducted since March, 2016.

The reduction in piracy incidents comes on the back of establishment of a trilateral maritime patrol agreement on 19th June, to address the increasing incidence of piracy, armed robbery against ships, kidnapping of crew at sea and other crimes along the shared borders of Malaysia, Indonesia and Philippines.

In dealing with the increasing threats to ships transiting the Sulu-Celebes Sea, the Philippine Coast Guard (PCG) has also implemented several regulations and guidelines.

In addition, the Philippine authorities continued search and rescue operations for the abducted crew and neutralising the militant groups responsible for the kidnappings. During 1H17, the Philippine authorities rescued nine crew.

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Running a large shipmanagement concern

With the seemingly endless number of rules and regulations the shipping industry is faced with, especially in today's market conditions, *Tanker Operator* spoke with Bernhard Schulte Shipmanagement's (BSM) COO, David Furnival, about the challenges of running one of the world's largest shipmanagement companies.

Kicking off with the question of regulations, such as the forthcoming EU MRV and IMO 0.5% sulfur cap regulations, Furnival said; "BSM takes the view that new regulations, whilst being a significant challenge, are often opportunities and the cost of managing implementation can be off-set by generating revenue through value and demand creation.

"For the EU MRV regulations, we are developing additional functionality within our own PAL Voyage Module and offering a turnkey solution to clients at a very competitive rate. In the case of the 0.5% sulfur cap, we have worked with Babcock

International to design and build an innovative new gas supply vessel that will help develop LNG bunkering infrastructure and provide a fleet diversification opportunity for our shareholders," he said.

As for the thorny issue of the Ballast Water Management Convention (BWMC), BSM's design and newbuilding division, Schulte Marine Concept, has undertaken a detailed study of all the leading BWTS and as a result, is able to provide guidance to customers for any vessel type under management, Furnival explained.

Training is another area that companies will be faced with when installing a BWTS. Furnival said that there have been relatively

few BWTS installed in BSM's managed fleet to date, so training has been limited to the requirements of each individual vessel and crew. "However, we are prepared to gear up the capability at our Marine Training Centres once the demand increases," he said.

Cyber problems addressed

One of the major problems today is perceived to be cyber security, as highlighted in TMSA3. To combat this, Furnival said that BSM has comprehensive cyber security procedures for BSM's vessels that were recently updated to encompass the latest pan-industry guidelines (published jointly by BIMCO, CLIA, ICS, INTERCARGO, INTERTANKO, OCIMF and IUMI).

"Our IT division, MariApps, has developed an advanced strategy for the entire Schulte Group for maintaining security of our PAL applications and IT and communications infrastructure, underpinned by Microsoft Stack technology. This will remain an ongoing challenge in the face of developing threats such as ransomware," he warned.

Another problem recently highlighted by OCIMF is mooring operations. The organisation is currently updating its guidelines on mooring. Furnival said that BSM has maintained a particularly high focus on mitigating mooring risks for a number of years and has established procedures based on available industry best practice, such as P&I Club guidelines.

"In 2015, BSM opened a new mooring station training facility in the Philippines, designed to work in conjunction with a comprehensive, interactive training portfolio comprising video learning and class discussion around case studies from real life scenarios,"



BSM has invested a lot of money in its five training centres.

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he explained. "Further, we upgraded our simulator facilities in Mumbai, Limassol and Manila last year."

In addition, he said that BSM carries out on board training to enhance mooring hazard awareness as part of the company's Behaviour Based Safety programme and it is also a core subject of the reflective learning component of Shell's Maritime Partners in Safety programme that has been adopted across the full managed fleet.

Seafarer recruitment and retention is often seen as another problem in today's market place. Furnival explained that third party shipmanagement has a tendency for a relatively high fleet churn, especially in challenging market conditions, therefore having effective seafarer recruitment techniques is a pre-requisite for successful managers.

However, in BSM the main focus is on maintaining a high level of crew retention and the development of a strong internal talent pipeline. Success with this strategy significantly reduces the risk and challenge of external recruitment.

Internal development of shore staff is also a focus for BSM. Here, the talent pipeline includes a structured Seafarer Coming Ashore programme. "When we do recruit externally we have rarely had any serious difficulty to find competent candidates," he claimed.

The rise of private equity investment in shipping is spawning new players, which has to a certain extent eased the lack of more traditional finance.

Good opportunities

Furnival agreed that the growth of shipowning through private equity acquisition has certainly provided good opportunities for third party shipmanagers.

"Such owners often lack the resources or desire to manage vessels directly and will seek the services of professional managers to help ensure optimised operations and cost control, as well as gaining the economies of scale that a large shipmanager can offer," he explained.

One of BSM's core strengths is its training centres, located at some of the major shipping centres worldwide. "Our present focus is on building the resources and capability of our five existing Marine Training Centres.

"This includes recent upgrades of shiphandling simulators in Cyprus and Manila, the adoption of engine simulators for new technology, such as dual fuel diesel electric and the development of training modules for LNG bunkering," Furnival said.

The use of virtual reality is becoming



BSM COO David Furnival.

popular, especially for equipment repair and maintenance training.

Furnival said that as part of BSM's High Potential staff development programme, the company has embarked on a collaborative project with Microsoft Innovation, which will evaluate the potential for Microsoft's HoloLens technology to be used for machinery and equipment familiarisation, including maintenance aspects.

"We are also considering the value of embedding bespoke guidance videos into our Planned Maintenance System for key machinery," he said.

As for future growth, BSM has one of the largest fleets under third party management and as the managed fleet continues to grow, Furnival said that there is relatively little need to enlarge the most senior layer of management and therefore, while additional operational staff are engaged, the overall net profitability potential is improved.

For tankers, BSM utilises well-resourced Fleet Teams to perform the main functions for full tanker management. Each Fleet Team is

responsible for up to 25 vessels and is composed of a Fleet Manager, five to seven Technical Superintendents, two Marine Superintendents and one Fleet Personnel Superintendent, plus support officers.

