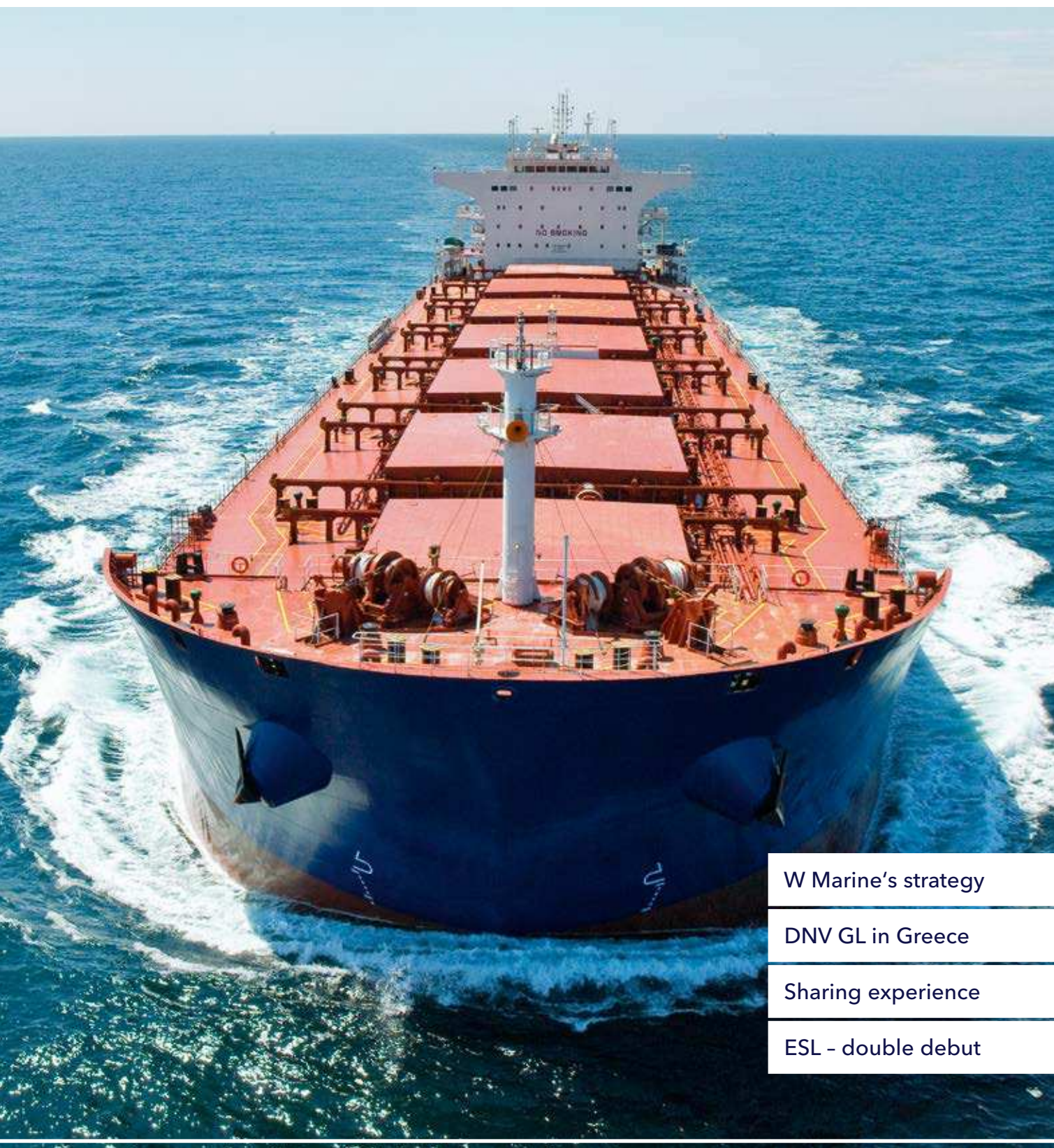


BULK CARRIER UPDATE

No. 01 2016



W Marine's strategy

DNV GL in Greece

Sharing experience

ESL - double debut

CONTENT

Too many carriers and too little bulk	04	Expert guidance for vessel lay-up	15
DNV GL in Greece: boosting support for a heavyweight	06	DNV GL rules: a new, future-ready standard for shipping	16
W Marine: flexibility to adapt.....	10	LNG bulk carrier: double debut	18
Operational Experience: putting big data to good use	12	What you can expect from a leading class	20
		Keeping pace with environmental regulations	24

Cover photo: W-Eagle is one of four 93,000 dwt post-Panamax bulk carriers recently moved to DNV GL class (photo by W Marine).





Morten Løvstad
 DNV GL Business Director Bulk Carriers
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DEAR READER,

Welcome to this 2016 edition of BULK CARRIER UPDATE! Despite a challenging market, there is a lot of activity and we at DNV GL have taken important measures to remain the leading class and further enhance our services.

2015 was a difficult year for the dry bulk market, and 2016 has started even more challenging, with both spot and TC rates well below break-even rates for all size groups. In these challenging times DNV GL is determined to be a reliable and predictable partner who can help you stay competitive. Listening carefully to feedback from our customers, we identified a need for faster delivery of expert answers to customer enquiries. We therefore implemented our new 24/7, worldwide DATE service enabling customers to contact technical specialists directly with a guaranteed answer within one working day. In addition, we appointed Ship Type Experts at all major bulk carrier hubs. Our ambition is to deliver the world's best technical support to our customers.

The Greek shipping industry is the world's number one, controlling 20 per cent of the world's bulker fleet (in dwt). In pursuit of DNV GL's long-term strategic ambition to grow our position in the bulk carrier market, DNV GL is therefore now significantly enhancing our support for Greek customers by assigning more expertise and resources, and expanded authority to our Piraeus office.

Challenging market conditions comprise the risk of cost-cutting measures going at the expense of maintenance. DNV GL has therefore used its big data to pull out operational experience data from around 1,000 bulk carriers with DNV GL class, based on its class survey and Port State Control findings. Based on this, we have put together a set of recommendations for bulk carrier owners to avoid costly deficiencies, losses and detentions.

We are encouraged by the results of our increased focus on the bulk carrier market. Read how and why W Marine decided to enhance the partnership with DNV GL recently, and why the Finnish owner ESL teamed up with DNV GL when ordering the world's first LNG-fuelled bulk carriers.

I hope you will enjoy reading this magazine, and I look forward to seeing you at one of our many DNV GL bulk carrier seminars around the world!

BULK CARRIER UPDATE

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TOO MANY CARRIERS AND TOO LITTLE BULK



Still, too many bulkers are on the market for rates to recover. Owners are responding by laying up or scrapping ships.

Photo: Luytzen Zeevaart / Corbis

The situation in the bulk carrier market continues to be characterized by an oversupply of ships and weak demand. Orders for new ships are being delayed or cancelled, while existing ships are laid up or scrapped. Ship prices as well as earnings are at an all-time low.

During the last few months dry bulk earnings have hit record lows and asset prices continue to fall. In an attempt to reverse these trends, owners are increasingly scrapping or laying up ships. At the same time contracting has almost stopped. With little sign of a pick-up on the demand side, the market seems to have reached rock bottom.

In February 2016, average bulker earnings reached a record low of around 3,700 US dollars (USD) per day and the Baltic dry index fell to 290 points. A five-year-old Capesize could be purchased for 23 million US dollars, the lowest level in almost 30 years. The newbuilding price for a Capesize is estimated to be around 45 million US dollars – nearly ten million dollars cheaper than at the beginning of 2015. Contracting activities have been extremely quiet during the first quarter with the exception of thirty 400,000 dwt Valemax deals signed between China's state-owned carriers and shipyards, all of which will be contracted on a long-term time charter to VALE.

A factor which helps reduce overcapacity is the growing number of delays and, in some cases, cancellations of newbuilding orders. Last year's "non-delivery" rate was 42 per cent measured in tonnage, and so far this year more than half the tonnage scheduled for delivery did not materialize according to the initial delivery plan. If we look at cancellations five years ago, approximately 21 million dwt of the tonnage that was scheduled to be delivered in 2011 was cancelled, followed by the same amount in 2012, and this number is anticipated to be surpassed in 2016 if delays and cancellations persist.

Lay-ups could see new record levels

In addition to a shrinking order book, scrapping has provided the fastest means of reducing the oversupply of ships with the amount of tonnage scrapped in 2015 reaching more than 30 million dwt. This included more than 80 Capesizes with an average age of just over 20 years. So far this year, more than 200 bulkers have been scrapped, removing 17 million dwt from the market. If this continues throughout 2016, the 2012 record of 33.4 million dwt will be beaten.

