

ClassNK

MAGAZINE

DECEMBER 2014 - 70TH EDITION

• *Helm joins ClassNK*

• *Gas-fuelled ambition*

• *Expanding in South America*



Leading the way



Welcome to the 70th edition of ClassNK Magazine.

Publication comes as the industry approaches a pivotal moment in the regulation of inland shipping in the US, and when new infrastructure is being put in place in South America to support a major expansion of inland waterborne business.

Like sea-going shipping, inland transportation by water offers a low environmental impact and efficiencies of scale compared with transportation by road or rail. However, the two sectors part company when it comes to regulatory oversight. Where safety rules governing sea shipping are predominantly global, consistent and prescriptive, the inland sector is characterized by either local governance, or even voluntary standards.

ClassNK has been and remains committed to supporting the needs of businesses in understanding and managing their compliance requirements on safety, the environment and security. Service is at the center of everything we do, whether that be in surveying and auditing, rule development or in our partnering role in progressing shipping's next generation technologies.

For inland shipping, this has recently been reflected in the development of new Rules and Guidance for the Survey and

Construction of Inland Waterway Ships (see p21-22), which entered into effect in September. Harmonization of standards in South America has been a key impetus behind these rules.

In addition, however, ClassNK has been engaged in a concerted effort in the US to address the finalization of 'Subchapter M' – the new regime that will demand comprehensive and impartial inspection, standards and safety management for all inland towing vessels operating within the US. Finalization of Subchapter M is expected in March 2015.

Over the last year, the ClassNK strategy has brought extended authorization from the USCG, new surveying authorization from Transport Canada, and the acquisition of audit specialist Safety Management Systems LLC and – most recently – of procedure software developer Helm Operations. A full exploration of the Helm acquisition is included in this publication.

“Service is at the center of everything we do”

Readers will also find a timely overview of ClassNK's thinking on LNG as a marine fuel, and specifically on LNG bunkering vessel designs (see p14-15).

We firmly believe that this edition further demonstrates ClassNK's dedication to supporting the growth and development of waterborne shipping in all of its forms, and in the process of ensuring the safety of ships, crews and the environment to the benefit of the entire maritime industry.

A handwritten signature in black ink, appearing to read "Noboru Ueda".

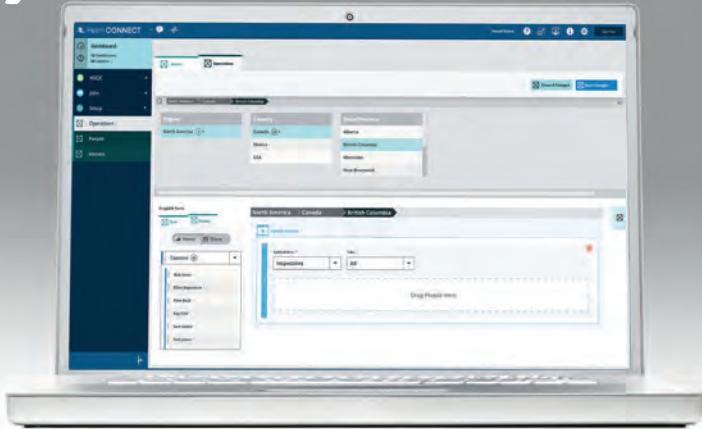
Noboru Ueda
Chairman and President of ClassNK

ClassNK

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ClassNK news

CLASSNK OFFERS PSC UPDATE

25 August 2014 - ClassNK has released its annual report on Port State Control. Port State Control (PSC) inspections have proved to be a highly effective tool for eliminating substandard ships that may be in operation, ensuring maritime safety as well as reducing maritime pollution. This report aims to provide the maritime industry with information about ships detained by PSC as well as deficiencies that were found on board from all port states around the world in 2013. The information provided in this report can be used to further increase awareness about PSC and their activities and improve ship maintenance, surveys and safety management systems.