Finally, turning to cost control in the light of the above, Furnival said this is achieved by focusing on organisational and system efficiency to promote better productivity. For BSM, this is being achieved through three principle mechanisms:

- The provision of cost effective shared resources to reduce the administration burden of key staff and release capacity, remove duplication of effort and create standardisation as a precursor to automation, where possible.
- The development of PAL application functionality, user interface simplicity and key data visibility to facilitate proactive behaviour and correct decision making.
- Re-writing the entire documented management system to a user-friendly, concise format that more effectively guides staff in the performance of their duties. **TO**

V.Group companies involved in management services

Alistair Evitt of V. Group said that third party shipmanagement has always had to keep ahead of impending legislation – this is an important part of the value proposition V. Group can offer owners.

Of course there is a cost to this but in V.Group the cost of monitoring impending legislative changes and the development and implementation of practical and efficient solutions is spread as a consequence of the group's global scale.

As for the BWMC question, through Seatec Services, V. Group is closely monitoring all developments relating to BWTS – including legislative, technology and manufacturer related aspects. Evitt claimed that V. Group is well placed to advise clients what the optimal solution may be for their individual vessels and has

significant experience supporting clients in this technology area.

In addition, Marlin, V.Group's specialist training business, has also developed a suite of computer based training courses specifically focused on impending legislative and technical developments.

The requirement for and principles of BWM are covered in induction/ environmental training pre-joining in group training centres. Training of the specifics of operating installed systems occurs on board vessels.

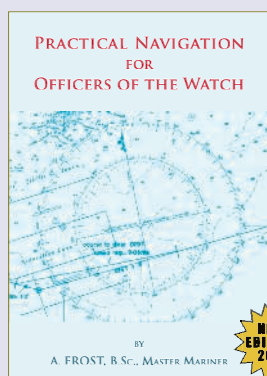
Answering the question of cyber security, Evitt said that V. Group has already taken stringent internal measures to ensure vigilance across all businesses – both ashore and afloat. "We identified the complexity of this challenge early on and are constantly reviewing and updating our defences and responses," Evitt said.

Tanker Operator then asked about the impending OCIMF mooring guidelines. Evitt said that V. Group fully supports any initiative, which improves the safety of people ashore and afloat – mooring, by its very nature, is a hazardous operation and as an industry we must share experiences and continue to develop best practices.

He also said the group had not embraced virtual reality in equipment maintenance training, but revealed that the group has been using virtual reality in terms of bridge, engine room and liquid cargo handling simulation for many years.

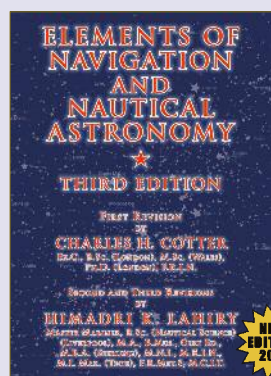
"And as virtual reality training becomes more readily available as manufacturers realise its value and invest accordingly, this will be the future of on board maintenance, as it can share best practice by providing practical guidance and detailed instructions," he concluded. ■

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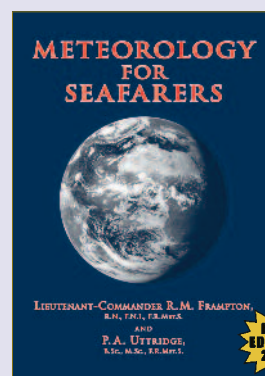
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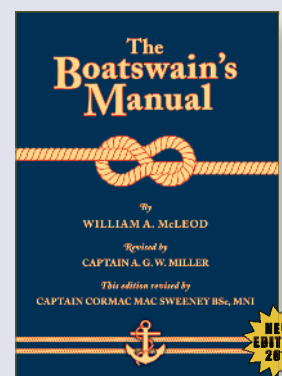
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Pumps for seawater marine exhaust gas cleaning systems

Throughout many areas of industry, international legislation is in place to limit noxious emissions that can be harmful to the environment.

P rime examples include power plants, cement, steel and metal foundries, chemical plants and waste incinerators, plus shipping. Exhaust fumes, soot and particulates from diesel engines have been identified as a significant polluter of both air and seawater. To comply with legislation, industries have had to develop and invest in technologies that remove or treat the emissions.

In the marine sector, some shipowners and operators use scrubber systems to remove SO_x. There are three types - open, closed loop and hybrid. The hybrid system combines open and closed-loop technologies. However, common to all three types is the use of seawater.

In May, 2005 MARPOL Annex VI entered into force, which requires ships' air pollution to be regulated, including the emission of ozone-depleting substances - NO_x, SO_x and shipboard incineration.

The Annex also established requirements for the establishment of SO_x Emission Control Areas (SECAs). Designated emission control areas set more stringent standards for SO_x, NO_x and particulate matter. In 2011, the standards for vessels trading in SECAs became mandatory for all newly-built ships and this piece of legislation has now been signed by 53 countries involving 82% of the world's fleet.

On 1st January, 2015, shipping came under the new MARPOL directives, as one of the SECAs increased in size. This larger SECA zone now includes the North Sea, Scandinavia, and parts of the English Channel. This area is also set to include all of the Republic of Ireland's international waters in 2020, which will result in the whole of Western Europe coming under the MARPOL directive.

As a consequence of these directives, technologies have been developed for removing exhaust gas emissions. These technologies provide a cost effective solution

that enables shipowners to comply with international air and seawater regulation while using low cost fuels.

With its global experience in supplying pump packages to the international marine industry, KSB ITUR claimed to play a significant role in the development of exhaust cleaning systems. Fundamental to all exhaust cleaning systems is the constant supply of seawater and for this key operational systems, manufacturers are using KSB ITUR ILN/ILNC pumps.

KSB pump package

The ILN/ILNC pumps are centrifugal in-line units with a single stage closed impeller with single or double suction depending on the pump size and mechanical seal. Designed for a variety of operations, including seawater, firefighting, ballast and cargo tank cleaning, the ILN/ILNC is a vertical volute casing pump with in-line suction and discharge flanges.