The number of lay-ups has increased substantially over the last few months. By mid-April, the total inactive fleet stood at almost 400 vessels compared to around 250 ships at the beginning of the year. The growing number of warm and cold lay-ups in Greece and Indonesia is seen as a way of bringing more balance to the market, especially for segments that continue to operate below cost, such as Capesizes and

Panamaxes. In these times of volatile global markets, taking a ship out of service for one or several months may be the most profitable option until demand rises again.

To help shipowners and ship operators understand their lay-up options, DNV GL has developed an updated Class Guideline for vessel lay-up. The guideline informs about recommended practices gained from experience during the major lay-ups in the shipping industry of the 1970s, 1980s and 2009, providing a systematic and cost-effective approach to preparing a vessel for lay-up and maintaining it in a safe and optimal condition while inactive.

A slight gleam of hope

Last but not least, there is little evidence of an increase in demand for bulkers. Overall, global seaborne dry bulk trade is currently projected to remain static for all of 2016. Chinese steel production is expected to decline for the third consecutive year leaving little hope of an increase in the seaborne iron ore trade. The total seaborne coal trade is expected to decrease for the second year running, driven by dropping Chinese and Indian thermal coal import demand.

Muted newbuilding activities, an interesting second-hand market with brand-new ships being sold at discounted prices coupled with an increasing number of delays and cancellations as well as increasing scrapping activities are raising hopes for a better market. Some temporary freight rate improvements due to seasonal variations should be expected, such as during grain season. Smaller vessels from Ultramax downwards may fare somewhat better than the bigger ones thanks to their higher flexibility with respect to both cargoes and ports. On the other hand, the traditional Capes and the more specialized Newcastlemaxes may face some challenging times with iron ore volumes flattening out and coal volumes going down. Unfortunately it seems like the market will be stuck with the imbalance between a global surplus of bulkers and a weak demand side for some time. Most forecasts do not anticipate any significant improvements before the end of 2017. ■ PP



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BOOSTING SUPPORT FOR A HEAVYWEIGHT

With the Greek shipping industry more vibrant than ever, DNV GL is reinforcing its commitment to the Greek bulk carrier market. Enhancing support for local customers, DNV GL is assigning more expertise and resources, and expanded authority to its Piraeus office.

Greece is a shipping nation par excellence. Today the Greek shipping industry is the world's number one in terms of gross tonnes (GT), controlling roughly 16 per cent of the global fleet in dead-weight tonnage. Since the late 1990s, the number of ships owned by Greek companies has doubled, and their tonnage has quadrupled, reflecting the continuous increase of ship sizes. About half of the Greek-owned fleet is bulk carriers. Substantial capital has been invested in modernizing the Greek fleet over the past 15 years, lowering the average vessel age from over 20 years in the year 2000 to just under ten years today.

DNV GL expansion in Greece

As all these facts show the Greek shipping sector is a mainstay of the global maritime industry, and especially that of bulk carriers. Greece in general, and its famous port of Piraeus in particular, form a unique maritime hotspot with an unmatched concentration of shipping company headquarters and offices. DNV GL has been a partner to Greek shipping companies for nearly a century and

is proud of its long-standing and productive relationship with the nation's shipowners and operators.

Greek DNV GL customers have shown their confidence and trust by teaming up with DNV GL for a prominent share of their bulk carrier fleet, experiencing more extensive worldwide coverage of surveyors than offered by any other classification society. In pursuit of its long-term strategic growth targets in the bulk carrier market, and in response to the steady growth of the Greek maritime sector in general and the bulk carrier segment in particular, DNV GL has decided to boost its range of services available locally and accelerate service

TOP TEN SHIPPING NATIONS BY GT

Total million GT, ships greater than 1,000 GT in service

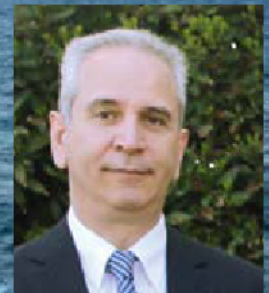
With nearly 200 m GT in service, Greece is the world's top shipping nation in the 1,000+ GT segment.



Source: Clarkson

“Our team in Piraeus now offers even more innovative solutions and support to the local maritime community.”

Loizos Isaias, Manager Maritime Service Centre & Advisory





“We and many of our customers are at home in Greece - which is why we are making Greece our third home market.”

Ioannis Chiotopoulos, Regional Manager for South East Europe & Middle East

DNV GL's 100-year history of successful cooperation with a growing local industry manifests itself in a strengthened local presence.

delivery. Owners and operators based in Greece will soon be able to conduct more of their business directly with the DNV GL team in Piraeus, and enjoy a broader network of Greek-speaking surveyors worldwide.

A stronger team in Piraeus

More difficult and challenging decisions may now be made locally by the newly appointed Chief Surveyor. Andreas Pagalos was appointed as one of three global DNV GL Chief Surveyors effective 1 January 2016. The Chief Surveyor concept has been established in order to make quick, predictable and consistent decisions on the spot and resolve challenging issues for DNV GL customers promptly. Pagalos can be consulted for a second opinion any time and can help solve potential quality issues which go beyond rules and instructions.

To further strengthen the local expertise and authority, the Greek DNV GL Maritime Service Centre (MSC) now covers approval of major technical questions within both the new-building and the fleet-in-service disciplines. This is also



“We are excited to boost our range of services available in Greece and to accelerate our service delivery in the Greek market.”

Georgios Teriakidis, Regional Business Development Manager





“Our commitment is to stand closer to our valuable customers and provide quality services in a flexible and efficient way.”

Dimitris Dedepsidis, Customer Service Manager/Ship Type Expert Bulk Carrier

> supported by the appointment of Dimitris Dedepsidis as the local Ship Type Expert (STE) for bulk carriers. In this role Dedepsidis can spend more time monitoring and keeping up to date on technical and operational developments for bulk carriers. He will work closely with Morten Løvstad, DNV GL Business Director Bulk Carriers, and provide strong support on matters related to bulk carriers, and act as a point of contact for customer questions requiring in-depth bulker-related technical knowledge.

Furthermore, the existing DNV GL Piraeus research and development team will be expanded and has already assumed also the coordination of DNV GL’s advisory services focusing primarily on the needs of the local maritime community. Headed by Nikolaos Kakalis, it is working with Greek shipping companies on joint development projects and offers value-adding consulting services. For example, the Piraeus-based Minerva Marine Inc, which operates a fleet of 56 crude oil and chemical product carriers and five Capesize bulk carriers, has contracted the DNV GL COSSMOS service to monitor and improve the energy efficiency of its cargo operations over its entire fleet. Such services are delivered by Kakalis and his local R&D team, putting innovative solutions into practice.

As an additional measure specifically supporting Greek ship-owners and ship operators, DNV GL is building a global network

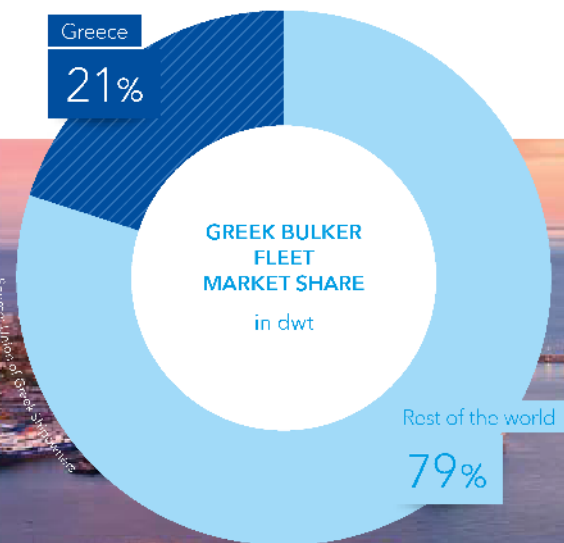
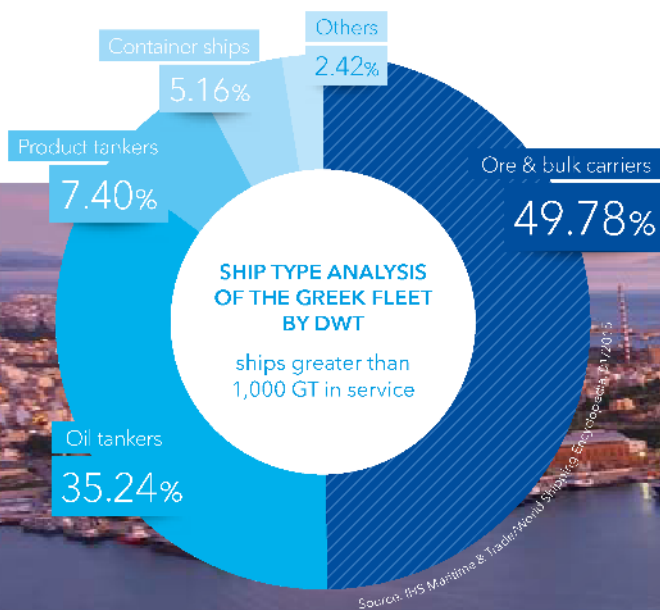
of Greek-speaking surveyors operating in various countries around the world. When this network is fully in place, customers may specifically request to have an experienced Greek-speaking surveyor attending to a vessel at major ports. Customers may also specially request a Greek newbuilding project manager. This has been a key concern for the DNV GL Regional Manager for South East Europe & Middle East, Ioannis Chiotopoulos, who is highly committed to delivering on DNV GL’s growth ambitions in the Greek market.