RULES FOR INLAND SHIPS RELEASED

17 September 2014 - ClassNK has released new technical rules and guidance for the survey and construction of inland waterway ships. As a result of ClassNK's recent expansion of its global activities, in particular across South America, the number of inland waterway ships on the ClassNK register has continued to grow. In order to support this growing market and ensure the safety of the inland waterway fleet, ClassNK developed new Rules and Guidance for the Survey and Construction of Inland Waterway Ships to specify new requirements for the survey and construction of ships that navigate inland waterways. The requirements come into effect as of 17 September 2014, requiring all inland waterway ships registered with ClassNK to adhere to the new rules and guidance. *See full article, P21-22.*

SUPPORTING ENGINE MONITORING RESEARCH

28 August 2014 - ClassNK has announced that it will embark on a joint research project together with Daihatsu Diesel Mfg. Co., Ltd. (President: Takeshi Harada). ClassNK will support research that tests the extensibility of the condition based monitoring system and automatic diagnostic system "ClassNK CMAXS LC-A" for auxiliary diesel engines manufactured by Daihatsu Diesel Mfg. Co., Ltd. The aim of this joint project is to test the extensibility of "ClassNK CMAXS LC-A", a cloud-based machinery maintenance system that uses sophisticated analysis software to analyze sensor data obtained in the engine room for automatic condition diagnoses and to detect any early signs of damage to auxiliary equipment.

MOL COMFORT REPORT PUBLISHED

30 September 2014 - In response to the *MOL Comfort* casualty which occurred on 17 June 2013, ClassNK established the Investigative Panel on Large Container Ship Safety, comprised of leading experts from shipbuilders, shipowners and academic institutions, to carry out the following course of action:
(1) Investigate the possibility of casualty occurrence
(2) Consider and examine safety of large container ship structure
The findings and outcomes of the panel have been consolidated into a report, which is available to download in both English and Japanese via the website below:
www.classnk.or.jp/hp/en/hp_news.aspx?id=1100&type=press_release&layout=1

CFRP PROPELLER FIRST

29 August 2014 - ClassNK and Nakashima Propeller Co., Ltd have announced the world's first installation of a carbon fiber reinforced plastic (CFRP) propeller on the main propulsion system of a merchant vessel. The CFRP propeller was installed on the *Taiko Maru*, a domestic 499 GT chemical tanker owned by Sowa Kaiun YK by Marugame-based Koa industry Co., Ltd. in May 2014. During sea trials the CFRP required 9% less horsepower to operate compared to conventional aluminum-bronze propellers, and expansion

of their use on merchant vessels is expected to contribute to better fuel economy and greater efficiency in operations. As part of its contribution to the project, ClassNK carried out rigorous fatigue testing and material testing to assess the basic mechanical properties of the propeller, as well as conducted static load testing on full-scale propeller blades to determine the adaptability of the propeller for marine-use prior to approving the CFRP propeller for use as part of the merchant vessel's main propulsion system.

CLASSNK FOCUS ON BULK CARRIER SAFETY

10 September 2014 - ClassNK has announced that it will join a new European Joint R&D project to ensure bulk carrier safety. The project, called LiquefAction, aims to better understand the physical properties of cargo liquefaction in order to prevent bulk carrier casualties and is being carried out by a consortium of Europe's top research institutions, including Germany's Hamburgische Schiffbau-Versuchsanstalt (HSVA) and Hamburg University of Technology (TUHH), as well as France's Ecole Centrale de Nantes (ECN) and the Institute of Science and Technology for Transport, Development and Networks (IFSTTAR), with support from German shipowner Oldendorff Carriers. ClassNK is the world's leading classification society in the dry bulk sector, providing survey and classification services to more than one third of the world's bulk carrier fleet. The society has been widely recognized for its work related to the safe transport of nickel ore, which BIMCO and other industry groups have named the "world's most dangerous cargo." ClassNK Chairman and President Noboru Ueda said: "Our goal is to support the safe growth and development of the maritime industry, not only in Japan or Asia, but in Europe and all around the

world. We opened our Survey Operations Headquarters here in Hamburg not only to better support shipowners in the region – but also to better provide the knowledge and resources to address the many challenges we face as an industry. With this project we are one step closer to achieving that goal."