The design enables access to the internal part of the pump without the need to remove any pipework or motor parts, KSB said. The ILN model has a maximum operating capacity of 3,700 cu m per hour (60Hz) and a maximum head of 162 m (60Hz), whilst the smaller INLC provides a maximum capacity of 447 cu m per hour (60Hz) and maximum head of 161 m (60Hz).

Both pump systems have a maximum operating pressure of 16 bar and are available in cast iron, bronze, NiAl bronze, Duplex and Super Duplex stainless steel.

The scrubber systems' DeSOX towers use seawater as the wash water to neutralise the SO₂ contained in the exhaust gas. In open loop operation, SO₂ removal is controlled by seawater injection, while in closed loop operation, a caustic re-agent is added to the wash water. Pumping seawater into the system is the first part of the process and this passes through a filtration device before being injected

into the tower through purpose-designed nozzles.

According to KSB ITUR, the ILN/ILNC pumps are being specified for this application, due to their proven performance in many other marine applications. Key factors in their selection are the pumps' ability to withstand the varying nature of seawater encountered around the world, their compact design, which enables them to be easily incorporated into scrubber systems and ease of maintenance.

Several leading international manufacturers of exhaust gas cleaning solutions have opted for KSB ITUR seawater recirculating pumps. Based in Zarautz Spain, KSB ITUR is a subsidiary of the KSB Group and is a global manufacturer of marine pumps.

T5



KSB ILN vertical volute casing pumps with in-line suction and discharge flanges.



Wash water treatment plant, open-loop system. Source: EGCSA

Fleet intelligence – big data for the masses

If you've been to a shipping event in the last couple of years, there is little chance that you'll be unaware of the importance of Big Data. It seems strange to think that, at some point, there must have been a time when the term wasn't part of the everyday business vocabulary.*

By quickly applying some more Big Data to the problem through the magic of Google Trends, we can see that interest in Big Data took off as a topic around 2012 and grew steadily - although people have taken a break from thinking about it each year at Christmas, it seems.

The trend line slows down around 2014, which might confirm what many of us already suspect – that we're becoming saturated with the discussion of Big Data. However, what results are we seeing from this explosion of interest in the topic in the last few years? For shipping, it can often seem like many of the revolutions that are transforming commerce, or transport in other sectors, are slow to arrive. But five years since Big Data arrived in the public consciousness, what is it doing for us?

For the tanker segment, this is a particularly pressing question. With charter rates low, this sector can certainly benefit from the ability to crunch the ever-increasing datasets that ships generate, that can now be captured and analysed. With increasing levels of connectivity, and integration of ships' systems, there are considerable opportunities to be had in finding savings in all aspects of ship operations, from trim optimisation to cargo management, to operating profile optimisation. Virtually every aspect of the voyage can be optimised.

This does, however, come with a caveat. While on board performance monitoring solutions are powerful, they also come with costs; not only the financial cost of the equipment, but the investment of time needed to set up, calibrate and verify data findings, while training crew on board and onshore in

the use of the equipment. Powerful as it is, this equipment is only installed on around 10% of the global fleet.

This is why NAPA decided to develop a performance monitoring solution that can deliver similar insights as those that require on board equipment to be installed. NAPA Fleet Intelligence is a performance monitoring system that uses AIS data, and as such, is available for any conventionally powered vessel in the world, accessible through a web browser on a subscription basis.

Performance monitoring

It brings the power of performance monitoring to a much wider segment of the industry. It brings it within the reach of cash-strapped owners, and crucially, charterers who may not be incentivised to install monitoring equipment on board vessels that will only be 'theirs' for a short amount of time. Users can compare performance and efficiency against an optimised speed profile, as well as determining whether the cargo capacity is being used efficiently – gateways to some big-ticket carbon and fuel savings.

Fuel wasted

In addition, the software allows users to shine a light on the phenomenon of 'rush to wait' - speeding up to meet overly conservative arrival times at ports, only to be delayed waiting for a berth when they reach the port. NAPA Fleet Intelligence can put a dollar value on the amount of fuel wasted by this practice, compared to an optimum profile.

There are two main strands behind the development of this solution. One of these is the explosive growth in the number of

satellites handling AIS data, as by the end of this year, there will be about 100 AIS satellites, which is over five times more than two years ago. This makes ship-by-ship, voyage-by-voyage data available on a mass scale.

However, extra information is needed to turn this data into a tool that supports optimised operations – which is where NAPA's expertise in ship design and operations comes in.

Using advanced algorithms and hydrodynamic calculations, NAPA has created a system that can accurately model how a ship of a certain type performs and consumes fuel, based on AIS data and other publicly-available data like tide and environmental conditions. This means that performance monitoring data for any conventionally-powered (HFO-fuelled) vessel can be obtained easily and 100% remotely.

Voyage database

When it was introduced in May, 2017, the tool had 6.5 mill voyages in its database and it is currently growing by over 10,000 per day. The zero installation, zero hardware approach of Fleet Intelligence also means historical analysis is possible; today's users can analyse transits since January, 2015.

NAPA realises that for Big Data's potential to be fully exploited, data providers and analysts need to deliver the insights that businesses need to make critical decisions – and they need this to be available now.

**This article was written by Pekka Pakkanen, Director, Development, NAPA Shipping Solutions.*

Ørbeck-Nilssen takes IACS chair

The 75th session of the IACS Council (C75) was recently held in Beijing and once again made substantial progress on a range of issues.

These included initiating a review to ensure that IACS resolutions are fully adapted to handle the future development of ships with increased automation and connectivity and aligning the IACS strategic plan for the next five years to complement the vision and strategic directions of the IMO.

In addition, IACS continued its development of an oversight programme to enable administrations to oversee their Recognised Organisations (RO) in a robust and efficient manner.