DATE located in Greece

The DNV GL Direct Access to Technical Experts service (DATE), which has been established as a global service recently, likewise offers Greek-speaking experts. It provides customers with direct access to a pool of experts located in Hamburg, Oslo, Singapore, Piraeus and Houston. It is available to the fleet in service 24 hours a day, Monday through to Friday and, for urgent enquiries, even at weekends and on public holidays. All requests are normally answered within one working day and all offices work together as a single point of contact and unified source of expertise.

Global DNV GL Bulk Carrier Director in Piraeus

To further support the high number of bulk carrier owners and operators in Greece, Morten Løvstad will be spending a major





Thinking global, act local – a strong DNV GL expert team for Greek customers. Front row (f.l.t.r.): Andreas Pagalos (Area Manager for East Mediterranean & Chief Surveyor), Georgios Teriakidis (Regional Business Development Manager), Ioannis Koumartzis (Advisor Maritime), Dimitris Decepsidis (Customer Service Manager/Ship Type Expert Bulk Carrier), Alexandros Chiotopoulos (Customer Service Manager). Back row (f.l.t.r.): Loizos Isaïas (Manager Maritime Service Centre & Advisory), Nikolaos Papanikos (Customer Service Manager/Principal Surveyor), Andreas Benetis (Principal Surveyor), Ioannis Chiotopoulos (Regional Manager, South East Europe & Middle East), Dimitrios Sariklis (Customer Service Manager).

portion of his time at the Piraeus office, working closely with the Regional Business Development Manager, George Teriakidis, to strengthen the local team of key account managers (KAMs).

Løvstad will also support the local Ship Type Expert serving Greek bulk carrier owners and operators on specific matters, including establishing strategic cooperations and joint development projects, and offer his assistance to MARTECMA.

A strong commitment

DNV GL is proud to support its Greek customers through the ups and downs of the business cycle by providing an increased range

of services locally while accelerating service delivery. DNV GL invites its local customers and particularly its bulk carrier customers to experience that DNV GL is at home wherever its customers are. ■ ML



DNV GL Expert

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KEY SERVICES

- Full range of classification services
- Pro contract services
- Maritime solutions including: consulting, engineering, software and training
- All DNV GL services available, technical teams located in Piraeus
- Global network of Greek speaking surveyors (HIS, PMs, KAMs) in the US, Belgium, the Netherlands, UAE, Singapore, China and Korea
- Strong team of CAP specialists and surveyors
- Plan approval for ships in service (fleet in service)
- Expertise in all ship types and sizes, with a particular focus on bulkcar, tanker and container vessels
- Research and development unit
- Strong customer service team
- Maritime Academy Hellas with a wide array of courses

Photos: DNV GL, Getty Images, iStockphoto

FLEXIBILITY TO ADAPT

Greek ship management company W Marine shares its strategy for handling the downturn in the dry bulk sector and where it sees light at the end of the tunnel.

The dry bulk market has just experienced its worst quarter in decades, bringing freight rates and asset prices to all-time lows. With a fleet that only consists of bulk carriers, W Marine has been hit hard by the historically weak market. Managing Director Nikolas Triantafyllakis spoke with BULK CARRIER UPDATE about how he still plans to advance his business, the role of class and how Greek shipping could improve its position on the global market.


W Marine manages six dry bulk carriers and is currently adding one more vessel to the fleet. "We are small, don't take unnecessary risks in terms of investment, and we do not have the ambition to grow at a fast rate. That may seem conservative, and it is, but in today's market, this gives us an advantage over bigger players," says Triantafyllakis. "Being smaller speeds up decision-making processes and gives us the flexibility to trade whatever is more profitable and efficient."

Overall, he feels that Greek shipowners could be doing more to strengthen the local market. "We need to establish forums to exchange new ideas and share best practices for tackling operational challenges. One of the weaknesses of the Greek shipping community is that we don't have access to cargoes. Especially in difficult times, it would serve us well to have some cargoes that we could control to alleviate the pressure we face from the chartering business," he explains.

According to the Managing Director, developing seafarer competence to improve the safety record and efficiency in operations was the basis for winning more charters. "A good record is our most important marketing asset, and if you don't have competent crews, you will run into difficulties." Operational demands are increasing every day, creating a number of critical safety challenges for the crew. "For example, there is a lot of pressure from ports to get vessels in and out very quickly," he says. Vessels are being forced to run at their maximum capacity, sometimes exceeding permissible stability and strength limitations, especially during loading and unloading. "Operating safely in such an environment is precisely why we need the support of excellent personnel and a competent class society," Triantafyllakis adds.

Class makes a big difference

W Marine has recently intensified its cooperation with DNV GL by moving four 93,000 dwt post-Panamax vessels to DNV GL class. Previously only one W Marine vessel had been classed by DNV GL. Triantafyllakis considers the relationship with class as an alliance. "In a world where regulatory changes are implemented at an alarming rate and have a substantial impact on vessel operation, cooperation with class is a must; class has the necessary expertise and resources to assist us with compliance. DNV GL has been a valuable partner to us, and this was the reason for us to expand our cooperation," he explains. "The new set-up in Greece means we have 24-hour access to DNV GL experts - so we feel confident that when something happens, there is always a back-up there."



A good safety record, skilled seafarers and efficient operations help W Marine win charters.



Avoiding unnecessary risks is Managing Director Nikolas Triantafyllakis' mantra as he manoeuvres his company through difficult times.

One of the projects Triantafyllakis is most proud of is the Green Dolphin 84S design. Developed jointly by W Marine, DNV GL and the Shanghai Merchant Ship Design & Research Institute (SDARI), it aims to correct the inefficiency that W Marine experienced from the commercial operation of bigger vessels such as post-Panamax and Kamsarmax carriers. "The biggest problem these vessels have is the draught. Many of the ports in Africa, South East Asia and South America, where we see the greatest potential for trading dry bulk cargo in the future, are located in waters shallower than 14 metres. A Kamsarmax carrier has a draught of 14.5 metres so the vessel can't serve these ports fully loaded, which renders it inefficient," he explains. By reducing the draught to 13.5 metres and increasing the beam to 36 metres, the Green Dolphin 84S design maximizes a vessel's cargo lifting capacity in shallow waters. "We believe the design fits current and upcoming cargo trades and we plan to order a vessel built to this design in the near future," Triantafyllakis explains.

For his existing fleet he will focus on finding ways to better utilize excess heat generated by on-board equipment to reduce

overall heat and energy losses. "I believe there are significant savings to be made. In the next generation of vessels such as the Green Dolphin 84S, we may be looking at energy savings of 20 to 30 per cent," he explains. Implementing data management regimes will be a key factor in proving these energy savings to customers. "It is important for companies to streamline the large amounts of vessel performance data available today so they can be used to identify inefficiencies and benchmark their fleet," says Georgios Teriakidis, DNV GL Regional Business Development Manager in Greece. For Triantafyllakis, this is another piece in the puzzle to win over charterers and stay competitive. ■ **AJO**



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Photos: DNV GL, W Marine

PUTTING BIG DATA TO GOOD USE

Cost-cutting measures can go at the expense of maintenance. Based on survey and Port State Control findings, DNV GL has put together a set of recommendations for bulk carrier owners to avoid deficiencies, losses and detentions.

In challenging times like those the bulk carrier market has been experiencing since the end of 2008, no one has been spared from cost-cutting initiatives. However, cutting costs may result in lower maintenance standards in the bulk carrier fleet, which in turn can lead to more frequent class and Port State Control (PSC) deficiencies, and ultimately, detentions and repairs involving downtime which can be detrimental to business. DNV GL has used its big data capabilities to pull out operational experience data from the bulk carriers with DNV GL class, and is now sharing the main findings with its customers.