ClassNK announces its participation in the LiquefAction project in Hamburg. (Pictured left to right) Mr. Marco Schneider, Project Manager, CFD, HSVA, Mr. Noboru Ueda, Chairman and President, ClassNK, Mr. Yasushi Nakamura, Executive Vice President, ClassNK, Dr. Jean-Marc Rousset, Researcher, Ecole Centrale de Nantes, Capt. Herman Visser, Oldendorff Carriers

EEDI VERIFICATION SOFTWARE UPDATED

22 September 2014 - ClassNK has released the latest version of its PrimeShip-GREEN/MinPower software. The software was originally developed by ClassNK and released in April 2014 to help shipyards comply with amendments to MARPOL Annex VI, specifically EEDI requirements, by calculating minimum propulsion power requirements in compliance with the IMO 2013 INTERIM GUIDELINES FOR DETERMINING MINIMUM PROPULSION POWER TO MAINTAIN THE MANOEUVRABILITY OF SHIPS IN ADVERSE CONDITIONS. With this updated software, users will now be able to calculate the added resistance in irregular waves, allowing for minimum propulsion power re-

quirements to be determined to an even greater accuracy. To evaluate the minimum propulsion power requirement, added resistance in irregular waves must be calculated with ship's lines. ClassNK incorporated a new calculation module into the software to calculate the added resistance in irregular waves accurately developed by National Maritime Research Institute of Japan in addition to simplified formula for calculating added resistance in waves using only basic information. The PrimeShip-GREEN/MinPower software is provided to shipyards free of charge. Application forms can be downloaded from website: www.classnk.or.jp/hp/en/activities/primeship/index.html

NEW DEPARTMENT FOR RENEWABLES

1 October 2014 - ClassNK has announced the establishment of a new Renewable Energy Department. This new department which began operations on 1 October 2014 will oversee a diverse range of activities related to renewable energy, including audits and certification of new technologies. While ClassNK has previously provided certification for wind turbines, vast technological advances have made

it possible to practically harness the power of alternative energy sources such as wave power, tidal power, and ocean thermal energy conversion. The new department will provide technical and certification services for a wide variety of renewable energy production facilities, ensuring that ClassNK's high certification standards contribute to their safe development and practical application.

ClassNK news

AUTHORIZATION FROM CANADIAN FLAG

9 October 2014 - ClassNK has received authorization from Transport Canada to carry out statutory surveys on Canadian-flagged vessels on behalf of the Government of Canada. Speaking on the occasion, Chairman and President Noboru Ueda said: "This authorization reflects the rapid growth of our activities in North America and in Canada in particular. We have provided survey and certification services for many of Canada's leading shipowners for decades now, and we have consistently increased our resources in the region to support the growth of the local industry. This authorization represents the next step in our expansion here in Canada and will allow us to further expand the range of services we can offer Canadian shipowners and operators".

EEDI CERTIFICATION FOR MALS-EQUIPPED HARVEST FROST

29 October 2014 - ClassNK announced that it has completed the EEDI appraisal of *Harvest Frost*, the world's first post-panamax bulk carrier fitted with the Mitsubishi Air Lubrication System (MALS). The ship was constructed by Oshima Shipbuilding Co., Ltd. for ADM Harvest Shipping in accordance to ClassNK rules and guidance. Developed by Mitsubishi Heavy Industries with support of ClassNK's Joint R&D for Industry Program, MALS uses specialized blowers to create a layer of bubbles that flow along the bottom of a hull to improve fuel efficiency by reducing frictional resistance. The appraisal and certification of the EEDI of the MALS-equipped *Harvest Frost* is understood to be the first time that the effect of such an innovative technology has been evaluated as part of a vessel's EEDI.



GUIDELINES FOR EXHAUST GAS CLEANING SYSTEMS

17 October 2014 - ClassNK announced that it has released *Guidelines for Exhaust Gas Cleaning Systems*. These guidelines cover class safety requirements as well as safety requirements stipulated in the IMO guidelines. The easy-to-understand guidelines also compile the relevant safety requirements and other essential information related to the installation and operation of such systems. The Guidelines for Exhaust Gas Cleaning Systems are available free of charge via ClassNK's website www.classnk.com for those who have registered for the ClassNK "My Page" service.

FEASIBILITY STUDY FOR SINGAPORE TESTING FACILITY



30 October 2014 - ClassNK announced the launch of a new feasibility study for a new marine renewable energy testing facility to be built in Singapore. The study will pave the way for the establishment of the world's first marine renewable energy testing facility to be located in the tropics. The new study will assess the feasibility of establishing a testing facility for 1/5-1/10 scale tidal wave generator systems in the waters off the coast of Singapore, including surveys of tidal forces, as well as environmental and operational viability assessments. This work will be carried out by a consortium led by ClassNK and the Energy Research Institute @ Nanyang Technical University (ERI@N), with support from other leading research institutes and consultants including the European Marine Energy Centre (EMEC), Denmark-based water and environment consultants DHI, and oil, gas and mining infrastructure development specialists Fugro. By verifying the feasibility and practicality of the new testing facility as a third party certification body ClassNK hopes to help contribute to the widespread development and use of new marine renewable energy technology.