Set against the background of the decreasing trend in Port State Control (PSC) detentions, the IACS Council also confirmed that all 11 IACS members had successfully completed their periodic membership review thus ensuring their ongoing membership of the Association.

C75 also marked the conclusion of China Class Society's (CCS) Chairmanship of IACS. Reflecting on his year in office, CCS' Dr Sun, said; "It has been a landmark year for IACS; collectively the IACS members have accomplished a range of initiatives including signing an historic Memorandum of Agreement with the IMO, achieving full Goal Based Standard (GBS) compliance at MSC 98, promoting work on cyber safety and innovative survey techniques and further strengthening relationships with regulators and industry."

On 1st July, the IACS Chair passed on to Knut Ørbeck-Nilssen, CEO Maritime, DNV GL. Addressing the IACS Council at the meeting, Ørbeck-Nilssen highlighted his priorities, which will be to further improve IACS quality systems and the assessment of IACS members against those standards, to modernising class in anticipation of the developments posed by digitalisation and new technologies and to the deepening IACS' ongoing commitment to transparency in line with the expectations of stakeholders and society at large.

Ørbeck-Nilssen said; "I look forward to the challenge of chairing IACS during this time of rapid technological change and digitalisation. The current tectonic shifts in markets, regulations and technology make it

crucial that IACS retains its position as a key player in this evolving landscape with high standards of performance and quality."

Immediately following C75, IACS hosted a workshop on International Maritime Strategy attended by senior representatives from the IMO, flag states, shipbuilders and shipowners, at which the future IMO strategy was discussed along with the role of class and IACS in supporting its successful delivery.

Closing the workshop, Dr Sun stressed the need for ongoing dialogue and co-operation between all partners.

Tanker Operator will publish an in-depth interview with Ørbeck-Nilssen in the October issue.

Structural rules amended

Meanwhile, in June, the IMO's MSC 98 confirmed completion of the corrective actions requested by the organisation to the IACS Common Structural Rules for Bulk Carriers and Oil Tankers (CSR BC&OT).

Previously, MSC 96 had confirmed that CSR BC&OT complied with GBS in 2016, and the ships constructed in compliance with the rules at that time should be deemed as compliant with GBS.

IMO requested IACS and its member societies to carry out corrective actions for non-conformities identified as part of the initial verification process. At MSC 98, it was confirmed that IACS's corrective actions including the rule amendments were completed thus paving the way for the latest ship designs and structures based on CSR BC&OT.

Speaking just after the announcement, Dr Toshiro Arima, director of ClassNK's Rule Development Division, said; "ClassNK welcomes the confirmation for CSR BC&OT made at MSC 98. As a member of IACS, ClassNK has extensively worked to complete the corrective actions in line with the IMO's requests as well as develop CSR BC&OT. On top of this, ClassNK has also supported the industry's compliance to CSR BC&OT with the world's first innovative CSR-BC&OT design support tool, PrimeShip-HULL(HCSR).

"The software was recently updated in

February, 2017 to incorporate the rule amendments which were implemented as the corrective actions. ClassNK will continue providing innovative solutions such as PrimeShip-HULL(HCSR) to ensure the further safety of ships," he said.

PrimeShip-HULL(HCSR) is comprised of prescriptive rule calculation software and direct calculation software, improving the efficiency of the design process through shorter design lead times, structural optimisation and improved design quality. The prescriptive rule calculation software can be used to rapidly examine cross sections to determine optimal structural arrangements and scantlings, and consider structural arrangements in consideration of longitudinal distribution of the rule requirements by using 3D models which can be used to geometric data for Finite Element models.

The direct strength assessment software can be used to automatically create FE models, study various reinforcement plans to structural members where they do not meet rule criteria, and carry out comprehensive analyses of the required three hold models automatically partitioned from whole ship FE models.

PrimeShip-HULL(HCSR) can be used with design software such as NAPA Steel and other CAD software available on the market to prevent input errors and dramatically reduce design man hours. (see separate ClassNK piece on page 25)



New IACS Chairman and head of DNV GL Maritime - Knut Ørbeck-Nilssen.

ClassNK and the tanker sector

ClassNK has been involved in several tanker initiatives recently, including classing one of the world's first methanol-powered vessels, 'Manchac Sun', operated by Mitsui OSK Lines (MOL).

The detailed safety requirements regarding the use of methanol/ethanol as fuel has been incorporated into ClassNK Guideline for Gas Fuelled Ships ver.4.

In addition, the Polar Code, effective from 1st January, 2017, is giving new chances for ClassNK to closely work with industry for the design and safe operation of tankers in polar waters.

The class society's work on the Harmonised CSR and subsequent release of the updated design support software PrimeShip-HULL (HCSR) in February, 2017 is set to see an increase of CSR compliant newbuildings join the register.

The most recent initiative has been the development of guidelines for liquefied hydrogen (LH2) carriers for their safe constructions and operation, based on provisions of the IMO interim recommendations. With guidelines now available, ClassNK said that it will work with

the industry to bring this innovative technology to fruition.

Expansion

ClassNK has been expanding its overseas operations recently, but stressed it does not establish offices with the objective of carrying out marketing or targeting of particular sectors.

The service network is maintained in terms of how support for owners and operators can be undertaken in each region and ever greater survey coverage can be given. In addition to over 130 exclusive survey offices around the world, ClassNK has also established six plan approval centres in



The MOL managed methanol carrier 'Manchac Sun' has been classed by ClassNK.

major shipping / shipbuilding regions, as well as four survey department representatives globally with the same final decision making authority as the head office.

Regional offices located in Singapore and Dubai co-ordinate the efforts of the 15 and four respective offices, two of the most important regions for oil and chemical tanker trade routes, where there is always high demand for tanker surveys.

The Singapore office recently celebrated 50 years serving clients in the region. With the steady economic growth taking place in Southeast Asia, Singapore plays a key role in collaborating with ClassNK offices in Indonesia, Thailand, Myanmar, and others, to bring services to the local maritime industry, the class society said.