As a leading class, DNV GL attends to nearly 13,000 ships, including 1,000 bulk carriers, a fleet far bigger than that of any shipowner. Surveyors' observations have been combined with results from port state inspectors to build a unique collection of operational data and insights for the DNV GL-classed fleet. Realizing that the class observations on bulk carriers may be quite relevant for the day-to-day operation of these vessels, DNV GL put together a group of experienced technical experts from Classification Support at the Høvik and Hamburg offices to evaluate the data. Throughout 2015 the group worked on a project called "Sharing Operational Experience", gathering the latest DNV GL big data, holding technical workshops and using data analytics tools to identify what may be most valuable operational experiences to

share with bulk carrier customers. The main findings are published in DNV GL's report "Sharing Operational Experience", which can be downloaded at dnvgl.com/publications, and several DNV GL seminars have been held to share these insights with customers to help them ensure safe and compliant operations at minimum cost.

Trends from Port State Control and class findings

More than 33,000 PSC and class findings from the last five years were analysed for the DNV GL bulk carrier fleet, equivalent to an average of 4.2 findings per ship per year. This is a relatively modest number; however, it does not reflect all class observations as many minor issues observed on board are rectified without being recorded. About 4,300 conditions of class (CC), conditions of authorities (CA) and non-conformities (NC) were analysed.

The main conclusions from the analysis can be summarized as follows: there is a slightly negative trend in the overall maintenance level. Over the past two years the number of conditions of class (CC) has increased; the number of postponed CCs has increased significantly. Among the instances of hull damage recorded, there were 1,508 contact damages and deformations, 2,677 corrosion areas and 1,168 cracks, with more than 30 per



LOSS OF ANCHORS AND CHAINS
 Costly damage can be avoided by adhering to maintenance and anchoring procedures.

cent found in the combined cargo and ballast holds. Non-conformities reached a peak in 2013 but declined thanks to a sharpened focus on risk management.

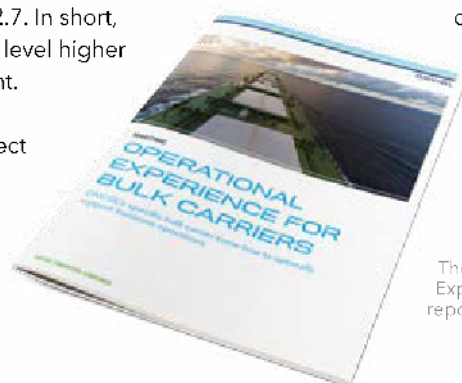
The analysis of the PSC inspections covers the fleet of conventional bulk carrier ESP ships; hence, forest product carriers, ore carriers, etc. are not included. The DNV GL study looked into 9,648 inspections resulting in 15,917 deficiencies and 205 detentions. The average number of inspections per year for the DNV GL bulk carrier fleet was 2.1 and the deficiency rate per inspection was 1.67, which is significantly better than the industry average, and actually better than for the bulk carrier fleet of any other class society. The detention rate has been fairly stable at about two per cent detentions per inspection. If we compare this with the worldwide PSC statistics, bulk carriers have a detention ratio of 2.7. In short, DNV GL customers have achieved a compliance level higher than the other players in the bulk carrier segment.

The top deficiency categories found by PSC inspectors on the DNV GL bulk carrier fleet reflect a well-known picture:

- Fire safety
- Safety of navigation
- Certificates and documentation
- Life-saving equipment

The deficiencies in these categories represent more than 50 per cent of PSC deficiencies, which corresponds to the general picture seen for the worldwide fleet. At the same time, looking at the top detainable PSC deficiencies, it can be observed that over the last few years there has been a much stronger focus on International Safety Management (ISM) Code compliance because of the New Inspection Regime (NIR) in the biggest PSC regimes (Paris and Tokyo MoUs).

When a DNV GL surveyor carries out an annual survey, he or she will, in addition to the class and statutory survey, perform an assessment of the maintenance level observed in four areas: the deck, accommodation, safety equipment and engine room. If a surveyor reports poor maintenance in any of these categories, the technical manager will be informed and there will be a dialogue on how to improve the situation. For the bulk carrier fleet, the maintenance scores worsened by about ten per cent from 2012 to 2015. There is relatively little variance between the four areas, but >



The results of the study "Sharing Operational Experience" have been published by DNV GL in report format and are shared in special seminars.

> deck and equipment achieved the lowest scores and accommodation the highest ones. Looking at hull inspection results, key findings are related to maintenance, inspection and design issues. The following key points and trends were identified:

Anchor and chain loss

There has been a distinct increase in the number of anchor chain and anchor losses in the bulk carrier fleet in recent years. Winch break failures and detached D-link securing bolts are top technical failures. Roughly 50 per cent of anchor and chain losses appear to be related to operational issues, such as lack of knowledge about the environmental limitations of anchoring equipment, staying at anchor in overly heavy weather, anchoring in waters too deep, failure to secure the anchor chain properly while at anchorage.

Realizing the importance of the safety aspects and the high costs associated with anchor losses, DNV GL responded to these findings by developing a special awareness campaign jointly with Gard and Swedish Club. Training material has been developed for use by customers during officer meetings or other awareness initiatives and for self-training on board vessels. This topic will also be covered in greater depth in the next issue of BULK CARRIER UPDATE. For further information please visit dnvgl.com/anchorloss.

Damages to hull structure

The sides are a single-skin bulk carrier's most vulnerable elements. Damage records indicate that side frame deformation is the key challenge while corrosion is the second most frequent observation. On the other hand there is a positive trend in the number of reported cracks in main frames. The increased strength standard introduced by IACS Unified Requirement No. S12, with continuous brackets in the upper and lower end, is believed to be a significant contribution to the reduced risk of cracking. As mentioned above, the combined cargo and ballast hold is more prone to fatigue cracks, and the connection between the corrugated bulkhead and the upper and lower stool as well as the connection between the lower stool and the inner bottom plate are the most typical crack locations.

The hatch coaming with its end brackets is another area exposed to high risk of cracking, with a total of 163 findings of cracked and heavily damaged structures. Statistics show a significant peak of findings during third-renewal surveys.

Fire safety

Fire safety is of utmost importance for the protection of the crew, the ship and its cargo. Inadequate maintenance of fire safety equipment comprises the risk of PSC deficiencies and detentions, and issues related to fire safety are the most common findings on the DNV GL bulk carrier fleet, including fire detection and alarm systems, fire-fighting equipment, fire dampers, fixed fire extinguishing installations, and fire prevention structures.

Crew training a crucial factor

The common denominator for improving performance related to maintenance, hull and fire safety is to ensure that the crew is



ANNUAL SURVEYS PUT MAINTENANCE TO THE TEST

The DNV GL surveyor also assesses maintenance of the deck, accommodation, safety equipment and engine room.

properly trained and that regular maintenance procedures are in place and adhered to.

A deformation in the hull side, for instance, could be modest, but it is essential for the crew to be trained properly in inspecting and reporting deformations of side frames which may severely affect frame strength. It is important to check whether the tug-reinforced areas are clearly marked; it might be advisable to expand these areas to mitigate the risk of contact damage and costly repairs.

Most of the maintenance deficiencies detected are related to equipment that needs regular maintenance and testing. Most companies have established maintenance systems, but the challenge remains to implement this in day-to-day operations. Customers are encouraged to review their planned maintenance systems (PMS) and implement them.

By focusing on the human factor and leveraging targeted campaigns to address the most frequent findings, shipowners can keep their costs under control and avoid downtime. ■ HS



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EXPERT GUIDANCE FOR VESSEL LAY-UP

Overcapacity and shrinking demand create an unfavourable climate for bulk carrier operation. DNV GL provides essential information on recommended vessel lay-up procedures.

In these times of volatile global markets, taking a ship out of service for one or several months may be the most profitable option until demand rises again. What was once a simple issue of finding a safe, sheltered mooring is today much more complex - a consequence of modern ship design and more elaborate regulations.

With over 13,000 vessels in class, DNV GL has the accumulated expertise and insight to advise shipowners on how best to lay up bulk carriers as well as all other ship types.

The shipowner has specific obligations towards stakeholders which need to be performed to ensure proper vessel lay-up.

Port authority requirements vary from port to port. For hot lay-up it is recommended to forward to the local port authority a lay-up plan for evaluation and authorization. For cold lay-up the owner should seek guidance from the vessel's flag state, insurer and local port authorities to agree on the final manning levels on board.

Practical checklist

Maintenance and preservation during the lay-up period is not a class requirement but will affect the scope of the recommissioning survey. If, during the lay-up period, the vessel has been preserved and maintained according to a programme accepted by DNV GL, the scope of the recommissioning survey will be adjusted accordingly.

The new DNV GL publication "Know your vessel lay-up options" provides customers with comprehensive information and cost details regarding the available lay-up options. It describes recommended practices gained from experience during major lay-up periods in the

shipping industry in the 1970s and 1980s and in 2009. The document explains a systematic and cost-effective approach for preparing a vessel for lay-up and maintaining it in a safe and optimal condition during lay-up, based on best practices. This publication supplements and acts as an overview of the key points found in the more extensive and newly updated DNV GL Class Guideline.