Helm joins ClassNK

ClassNK's commitment to supporting the maritime industry with software tools and technology to improve safety and operational efficiency prompted the acquisition of Helm Operations in June.

Founded in 1999, Canada-based Helm has become a leading provider of manning, maintenance, dispatch and HSQE (Health, Safety, Quality, and Environment) software to the workboat and offshore industry. The company, based in Victoria, creates intuitive and user-friendly technology that is currently used on around 1,000 vessels belonging to some of the most respected workboat companies in the world.

ClassNK's acquisition of Helm is significant for both parties and the industry as a whole. The two companies share a belief in the role intuitive and easy-to-use technology can play in enhancing both safety and efficiency.

Following the acquisition of NAPA earlier this year, purchasing Helm represents another step in ClassNK's over-arching strategy to develop world-class software platforms for the global maritime industry by bringing together a team of leading software companies from around the world.

For Helm, the benefits of the acquisition will be most readily seen through the accelerated development of Helm CONNECT for wider

HELM CONNECT AT A GLANCE

Helm CONNECT is a versatile and user-friendly web-based maritime compliance software system in which small applications or 'apps' can provide the information needed to solve any single problem at any time onboard and onshore.

The software is web-based, runs on most browsers and is optimized for tablets. It does not require the installation of any other software. Being workflow-based, it is intuitive.

Through Notifications, Feeds, Gamification and a Crew Portal, Helm CONNECT maximizes involvement of an entire team in the function of their day-to-day activities, as well as improving data and reporting.

The platform includes Helm CONNECT HSQE suite, which compiles, manages and reports complex safety and compliance information – includes Helm CONNECT Inspections, Helm CONNECT Maintenance and Helm CONNECT Actions.



ClassNK Representative Director and Executive Vice President Yasushi Nakamura and Helm Operations Founder and CEO Ron de Bruyne

use by the maritime industry. Helm CONNECT is the workboat industry's first app-based, web-based, workflow-based software system and has been designed based on the user experience principle.

ClassNK believes Helm is distinguished from the competition by a unique combination of software developing talent and its impressive culture of innovation, and by its in-depth knowledge of the maritime industry. As a result, ClassNK is convinced that Helm CONNECT is not only the best system available in the market but that Helm's development approach is the best for the wider maritime industry.

This new partnership will provide Helm with global resources and reach to develop Helm CONNECT further, not only as a tool to improve HSQE and operations for inland vessels, but also for ocean going vessels.. ClassNK is also considering how Helm CONNECT can be used to help streamline the survey and certification process, and enhance the potential for linking classification, owners and operators on a single platform.

ClassNK strongly believes that the role of a classification society is to support the maritime industry and the acquisition of Helm - in line with the earlier acquisitions of NAPA and SMS LLC – fulfils that goal. More than just expanding its own services, the acquisitions provide ClassNK's daughter companies with the resources and guidance to improve the services they offer to the maritime industry and make them available to shipyards, owners and operators around the world.

Interview: Yasushi Nakamura

A natural connection

The Helm acquisition will strengthen the collaboration between ClassNK and Helm in the years to come whilst providing world-class software solutions to the global maritime industry.



Yasushi Nakamura, Representative Director and Executive Vice President, ClassNK

How does the new partnership with Canada-based maritime software company Helm Operations fit into the wider Society strategy?

ClassNK is dedicated to supporting the maritime industry, including inland, coastal shipping, and the workboat industry around the world. Providing shipowners with the software tools and technology to make their operations safer, easier and more efficient is part of that mission.

We have worked with many companies over the years and, as we came to know Helm, we realized that they were making great software that was of incredible value to the work-

boat and OSV industries, and that we shared a similar commitment to supporting the maritime industry as a whole. Once we saw that natural connection, we began looking at a potential partnership and how we could help each other expand our activities.