As for any future expansion, ClassNK said its goal was not to expand, but meet the needs of its clients and to better serve the industry. Client feedback is listened to and decisions made as necessary.

In this year alone, ClassNK has added two exclusive survey offices to the service network in Izmir and Mersin, Turkey.

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Low carbon alliance launched

Lloyd's Register, together with other leading stakeholders have signed up to a new Global Industry Alliance (GIA) to support moving shipping and its related industries towards a low carbon future.

In total, 13 companies joined GIA at its launch at the end of June, under the auspices of the GloMEEP Project, a Global Environment Facility (GEF)-United Nations Development Program (UNDP)-IMO project, aimed at supporting developing countries in implementing shipping energy efficiency measures.

Activities likely to be undertaken or promoted by the partners include, inter alia: research and development; showcasing of advances in technology development and positive initiatives by the maritime sector; industry fora to encourage a global industry dialogue; and the implementation of capacity

building and information exchange activities.

The launch was held at the margins of the first meeting of the IMO Inter-sessional working group on reduction of GHG emissions from ships. Katharine Palmer, LR's Sustainability and Environmental Manager, signed up to the GIA on behalf of the class society.

At the launch, IMO secretary general, Kitack Lim, said the new alliance would help shipping to make its contribution towards greenhouse gas reduction and the mitigation of climate change, a key UN target under its sustainable development goals (SDGs).

"What we are witnessing today is the formal

start of a tried and tested partnership concept, which has the potential to boost still further our efforts to kick-start the change that society demands and create a firm, tangible basis to transform the shipping sector for the better.

"Under this new public-private partnership initiative, these 'industry champions', which come from different sectors of the industry and may have different business strategies within the same sector, are coming together to contribute to tackling the challenges of de-carbonising the shipping sector," he concluded.

Just days after GIA was formed, the 14th company signed up.

TO

Setting sights on de-carbonisation

In a comment, James Mitchell, Finance Lead – Maritime, Carbon War Room explained that when the Paris Agreement was signed in 2016, shipping and aviation were conspicuous by their absence.

This has since prompted both the IMO and aviation regulator, the International Civil Aviation Organisation (ICAO), to signal to the rest of the world the part they will play in holding global temperature rises to well below 2 deg C.

ICAO's recent commitment to carbon neutral growth from air transport by 2020, based on carbon offsetting, leaves shipping as the only industry without regulation to limit or offset GHG emissions.

The outcome of July's MEPC meeting demonstrated that IMO's work towards this regulation is beginning to move. However, it will not enter into force before 2023, and, in the meantime, business must work to accelerate de-carbonisation.

Profitably de-carbonising the shipping

industry is a formidable challenge. The ambition can sound overwhelming, particularly to sectors facing market issues and profitability challenges. However, rapid progress along the de-carbonisation pathway can be achieved in sectors like the tanker market, where simple changes to chartering decisions, operations, processes, and forward planning can have a significant impact on carbon reduction and reduce costs.

Hardware, software, people and processes that contribute to fuel cost savings are some of the most effective and accessible ways tanker owners, operators or charterers can take a first step towards de-carbonisation today.

There are many free and low-cost data tools that can help improve operational efficiency - including those on ShippingEfficiency.org - and dozens of proven technologies, like advanced hull coatings and propeller boss fin caps, that can contribute to reducing fuel consumption on a ship-by-ship basis.

Reducing GHG emissions is not a new

conversation for the shipping industry. But in the wake of the Paris Agreement, with a global de-carbonisation agenda taking shape, now is the time to refocus our efforts as an industry and work collaboratively to achieve a positive low-carbon future.

Fundamental to that transition is a clear and achievable de-carbonisation pathway that is laid out by the industry, for the industry. It must define what a de-carbonised industry looks like, clear objectives on crucial topics such as future low-carbon fuels, and the tools needed to achieve it. This should include specifics on transparency, regulation, technology and finance.

Through collaboration and innovation, a profitable low-carbon industry within the well-below 2 deg C context set forth by the Paris Climate Agreement is achievable. De-carbonising will be a challenge. To achieve it fully will take changes to operations, new technologies and new fuels.

Every stakeholder in the industry must consider what is achievable today and take that first step, Mitchell concluded. ■

The value of partnerships

John D ‘Jack’ Noonan, Chembulk Tankers CEO, was recognised as this year’s CMA’s Commodore for his lifelong achievement and outstanding contribution to the maritime industry.

In this interview, published courtesy of DNV GL, he talks about how he has navigated his way from the decks of a ship to the corner office, the corporate values at Chembulk and about collaboration with class.

When Jack Noonan was named the 2017 Connecticut Maritime Association (CMA) Commodore, the person most surprised was Noonan himself.

Although a long-standing and active member of the CMA, he recalled that his initial reaction was “I’m not in the same league as the prior CMA Commodores.”

A graduate of the US Merchant Marine Academy at Kings Point, Noonan spent his entire career in the maritime industry. After having sailed for six years as a deck officer with the US-flagged Texaco tanker fleet, he spent more than 35 years in the chemical tanker sector; all of which were spent with Connecticut-based companies.

Today, Noonan is CEO of Chembulk Tankers where he continues to influence the industry and to invest in its future.

“The characteristics that make Noonan an obvious choice for the award are the same qualities that are vital to the continued success of the industry- commitment, collaboration, dedication and vision,” said Paal Johansen, DNV GL’s Regional Manager for the Americas.

These are goals Noonan shares with the leadership of DNV GL. Long associated with the classification society and a member of the North American committee, Noonan has focused his career on some of the same values that guide the DNV GL organisation - leveraging history and experience to influence the future, recognising the value of new regulations that improve the industry, embracing innovation and capitalising on the ability to gather data for better decision making.

The understanding that investing in the future is an investment in the maritime

industry is a vital element of commitment.

Supporting maritime education to foster learning, providing work opportunities for interns and finding creative ways to advance the next generation of leaders are some of the forms that commitment takes.

Noonan has spent his career as an industry advocate, encouraging young people to follow maritime careers and helping to finance them through the companies he has been involved with.