Customers will also find a practical checklist and a brief overview of services DNV GL provides to support smooth lay-up processes. The most recent version of the DNV GL Class Guideline for vessel lay-up is now available: DNVGL-CG-0290, January 2016 edition. In the publication "Know your vessel lay-up options", you will find a reference to the Class Guideline with more details. ■ RT



DNV GL Expert

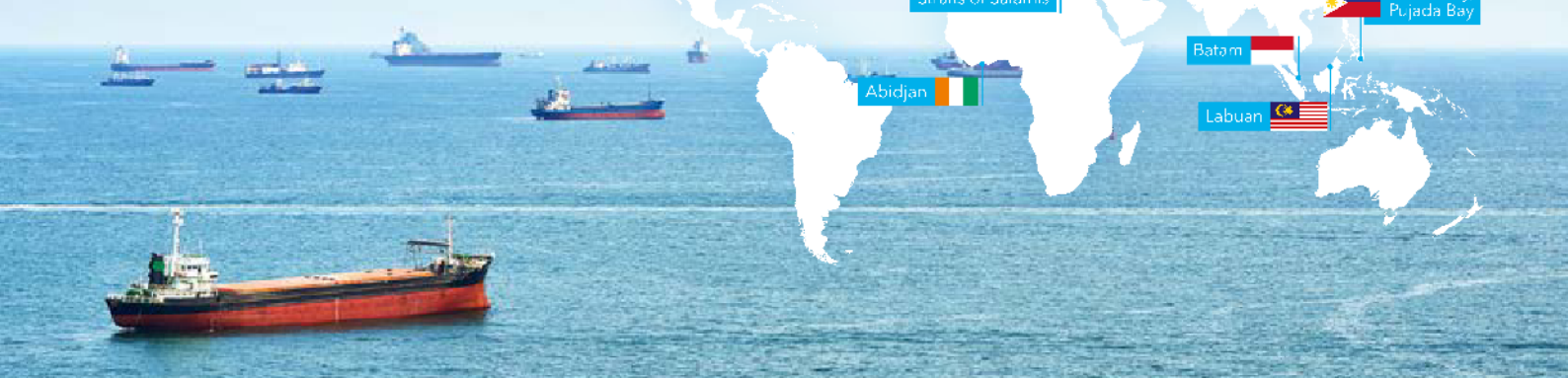
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ESTABLISHED LAY-UP LOCATIONS - COLD LAY-UP

The locations shown represent just a small number of very well-known and established locations.



Photos: DNV GL (3), JPEV - Shutterstock



A NEW, FUTURE-READY STANDARD FOR SHIPPING

Since DNV and GL joined forces, a huge effort has been made to consolidate our existing knowledge and further enhance our standards to serve as a reference for the maritime industry. The know-how and experience of both legacy companies have been incorporated into the new DNV GL rules which are now available to support state-of-the-art ship newbuilding and operation.

The new rules, which represent the best of the combined expertise and experience of two leading classification societies, have been evaluated for critical issues and improvement potential by our most experienced technical experts. The rule set, consisting of more than 20,000 pages, has been scrutinized with respect to clarity, practical application and how it contributes to the overall safety of vessels and thus supports safe and reliable shipping. The review has resulted in the most modern rule set published by any class society. The process has involved more than 200 technical experts in DNV GL and the rule set has been improved by extensive input from more than 800 shipyards, designers, ship owners and managers.

The total effort made to establish these rules is unprecedented in the industry and has resulted in a new rule set which is efficient, future-ready, consistent, transparent, modern and adaptable.

Harvesting operational experience

With around 13,000 ships classed by DNV GL, the experience we gain through supporting our customers in their day-to-day operations constitutes an unrivalled knowledge database. We continuously apply our experience in the development of our rules.

In connection with the development of the new DNV GL rules, we launched a research project in which we performed a thorough statistical review of our fleet. The aim was to identify possible areas where the rules could be further improved. More than 3,000 ships in service were closely monitored, looking for design-related defects. Typical defects and their frequency of occurrence were studied and the know-how achieved was incorporated into the new rules.

IACS CSR and DNV GL rules for hull structure

For most Bulk Carriers, the IACS Common Structural Rules (CSR) are applicable for the hull structure. However, the methodology

as applied in CSR has been further developed in the DNV GL rules to cover all ship types. This includes other dry cargo vessels carrying bulk such as ore carriers, general cargo vessels, MPV's, Great Lakes bulk carriers and self-unloaders. This gives ship designers and shipyards the benefit of having to relate to one set of overall principles in their structural design, while ensuring that the special operational conditions for each of these ship types are taken into account.

A new and improved technical foundation

The introduction of equivalent design waves (EDW) in the DNV GL rules marks a significant change in the way dynamic loads are calculated. The advanced load concept is a major step towards a more realistic and accurate representation of the environmental loads.

Along with our state-of-the-art capacity models, this concept will increase the consistency in the safety level applied to the complete hull structure. In addition, this approach will accommodate challenges related to the development of innovative designs. This provides a foundation for an ideal distribution of structural strength, ensuring every ton of steel is used efficiently. Increased accuracy in the rules for loads and more advanced capacity formulations require more extensive computational capabilities. DNV GL rules are therefore supported by powerful software tools that ensure an efficient design process.

New and enhanced notations

To enable owners to efficiently customize vessels to their needs, the new rules offer a variety of additional class notations. These are tailored towards ship types and additional features, and ensure that vessels are designed and equipped for their intended

INDUSTRY INVOLVEMENT

The aim of developing the DNV GL rules was clear: to develop a unique rule set that meets the needs and expectations of the maritime industry. Stakeholders have been involved throughout the development and implementation phases. More than 800 leading shipyards, designers, manufacturers and ship owners worldwide have contributed more than 2,000 comments and items of constructive criticism, enhancing the quality and relevance of the rules.

A TOTAL REVIEW AND UPDATE

The development of the DNV GL rules presented an opportunity to completely review the entire rule book and look at how the rules are structured. The rules are in a more logical sequence now, complementing a typical design process. Documentation and certification requirements are clearly summarized in each part of the rules. This makes it easier to navigate and find what you are looking for. To give shipyards and designers starting out on a new project an easy entry point, all ship notations and specific requirements can be found in Part 5.



For more information and access to our new rules, please visit our website www.dnvgl.com/dnvglrules

operations. In addition, they are made and continuously developed to support the application of the latest technology.

! Gas ready and scrubber ready

As the regulatory and technology outlook can be complex and unclear, DNV GL offers “Ready” notations to owners that want to prepare their vessel in the newbuilding stage for the future installation of new technology. By obtaining such a notation, owners can postpone initial investment costs while ensuring the necessary preparations are in place for a smooth and cost-efficient retrofit at a later stage. In addition, they may benefit from a higher degree of technology maturity (and possibly lower prices) on the actual installation date.

! TMON (closed loop water) and TMON (open loop water)

The revamped class notations for water-lubricated tail shafts are another example of how we are now offering greater flexibility to ship owners. These two notations allow ship owners and operators the possibility of unlimited intervals between tail shaft withdrawal surveys of water-lubricated systems. With these two voluntary class notations, DNV GL is the first classification society to use

a condition-monitoring-based survey process that eliminates the requirement for tail shaft withdrawal surveys at pre-determined intervals. The notations can be assigned to both newbuildings and ships in service.

The maritime industry welcomes the new rules

“We have no doubt that the maritime industry will benefit from our new DNV GL rules” says Morten Løvstad, DNV GL Business Director Bulk Carriers. “We have already observed a significant interest from yards and owners. In December last year, the first vessels contracted to the DNV GL rules were actually two innovative, LNG-fuelled Bulk Carriers for Finnish owner ESL Shipping. I am, together with our network of experts around the world, excited about and committed to support the industry in applying our new rules”

LNG fuelled Bulk Carriers based on DNV GL rules

Featuring the Deltamarin B.Delta26LNG design, the two highly efficient ships will have dual-fuel main and auxiliary machinery, resulting in CO₂ emissions per ton of cargo transported half that of present vessels. The bulk carriers will be built to the new DNV GL rules for general dry cargo ships with DNV GL ice class 1A and will have type C LNG tanks of approximately 400 m³ capacity enabling bunkering at several terminals within the Baltic region. The B.Delta26LNG has a shallow draft of maximum ten metres, an overall length of 160 metres, and a breadth of 26 metres. ■ SS

CALCULATION TOOLS - FREE OF CHARGE IN 2016!

Calculation tools are essential for developing modern ship designs. The new DNV GL rules for Hull Structures are supported by both the POSEIDON and Nauticus Hull software tools. These already have a strong reputation among designers and yards and have now undergone major updates to provide more efficient support for the design process and make it easier to apply the new rules. Please contact your local DNV GL Software representative for details.



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Photos: DNV GL, via nri, Fotobiz

The LNG-powered bulk carrier designed by Deltamarin will operate in the Baltic Sea.



DOUBLE DEBUT

The first DNV GL classification contract for an LNG-fuelled bulk carrier built to the new rule set has been signed - another milestone on the way to sustainable shipping.

The establishment of emission control areas (ECAs) in the Baltic Sea and the North Sea is driving technological advances towards low-emission shipping. In the Baltic Sea in particular, early initiatives to establish an LNG refuelling infrastructure have encouraged owners to embrace LNG as ship fuel. DNV GL recently signed the first classification contract for a large LNG-powered bulk carrier - and the first vessel ever to be built to the new DNV GL class rules.

The project comprises two sister vessels which have been developed by the Finnish ship design and engineering group Deltamarin for the Finnish owner ESL Shipping Ltd., the leading carrier of dry bulk cargoes in the Baltic Sea region. Both companies cooperated closely on the concept development to make sure the ships meet the demanding trading requirements of the Baltic area.

Mastering difficult climate conditions

Deltamarin is using its proven B.Delta26LNG design with a highly optimized hull form as a basis for these extremely energy-efficient ships, which will be built at Sinotrans & CSC Qingshan Shipyard in China. They will begin operating in the Baltic Sea in early 2018, supplying raw material to heavy industry and power generating companies. The 25,600 dwt handysize bulkers will feature highly efficient cargo handling and cargo hold arrangements, enabling rapid loading and unloading. To ensure reliable year-round operation in the difficult climate conditions of the Baltic Sea, they will receive the additional class notation DNV GL Ice Class IA.

Equipped with dual-fuel main and auxiliary machinery and 400 m³ type C LNG tanks, these vessels will be able to bunker LNG at several terminals in the Baltic region and meet all current

emission requirements. Their CO₂ emissions per cargo tonne transported will be reduced by over 50 per cent compared with present-generation vessels. The energy efficiency design index (EEDI) value will satisfy the International Maritime Organization (IMO) reference line requirements even in Phase 3 which will come into force in 2025.

The bulk carriers will be built to the new DNV GL rules for general dry cargo ships. "It is fitting that the first vessels that will be constructed to the most forward-looking set of classification rules are themselves at the cutting edge of maritime innovation," says Knut Ørbeck-Nilssen, CEO of DNV GL - Maritime. "We have created these rules to be ready for the future and we have long pioneered the use of LNG as a ship fuel. To see these two come together in a double first for the industry is a remarkable moment."

Ship designers have to account for increasingly complex requirements, resulting from stricter regulations and the need for optimal efficiency, which makes close cooperation with class more important than ever. Applying the new rule set for the first time was a journey into the unknown for the designers at Deltamarin. Konstantinos Fakiolas, Sales Director Ship Design at Deltamarin, reports: "The new rules are easier to handle than the old ones, and accessing them has become easier as well.

Mikki Koskinen, Managing Director of ESL Shipping: "Our main trade in the Baltic Sea is very busy and demanding, not only due to winter ice conditions but also because of tight schedules and very short port calls. That is why we need a classification partner capable of delivering services promptly and effectively when required without affecting the schedules of vessels. We chose

DNV GL because of our good experience from our last series of newbuilds and because we are convinced they have the required high level of knowledge of LNG systems and safety."

Optimized for varying sea conditions

Konstantinos Fakiolas describes how Deltamarin approaches the project: "We first modified the B.Delta26LNG design to make the ship fit for its trading purpose, then optimized it further to reach the highest possible levels of IMO compliance and ensure her competitiveness throughout her lifetime. The cargo spaces have been specifically designed and arranged jointly with the owner to meet the requirements in terms of cargo flexibility, distribution and quantity. The proven hydrodynamic properties of the Delta Series have been maintained despite the necessary restrictive Ice Class features, and optimized further in terms of power requirement, engine economy and hull lines. Finding the perfect solution for operation in two different weather conditions - icy water and open water - and different sea states has been challenging, but I believe we have found it."

A trendsetting design

For ESL, LNG was the preferred fuel option for the ships, says Mikki Koskinen: "In short-sea trades LNG is presently the best available large-scale energy solution, both operationally and from the environmental point of view. For us and our customers, LNG is a very good choice and will definitely be part of our future plans, despite the slow development of the LNG supply infrastructure, the large space requirement on board and the relatively high additional investment required."

Koskinen believes the new LNG powered bulkers are more than just state-of-the-art additions to ESL's fleet. "The ship concept developed jointly by the experts from Deltamarin and ESL Shipping is a trendsetting design that brings the commodity transport segment into a new era of greener shipping. When completed these vessels will be among the most environment-friendly ships to sail in pollution-sensitive areas, such as the Baltic." Fakiolas still sees additional optimization potential in ship design by expanding the range of parameters considered in the endeavour. "Future bulk carriers need to be operationally optimized further



Deltamarin's Sales Director Ship Design Konstantinos Fakiolas.

Photos: DNV GL, Deltamarin, ESL



Sealing the deal: Knut Ørbeck-Nilssen, CEO of DNV GL - Maritime (left), with Mikki Koskinen, Managing Director of ESL Shipping Ltd.

throughout their trade envelopes, accounting for various draughts and speeds while at the same time improving dynamically related performance characteristics, such as course-keeping at various sea states and wave angles, manoeuvrability in ports, and cost-efficient lifetime operation.

The future ship must be designed 'fit-for-trades' instead of 'fit-for-cargoes'. Traditionally ship fuel consumption has been optimized for only a few fixed operational points, and the improvement potential for these conditions is usually limited. New design tools and methods set a completely new baseline to fuel efficiency evaluation that corresponds to real-life operation." Fakiolas is sure other ship types could benefit from the design improvements achieved with Deltamarin's B.Delta26LNG type.

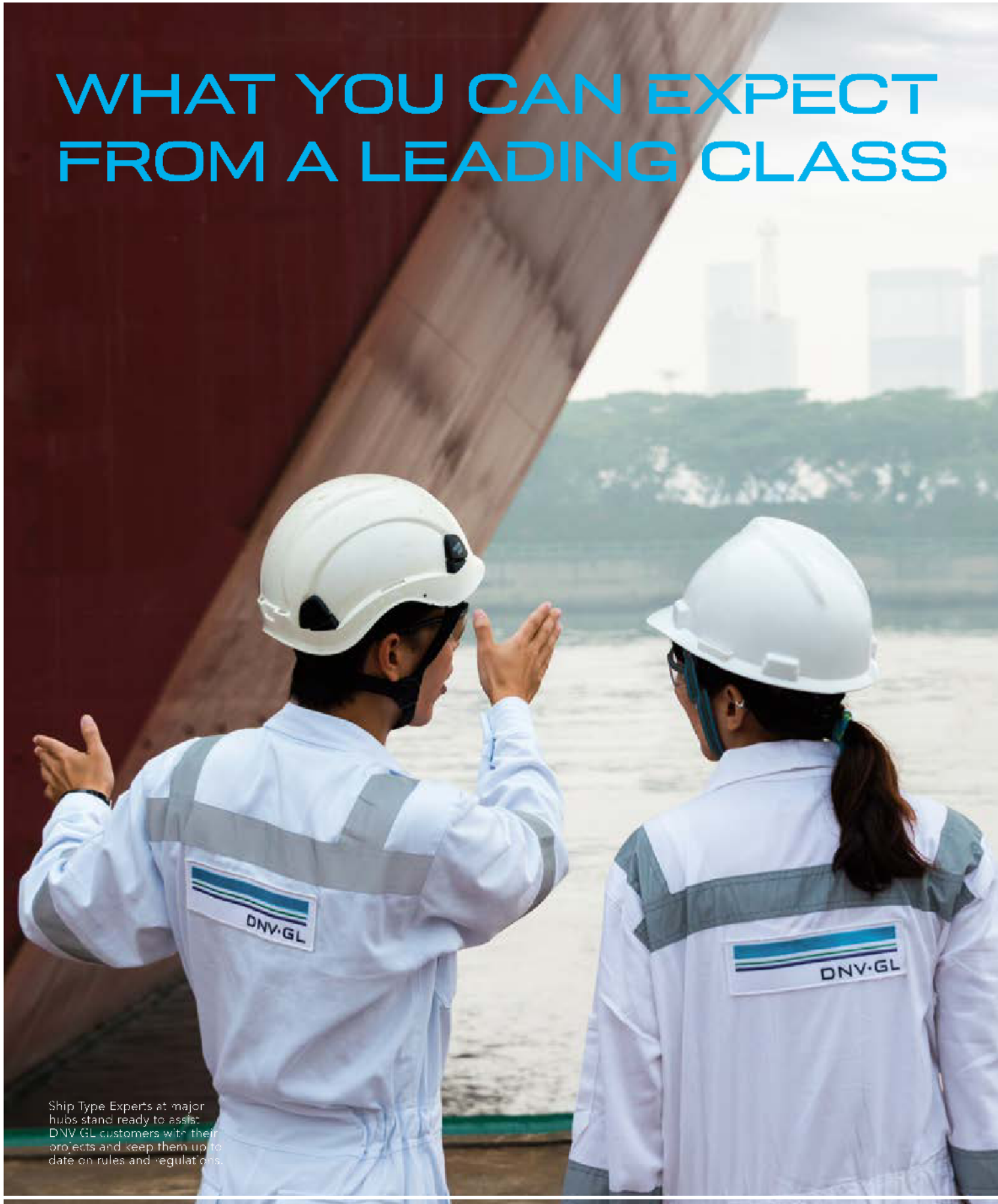
ESL's Mikki Koskinen agrees that his company's new bulk carriers set the right course for ship design in general: "Shipping needs to be much more environmentally conscious and we must work hard in order to reduce our carbon footprint and other emissions. LNG helps us in achieving our ambitious goal of cutting our CO₂ emissions in half. We believe the industry will follow, since sustainability and profitability in our business go perfectly hand in hand." ■ AK