He understands the value of partnerships and the benefit of aligning with like-minded organisations—this is why he views collaboration as another tool for advancing industry.

Partnerships go beyond aligning with educational institutions, they require reaching out to other industry leaders with common values and goals. This commonality is one of the drivers for Chembulk’s partnership with DNV GL.

“DNV GL has been an excellent partner,” Noonan said, pointing to the company’s vision and willingness to work alongside companies with similar aims. That commitment is what will make a difference in the future safety and longevity of the maritime industry.

“Part of being dedicated to the industry is having the discipline to adopt new ideas,” he said.

Noonan’s career has spanned an era that saw the tanker industry evolve from frantic telephone calls to co-ordinate shipments to responding rapidly to changing information on a monitor. The enormous amount of data available has altered the way business is done. While it has presented a challenge, it has undeniably transformed the way the maritime industry works and its potential to effect continued changes is considerable.

“Accepting change is a byproduct of the willingness to invite independent thinking and differing opinions,” Noonan said. “Once a decision is reached, there must be a commitment to seeing things through. I try to



John D ‘Jack’ Noonan.

foster buy-in, and I insist upon ownership.”

Buy-in is one of the challenges that arise when regulations change. Sometimes, getting everyone on board is difficult, but doing that early on in the process is critical. “Throughout my almost 40-year career, I’ve seen a lot of new regulations implemented,” Noonan said, “and the anticipation always created a higher level of anxiety than the implementation.

“Organisations like DNV GL provide support through that transition period by helping companies understand the changes and the probable repercussions. With every new regulation implemented, there’s always the law of unintended consequences,” Noonan added.

Success in the maritime industry is partly a product of grit and determination, but it also requires the ability to look forward and to see change as it is developing. To be truly successful, it is important to form strong alliances with organisations that are looking in the same direction.

Tanker trials prove Selektopes's resistance success

Coating systems that contain I-Tech's patented fouling prevention system Selektope are claimed to offer superior anti-barnacle performance under all conditions (static or in motion).

One of Selektope's prime advantages is its static performance. It also offers shipowners an alternative to the traditional biocides used in coating systems.

Selektope repels barnacles from attaching to the surface of the hull via its unique pharmacological mode of action that works to prevent barnacle larvae by inducing hyperactivity. The system's fouling prevention mechanism works by temporarily stimulating

the cyprid larvae octopamine receptor and activating swimming behaviour.

The effects of this neurological scrambling are temporary, with the larvae returning to normal functional capacity shortly after encountering the Selektope present in the ship's hull coating.

Another advantage is that it can either boost copper containing formulations, or it is powerful enough to replace copper – giving shipowners the option of copper-free coatings

with the same performance as copper coating systems.

For the paint manufacturers, the advantage is that only a minute quantity of Selektope is required to ensure leaching rates and efficacy – just 0.1% w/w.

The background to Selektope's development was that average global water temperatures were increasing. Ships were idling in subtropical/tropical areas and there was a growing regulatory movement against the

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transportation of invasive species by ships. These issues, whilst of great concern for shipyards and ship operators alike, created innovation in the coatings sector, as the pressure mounted on antifouling coatings to perform through changing environmental and market conditions.

The issue of biofouling was becoming an increasing problem for some Asian shipyards, as newly launched vessels lay idle in warming waters, suffering the effects of intense fouling during the three to four month fitting out process, I-Tech said.

This accumulation of biofouling on the hull can impact both the newly applied coating and the ship performance of a new ship leaving the yard. This resulted in shipyards pushing for antifouling solutions that ensure static performance during outfitting. In parallel shipowners were demanding solutions that were suitable and ensuring good fouling prevention for vessels with differing activity levels, whether they were in active service, idle for long periods of time, or fluctuating between the two.

This future-proofing approach to antifouling coatings selection exerted major pressure on the coatings suppliers and in turn spawned

new approaches to the development and trialling of fouling prevention technology.

Decade of R&D

For example, in Sweden, biotech innovator I-Tech dedicated over a decade of research and development work to these issues from the company's Gothenburg headquarters. The company's quest to find, develop and commercialise a fouling prevention technology alternative commenced in the wake the IMO's decision to ban the application of tributyltin (TBT)-based paints on vessels, as of 1st January, 2003.

The 'green light' for global market deployment came in 2015 when I-Tech received EC recognition for Selektope, enabling it to be included in anti-fouling products sold throughout the EU as of 1st January,

2016, in accordance with the terms of the EU Biocidal Products Regulation.

This accreditation was in addition to those already secured for use as an active agent in Japan, China and South Korea.

Last year was a turning point for the technology, as the first commercial, Selektope-containing coating products for use on ocean going vessels were launched on the market, in addition to ship trials being conducted over a period of 12 months, which were claimed to have yielded incredible results.



A CMP coating with Selektope being applied.

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The trials consisted of a copper-free Chugoku Marine Paints (CMP) hull coating containing Selektape being applied to the sides of Laurin Maritime's 2010-built, 46,067 dwt IMO II chemical and products tanker 'Calypso' during her first five-year survey at Sembcorp, Singapore.

Laurin Maritime's technical director Bertil Andersson said; "It was important that the company selected a coating that can cope with conditions in the 'red zones' in which their ships operate, where water temperature can be high and fouling can be problematic if a ship is at anchorage for three to four weeks."

The 'Calypso' operates in several areas, including East and south Asia, the Americas and Australia, making it the perfect ship for the trials.

"The application of a Selektape-containing

coating comes after several years of strong performance trial results," said Mikael Laurin, Laurin Maritime CEO.

The hydrodynamic analysis of performance data during the trials was carried out by independent party - Propulsion Dynamics. Operating rates were measured by fuel oil consumption and power output. After 12 months, the vessel was measured to have increased its resistance to fouling by a total of 3%, compared with a benchmark new vessel that would see an increase in resistance of 5-10 %.