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WHAT YOU CAN EXPECT FROM A LEADING CLASS



Ship Type Experts at major hubs stand ready to assist DNV GL customers with their projects and keep them up to date on rules and regulations.

Listening carefully to customer feedback, DNV GL has identified a need for faster delivery of expert answers to customer enquiries. The result is a new service enabling customers to contact technical specialists directly, and the appointment of Ship Type Experts at all major hubs to deliver the world's best technical support.

With about 4,700 highly skilled employees active in the maritime segment, including a worldwide network of more than 2,000 competent surveyors, DNV GL is the leading class society not only in size but in safety, quality and service delivery as well. Still, size matters and, with a greater global reach than any other class, DNV GL is in a unique position to offer comprehensive services for its customers' vessels wherever and whenever they are needed. To further improve its responsiveness and accessibility to customers, DNV GL has implemented a 24/7 technical support service called DATE (Direct Access to Technical Experts), and appointed Ship Type Experts for all major ship types at all major shipping hubs around the world.

Around-the-clock access to technical experts

Among the most frequent customer responses to the question what DNV GL could do to deliver even more value was the need for timely, authoritative and insightful answers to technical questions. Over the last two years DNV GL therefore implemented its technical helpdesk DATE which provides owners and operators of DNV GL-classed vessels with free access to DNV GL's expertise anytime and anywhere. Five support hubs around the world as well as online access through the new DNV GL digital platform my.dnvgl.com ensure true 24/7 availability of the service. Technical queries are routed to one of the five support hubs and can draw upon the knowledge of 400 technical experts globally, all authorized to provide formal answers on behalf of DNV GL. Enquiries are normally answered within one working day, and urgent requests within a few hours. Examples of cases which may be resolved by the DATE service include certificate issues, postponements, survey requirements, evaluation of repair proposals, interpretation of class and statutory rules, and minor alterations.

Well over 100,000 support cases have already been handled by DATE. Every customer can review all questions and answers registered for it on my.dnvgl.com. The accumulated case records form a growing list of frequently asked questions (FAQ) on class-related matters. DNV GL intends to provide the world's best technical support on classification matters, and DATE leverages the scale and knowledge of DNV GL for the direct benefit of customers.

Unmatched bulk carrier expertise

With the world's most modern and practical classification rules released recently, and a huge base of cutting-edge expertise, DNV GL is a technology leader in the bulk carrier segment. Major safety-related studies and campaigns have been initiated in

recent years, such as the Guideline on Cargo Liquefaction, and DNV GL has assisted designers and owners in the development of leading-edge designs featuring exceptional cargo flexibility and energy efficiency, such as the Green Dolphin 38 Handy, and more recently, the world's first LNG-fuelled bulk carrier B.Delta26LNG.

In the bigger, specialized vessel categories, more than 50 per cent of the very large ore carriers older than five years are DNV GL classed, and biggest of them all, the 400,000 dwt Valemax vessels, have all been designed to DNV GL rules. For the customer this translates to more practical experience and more surveyors with detailed knowledge of these highly specialized vessels available worldwide than with any other class.

To further strengthen its position in all bulk carrier segments, DNV GL has not only appointed a dedicated Bulk Carrier Director but also built a network of bulk carrier Ship Type Experts (STE) located in all major bulk carrier hubs worldwide. The STEs cooperate closely with the Bulk Carrier Director and the Approval Centres, offering a dedicated expert channel to designers, yards, owners and operators to discuss matters specific to bulk carriers - from design through to operational matters.

Each STE has a special responsibility to monitor technical developments within the bulk carrier segment, cooperating with other STEs and DNV GL technical experts around the world. They all share their knowledge through active contributions to seminars and conferences, technical meetings as well as lectures in bulk carrier training courses offered by the DNV GL Academy. >



The new DNV GL Cargo Liquefaction Guideline addresses risks concerning the moisture content of the ship's cargo.



The customer portal "My DNV GL" offers access to personalized services from DNV GL - anywhere, anytime.



> To date, dedicated bulk carrier STEs have been appointed for the following regions: Greater China, Korea and Japan, the Nordic countries, Germany and Greece. While DNV GL surveyors with extensive bulk carrier expertise can be found worldwide, STEs at these major bulk carrier hubs provide even more in-depth knowledge. They are natural contact points for discussing new bulk carrier designs and technology.

STE for the Nordic countries

"Bulk Carrier Ship Type Expert is a title I am personally proud of," says Håvard Helling who has worked with bulk carriers since he joined the company in 2005. From being an approval engineer at DNV GL in Norway he moved to the Shanghai Approval Centre in 2009 and returned to Norway in 2012.

"One hot topic for me right now is cargo liquefaction," says Helling. "This is unfortunately a problem area which causes many accidents." Cargo liquefaction, the abrupt transformation of soil-like materials from a solid dry state to an almost fluid state, can happen in adverse weather conditions when the moisture content of the cargo is too high and the cargo begins to shift. If a bulk carrier starts to list until it takes water, it can be doomed with little or no time for the crew to abandon ship, and tragic crew loss becomes a reality. If the problem is detected early enough, the heading and speed can be

adjusted to reduce movements and seek an emergency port. But the best approach is to avoid this situation altogether. The new DNV GL Cargo Liquefaction Guideline addresses this problem, raising awareness among owners and crews and helping ship masters verify and avoid taking on cargo that does not comply with the limits for moisture content.

Over the past few years Håvard Helling was heavily involved in the development and implementation of the new and updated Common Structural Rules (CSR) which came into effect in July 2015. In addition, he contributed to the new DNV GL class rules which were published in autumn 2015 and came into effect in January 2016, a milestone achievement and the result of a two-year concerted effort following the merger of DNV and GL. "We spent plenty of time with yards and designers to find good solutions for CSR-compliant bulk carrier designs," Helling reports. "For dry cargo vessels not covered by the CSR, such as ore carriers, open-hatch general cargo carriers and multipurpose dry cargo ships, we undertook an extensive verification of existing and new designs for the new DNV GL

rules," says Helling.

Both the new DNV GL rules and the CSR are based on state-of-the-art scientific and engineering knowledge and the best available standards and methodologies. Just as important, however, is the fleet-in-service experience that has been incorporated.

"We undertook an extensive verification of existing and new designs for the new DNV GL rules."

Håvard Helling,
DNV GL Bulk Carrier
Ship Type Expert



From design through to operational matters, DNV GL offers unmatched ship type specific expertise to its bulk carrier customers.

Survey and damage reports from several years were reviewed to identify areas where the rules could be improved. Similarly, thickness measurement records were evaluated to make sure the corrosion additions were reasonable. “The goal is always to put the steel where it matters or, in other words, where it increases safety and makes sure the vessel is fit for purpose,” Helling explains.

STE for Greater China

Senior Plan Approval Engineer Can Chun Cai has been in the industry for over ten years as a bulk carrier specialist. he was appointed Ship Type Expert for bulk carrier in Greater China in 2014. “My role as a bulk carrier STE is to support our customers proactively. T-shaped skill profiles with multidisciplinary knowledge and the ability to build good personal and professional networks internally and externally are essential for supporting our customers effectively,” says Can Chun.

In addition to his job as a plan approval engineer, Can Chun attends to the numerous tasks of a bulk carrier Ship Type Expert for Greater China: he has to provide timely technical support to customers including shipowners, shipyards and design offices, inform stakeholders about the latest bulk carrier-related rules and regulations, performing specification reviews, and share information and knowledge with customers through bulk carrier workshops, forums, training courses and external conferences, among other responsibilities.

“At DNV GL there is always a network of experts you can rely on and work with,” says Can Chun. “I collaborate closely with the global bulk carrier director, regional pre-contract managers, district business development managers and other local and global experts within DNV GL. We share experiences, knowledge,

information and workloads across our global Ship Type Expert network. Even more importantly, we work on many joint projects (JDP/JIP) with customers, and invest a lot of effort in studying new technologies emerging across the industry. For example, I am convinced future bulk carrier designs will feature both glass-reinforced plastic (GRP) hatch covers and hybrid cranes to make them more competitive,” he adds.

In 2015 Can Chun and his peers worked hard to improve the calculation tools to support designers and yards, incorporating both the new CSR rules and the new DNV GL rules. Efforts continue to make these tools even more efficient. In addition the group developed a two-day training course in finite element modelling and analysis for Chinese yards and designers, introducing best practices and showing participants how to use the DNV GL tools in the most effective way. “These workshops and training courses for rules and tools have been welcomed by owners, yards and designers with great appreciation,” Can Chun stresses. ■ ML

“At DNV GL there is always a network of experts you can rely on and work with.”

Can Chun Cai,
DNV GL Bulk Carrier
Ship Type Expert



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Photo: Barut T/dina - iStockphoto.com/ryl_aekhtikov/CC BY-SA 3.0, DNV GL (3)

KEEPING PACE WITH ENVIRONMENTAL REGULATIONS

The environmental impact of the shipping industry remains a topic of keen interest for regulators, with agreed regulations entering into force in the near future and new regulations being developed around the world. Understanding the evolving regulatory landscape is of strategic significance when making business decisions.


Over the past decade, shipping has seen a surge of environmental regulations. Political pressure and an increasing focus from society at large have driven the International Maritime Organization (IMO), various countries and regions such as the EU to develop steadily more stringent regulations. The consequence is a patchwork regulatory system, where numerous overlaps create challenges for operators. There are unfortunately no indications that this will change. It is important for operators to both understand the existing regulatory framework and be aware of forthcoming developments, both at IMO and elsewhere, in order to make the right business decisions.

Ballast water management

Ballast water management has been a hot topic for a number of years. At present, the Ballast Water Management (BWM) Convention is only 0.21 per cent short of the gross tonnage ratification threshold. Several states have announced imminent ratification, and DNV GL believes the threshold is likely to be crossed sometime this year. The convention will then enter into force one year

later, requiring all ships to comply within the following five years. The content and interpretation of the convention are still evolving. Presumably the IMO Marine Environment Protection Committee (MEPC) 70 will finalize the revision of the technical guidelines in October. There are presently 65 IMO-approved BWM systems on the market.

The national ballast water management regulations of the United States entered into force in 2013. New ships now have to comply upon delivery, while existing ships must comply by the first scheduled dry docking after 1 January 2014 or 2016, depending on ballast water capacity. US type approval is required for the ballast water treatment systems of affected ships; so far no such approvals have been granted. To address the obviously paradoxical situation of having to install approved systems when none have obtained type approval, the US Coast Guard (USCG) has issued more than 50 so-called Alternate Management System (AMS) approvals for systems accepted by IMO. These approvals are limited to a five-year validity period. To ease the transition further the US is also liberal in granting time-limited exemptions



Ballast water is among the top environmental issues addressed by new regulations.

to individual ships. We believe that once US-approved systems become available the extension policy will become significantly more stringent.

For more information on different ballast water topics such as treatment systems and approval process please visit dnvgl.com/bwm.

SO_x regulations

Discussions at IMO are centred on the question of whether the global 0.5 per cent sulphur content requirement should enter into force in 2020 or 2025. A fuel availability study is in progress to provide a discussion basis for an IMO decision which may be made at MEPC 70 in October 2016. A complicating factor in the discussions is the EU Sulphur Directive, which stipulates a maximum 0.5 per cent sulphur content for all EU waters by 2020, irrespective of the IMO decision. If different dates are decided by IMO and the EU, shipping will for a period face a three-tier sulphur content regime. From an operational perspective, this will be challenging.

Photo: Hasenpusch

It should also be noted that the Water Framework Directive is putting constraints on the discharge of scrubber water in certain EU countries. Belgium and Germany have in essence prohibited the discharge of scrubber water in most areas, severely constraining the operation of open-loop scrubbers. Other EU countries are following suit to a lesser or greater degree, with no common EU practice likely to be agreed. China has recently published regulations for SECA-like fuel requirements in certain coastal areas (see box next page).

More information and our updated Sulphur guideline are available at dnvgl.com/lowsulphur.

NO_x regulations

NO_x Tier III requirements have entered into force in the North American ECA for ships constructed on or after 1 January 2016. In essence, anyone constructing a ship today needs to consider potential operation of the vessel in the North American ECA, whether upon delivery or at some time in the future. If such an operation pattern is conceivable, NO_x control technology will >

> be needed for that ship. In contrast to the North American ECA the ECAs in the North Sea and the Baltic do not yet include a NO_x requirement. This has been on the table for a number of years and there are now robust signals that a joint North Sea/Baltic NECA application will be made to MEPC 70. Assuming agreement at IMO these Tier III requirements are expected to apply to ships constructed on or after 1 January 2021.

CO₂ and energy efficiency

Climate change remains the driving political force behind CO₂ and energy efficiency regulations. In the EU, regulations for Monitoring, Reporting and Verification (MRV) of CO₂ emissions have entered into force, requiring all ships above 5,000 GT sailing to or from European ports to comply. Ships must also report cargo data and average energy efficiency. The EU will make the data publicly available on an annual basis. Monitoring plans are to be submitted to verifiers by 31 August 2017, with 2018 being the first year of reporting. Data will be published by the EU in mid-2019. There is extensive work in progress to develop the practical framework and the EU is expected to publish practical details towards the end of 2016.

Part of the purpose behind the EU MRV regulations is to encourage IMO to work on a similar mechanism with global, not only regional, coverage. The EU has stated that if this happens it will mothball its regulation. It is therefore of great significance that MEPC 69 did agree on a global mechanism for mandatory monitoring, reporting and verification of fuel consumption data for all ships above 5,000 GT. The scheme is expected to be adopted at MEPC 70, in which case 2019 will likely be the first

year of operation. However, the scheme differs from the EU MRV in several important aspects, including confidentiality of data, calculation of efficiency metrics and requirements regarding the verification of data. While the European Commission sees the IMO work as an important step forward it seems unlikely to view the mechanism as robust enough to reverse its own course on the MRV scheme. DNV GL expects that the shipping sector will have to deal with two different but overlapping reporting regimes for at least some years.

IMO is also seeing a reinvigorated discussion on long-term CO₂ emission goals following the global climate change agreement reached in Paris last year. There is as yet no agreement within IMO regarding the need to move beyond establishing a fuel data collection system, and it remains to be seen whether consensus can be reached. DNV GL sees a very real risk that unless significant progress is quickly made at IMO, other bodies outside the shipping industry may attempt to issue regulations. This would not be of benefit to anyone, least of all the shipping sector itself. ■ EN

All technical and regulatory news can be found at dnvgl.com/tecreg.



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CHINA IMPOSES SULPHUR LIMITS AND MIGHT ESTABLISH SECA ZONES

China has published regulations to establish SECA-like sea areas outside Hong Kong/Guangzhou (Pearl River Delta) and Shanghai and in the Bohai Sea. In a staged approach, the new regulations impose an initial 0.5 per cent sulphur limit for fuel burnt in key ports within these areas, gradually expanding the coverage to finally encompass these sea areas entirely from 2019 onwards. The sulphur limit might be lowered to 0.1 per cent as of 2020, and a formal ECA application may be submitted to IMO.

Legend:

- Existing, IMO
- EU Sulphur Directive
- Existing, regional
- Possible future

CHINA

Beijing

Shanghai

Pearl River Delta

Photos: DNV GL, oraziopuccio - Fotolia



WHAT YOUR BULKER NEEDS - ANYTIME, ANYWHERE

To support you in remaining competitive, DNV GL offers every service for your bulk carrier, where and when you need them. With the most extensive coverage of any classification society, we are accessible worldwide 24/7. Use our new customer portal My DNVGL, or our DATE service (Direct Access to Technical Experts) to get real solutions directly from our technical experts within 24

hours. The accumulated experience of more than 2,500 surveyors and data analytics from more than 13,000 ships in class, combined with continuous investment in research and new services, means you'll benefit from cutting-edge quality that you can count on - anytime, anywhere.

Learn more at dnvgl.com/maritime

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