This benchmark is made up of a many different vessels with different coatings related to the size of Propulsion Dynamics' database. This benchmark allows for the comparison of one ship to a variety of similar vessels, thus addressing the problem that it is not possible

to compare equal ships with each other when analysing and contrasting coatings performance.

The trials on the 'Calypso' also showed that the increase in resistance came mainly from the propeller at 3%, with the remaining resistance being measured on the hull.

However, I-Tech chairman, Stefan Sedersten, applied a note of caution when celebrating the successful trial results, saying that: "Although there are very convincing long-term performance results from patches, more time is required to confirm the promising results from 'Calypso' [and] there would need to be further trials of Selektape for longer periods so that the long-term effects of the biocide can be measured."

At present, only CMP has I-Tech products on the market. However, it is not exclusive to the company, as other paint manufacturers are developing products and some are very close to being launched on the market.

Thus far, three CMP products contain Skeletape - SEA GRANDPRIX 880HS PLUS which was the third product launched containing this system, joining CMP's SEAFLO NEO CF Premium and SEAFLO NEO-S PREMIUM products, both launched in August, 2016.

Apart from the trials on the Laurin MR, the majority of the 150 or so orders thus far recorded have been for product carriers, LPG carriers and VLCCs - although applications have also been made to other ship types.

"As demand for Selektape soars, the number of antifouling products that contain our unique bio-repellent ingredients is expanding. This ensures that shipowners and operators have a selection of products to choose from, and confirms the flexibility and compatibility of our product with a range of different antifouling ingredients," said Philip Chaabane, I-Tech AB CEO.

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Hull performance monitoring for operational efficiency

The downward cycle continues to plague the tanker market with freight rates touching a five-year low recently.*

The global fleet keeps growing with an estimated 20 VLCCs, 20 suezmaxes and 24 aframaxs delivered thus far and another 40 suezmaxes and 50 aframaxs still to be delivered before the end of this year. This additional tonnage coupled with OPEC's recent decision to cut production is continuing to put pressure on freight rates.

As a result, owners and operators are strengthening their search for sustainable solutions to achieve more efficient operations. One area that is coming into sharper focus is a vessel's hull performance. It is well known that improved hull smoothness reduces fuel consumption and associated emissions. Fouling organisms such as barnacles and biological slime will attach to the hull to create extra drag, which requires additional fuel to move the ship through the water.

Fuel is one of the most significant costs. Even a small decrease in the bunker bill as a result of a drop in fuel consumption through a reduction in fouling and hull roughness can significantly impact an owner's bottom line and their environmental performance.

Here is where investing in a top performing hull coating is vital, but with many factors impacting fuel consumption it can be hard for tanker operators to determine the exact performance, and subsequently the return of investment (RoI), of their choice of hull coating.

In November 2016, the International Organisation for Standardisation (ISO) published the ISO 19030 standard, providing shipowners with a foundation for hull performance monitoring. Hempel played a significant role in the development of these new standards from their inception and over the three years they took to finalise.

Offering a two-layered, three-part approach to performance monitoring, the most

advanced, and with the greatest measurement accuracy, is the ISO 19030:2a-2016. This defines the method for measuring changes in hull and propeller performance, calculating a set of basic performance indicators and providing guidance on the expected accuracy of each performance indicator.

At Hempel, we offer our customers ISO 19030 compliant clear, comprehensible and verifiable analytics to track and assess hull and propeller performance through our in-house hull performance team that comprises experts in hydrodynamics, physics, chemistry and others with data science backgrounds.

Performance monitoring is also offered in partnership with third party suppliers, including DNV GL with whom we have a particularly close relationship. This allows us to accurately determine the relationship between hull and propeller performance and the actual fuel consumed. We do this not only from a relative performance level over a specific time period, but also by benchmarking current performance against the newbuild condition. Our customers can also benefit from computational fluid dynamic (CFD) studies to show a vessel's hull degradation over time.

Insight into RoI

In 2013, we launched our most advanced hull coating to date, Hempaguard X7. We work with a range of vessel owners and operators and Euronav was keen to test our new technology. Initially a 300 sq m test patch was applied to the VLCC 'Famenne' and following a dive inspection at 23 months and then again at 45 months, it was confirmed that Hempaguard was still giving a slime and fouling-free performance.

The uniqueness of Hempaguard is that it combines two proven technologies in one coat, delivering 6% fuel savings compared with

other antifoulings over the entire docking interval, even if the vessel is idle for extended periods (up to 120 days) or changes trading patterns. This offers tanker owners and operators unrivalled flexibility over their fleet utilisation.

Following 'Famenne's' excellent performance, Euronav took the easy decision to switch a number of its vessels to Hempaguard X7. These vessels also saw a significant increase in fuel efficiency and we were keen for Euronav to utilise our performance monitoring service to determine the exact performance and RoI of our innovative hull coating.

Three VLCCs - 'Hakone', 'Hirado' and 'Sara' - were the first vessels that our hull performance team began monitoring for Euronav - six months before Hempaguard X7 was applied. Six months after application it was clear that there was an increase in propulsion efficiency, of which a large proportion was directly attributable to Hempaguard X7.

As a result, Euronav decided to apply Hempaguard X7 to a further three more of its vessels - VLCC 'Sandra' and Suezmaxes 'Maria' and 'Captain Michael'.

Services such as our monitoring system provide tanker operators with a full analysis of how well the hull, and consequently the coating system, is performing. When considering hull coatings, it really is a matter of "you get what you pay for" and by investing in an optimal solution tanker operators have the potential to realise the benefits of enhanced operational efficiency backed up with accurate data to prove a significant return on their investment.

**This article was written by Andreas Glud, Group Segment Manager, Marine, Dry Dock, Hempel A/S.*

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AkzoNobel confronts the digital age

Tanker Operator spoke with AkzoNobel's Michael Hindmarsh about the company's marine coatings business, which is centred on International Paints.

Starting with downturn in vessel orders, Hindmarsh said that AkzoNobel aimed to provide coatings and maintenance solutions that maximise performance throughout the lifecycle of a vessel, from newbuilding onwards. "Regardless of the market, we continue to focus on drydock and maintenance coatings, as much as the newbuilds, regardless of the strength of the newbuild market," he said.

The use of drones for on board surveys is increasing. "AkzoNobel recognises the growing importance of drone technology in ensuring safe, efficient maintenance and inspections," he said. "This is why, together with DroneOps Ltd, Barrier Group, Safinah and a major oil tanker operator, we have formed a consortium to develop an unmanned aircraft to carry out remote inspections."

He explained that the project, called RECOMMS (Remote Evaluation of Coatings and Corrosion on Offshore Marine Structures and Ships), uses virtual reality technology and semi-autonomous operation of a drone to remotely inspect ballast tanks, and other difficult to access areas on vessels and offshore structures.

Turning to the use of digitalisation and big data, Hindmarsh claimed that the company is committed to its 'Digital Voyage', which was recently highlighted at Nor-Shipping.

"Digital Voyage" is a programme, which uses digital technology to put our expertise in the hands of the industry to help shipowners and operators make smarter, more sustainable decisions. To make this work, however, we need to take on the challenge of 'on boarding' the industry into the digital world.

"The digital transformation requires both a technological and a cultural shift. This can be daunting for an industry that still suffers from challenging market conditions – for many, this can seem like a leap into the unknown, rather than a leap into the future.

"To really make an impact, big data needs

to support owners and operators in making the decisions that will most affect their businesses, without requiring extra expense on their part. This is exactly what we're seeing with our Intertrac Vision consultations, where we are using our industry-first big data tool to help owners predict the effect of coatings choices on their vessel performance – and ultimately the bottom line of their finances. We're seeing an increase in the demand for these consultations, and the number of decisions that are being made based on them.

"This philosophy underpins our 'Digital Voyage'. At Nor-Shipping this year, we rolled out Intertrac OBM, another tool dedicated to finding savings in the Seastores market, by nudging users towards savings by buying in bulk, finding cheaper alternative products, and purchasing in ports with better service.

"By focusing on what is going to save time and money for owners now – not waiting until 2020, or 2030 – we are confident that digitalisation will continue to make a difference," he said.

ISO 19030

In 2016, ISO 19030 'Ships and Marine Technology - Measurement of changes in hull and propeller performance' was finalised following three years of development by a wide range of industry stakeholders, including coating and propeller manufacturers, academics, shipowners and data analysts.

This enables shipowners and operators to compare hull and propeller solutions, and select the most efficient option or their vessels and fleets.

Hindmarsh said that it was still too early to definitively discuss its impact. "However, we firmly believe that the standard has the potential to play a decisive role in strengthening relationships between shipowners and providers of energy saving solutions, such as hull coating and propeller

manufacturers, which will in turn enable the industry to work towards the adoption of the most sustainable and efficient technologies," he said.

He explained that this was the reason why AkzoNobel launched an engagement programme to simplify the complexities of ISO 19030, explain the principles and values of the standard, and clarify the appetite for its take-up within the market.

AkzoNobel has integrated ISO 19030 requirements into Intertrac Vision. This means hull coating performance predictions from the solution can be verified and validated against actual performance using a monitoring process that is ISO 19030 compliant, he explained.

Carbon credits

As for the carbon credit scheme launched by AkzoNobel a few years ago, Hindmarsh said that the push for de-carbonisation must also compete with the economic realities of the shipping industry – and this means convincing a cash-strapped market that GHG reduction not only makes environmental, but economic sense.

Carbon credits is a scheme that rewards owners who choose to use a biocide-free foul release coating, such as Intersleek1100SR, by awarding credits for each tonne of carbon saved, which can then be traded or used to offset emissions in other parts of their business.

This effectively rewards owners twice for choosing eco-efficient coatings - through the reduced fuel costs and when the credits are awarded.

This scheme has the potential to grow alongside the increasing recognition of the need to reduce emissions within the shipping industry.

Currently 69 vessels are involved in the programme, providing those shipowners with a share of an estimated \$3 mill of value in carbon credits, Hindmarsh concluded.

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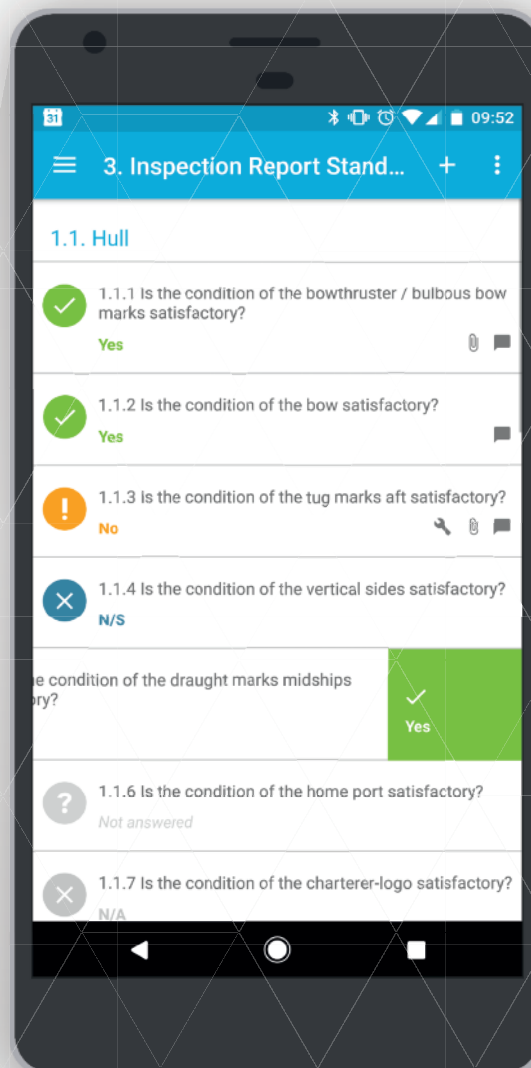
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