We share the belief that intuitive easy-to-use software can contribute greatly to the safety and efficiency of the maritime industry. We also share a common vision for the development of the Helm CONNECT software - to provide a world-class software solution to the entire maritime industry. We believe that Helm's user experience based approach to software development ensures that their software is not only functional but also practical.

How long have the two companies known and cooperated with each other?

ClassNK has known Helm for several years both independently and through our work with the American Waterways Operators, the association of leading American coastal and inland ship operators and shipowners. Over that time we saw Helm move from supporting local and regional workboat owners, to being chosen by some of the world's largest workboat and offshore companies; all based on the strength of their software and development approach.

How does this acquisition sustain the role and neutrality of classification societies in supporting the global shipowning community?

As a classification society we believe one of our roles is to provide the maritime industry with the tools and services necessary to operate vessels safely and efficiently.

We believe these services should be made available to the

entire industry and that is why Helm will continue to operate as an independent company, and its software will remain available to all regardless of class, shipyard or owner. Helm's client data and sensitive information will also remain confidential to ClassNK, ensuring that Helm's current and future clients will continue to enjoy the same level of confidentiality when using Helm CONNECT and other Helm developed solutions.

Why Helm? And what key elements differentiate the company from its competitors?

At ClassNK we have worked with an incredible number of software companies over the years, from IT majors like IBM to small start-ups, and are regularly invited to consider investments in companies or joint ventures.

While we have acquired companies over the past two years, namely NAPA and SMS LLC, it has always been a very careful process and the companies we acquire always fit a set of very strict criteria.

In Helm we see an incredible combination of software developing talent and an impressive culture of innovation with deep experience in the maritime industry. The result of this combination is Helm CONNECT, a software which we think has an incredible potential in this industry. There are many companies producing similar systems, but we think that Helm CONNECT is not only the best system on the market but also that its development approach is the best for the maritime industry.

As is the case with NAPA, Helm shares a common approach to our work and a common vision – it's a very natural fit – and there is no other company in this field that we would have considered acquiring.

How does the Helm acquisition fit with ClassNK's earlier acquisitions of SMS LLC and NAPA?

As we have shown with our acquisition of both SMS LLC and NAPA, we are not buying companies just to merge them together. We are selecting very carefully a team of top companies from around the world to provide the best possible software and services to the maritime industry.

The acquisition of Helm, as with the past two acquisitions, is all about expanding the services we can provide to the

industry – while providing each of our daughter companies with the resources and guidance needed to achieve even greater success and make an even greater impact on the maritime industry.

How will this acquisition help improve NK's services?

At ClassNK we have always seen our mission as to support the development of the global maritime industry. As we have expanded our operations around the world, we have also developed our services to support a wider variety of vessels, including the inland shipping, harbor towing and offshore markets.

In Helm we see an incredible combination of software developing talent and an impressive culture of innovation

With our purchase of SMS LLC last year, we began laying the groundwork to support the North American inland shipping industry as it implements new safety management regulations; with the acquisition of Helm we are further expanding the range of services that we can provide to that important sector, as well as the offshore and harbor towing sectors of the world.

Helm CONNECT is a product developed through crew and shore-based team consultations. How can a higher level of communication throughout the team increase safety and efficiency throughout a company?

Effective communication is vital for the success of any organization. This is especially true for HSQE (Health, Safety, Quality, and Environment), where communication is not only essential for compliance but to ensure the safety of the ship's crew and the ship's operations

Helm CONNECT makes it possible to comprehensively manage HSQE work processes, such as inspections and maintenance, in real-time. The ability to share information in real-time allows both crew and shore-based staff to send reports and updates, with feeds keeping managers informed

Special feature - Helm acquisition

of every significant event that occurs on each ship. Helm CONNECT's simple and straightforward reporting process means that crew can complete and send reports in a matter of minutes, greatly increasing the efficiency of operations. Managers can then see what needs to be done to prevent any potential accidents which could cause time losses, or in the worst scenario, serious injuries.

How can improved data and reporting allow crew and captain to make better decisions for the company?

With Helm CONNECT users get greater transparency in day-to-day operations on boat and onshore. With access to extensive data and records at their fingertips, captains and shore side staff have all the information they need to make informed decisions in a timely manner. As Helm CONNECT stores data locally, information can be accessed even when offline, ensuring that captains have access no matter what the situation.

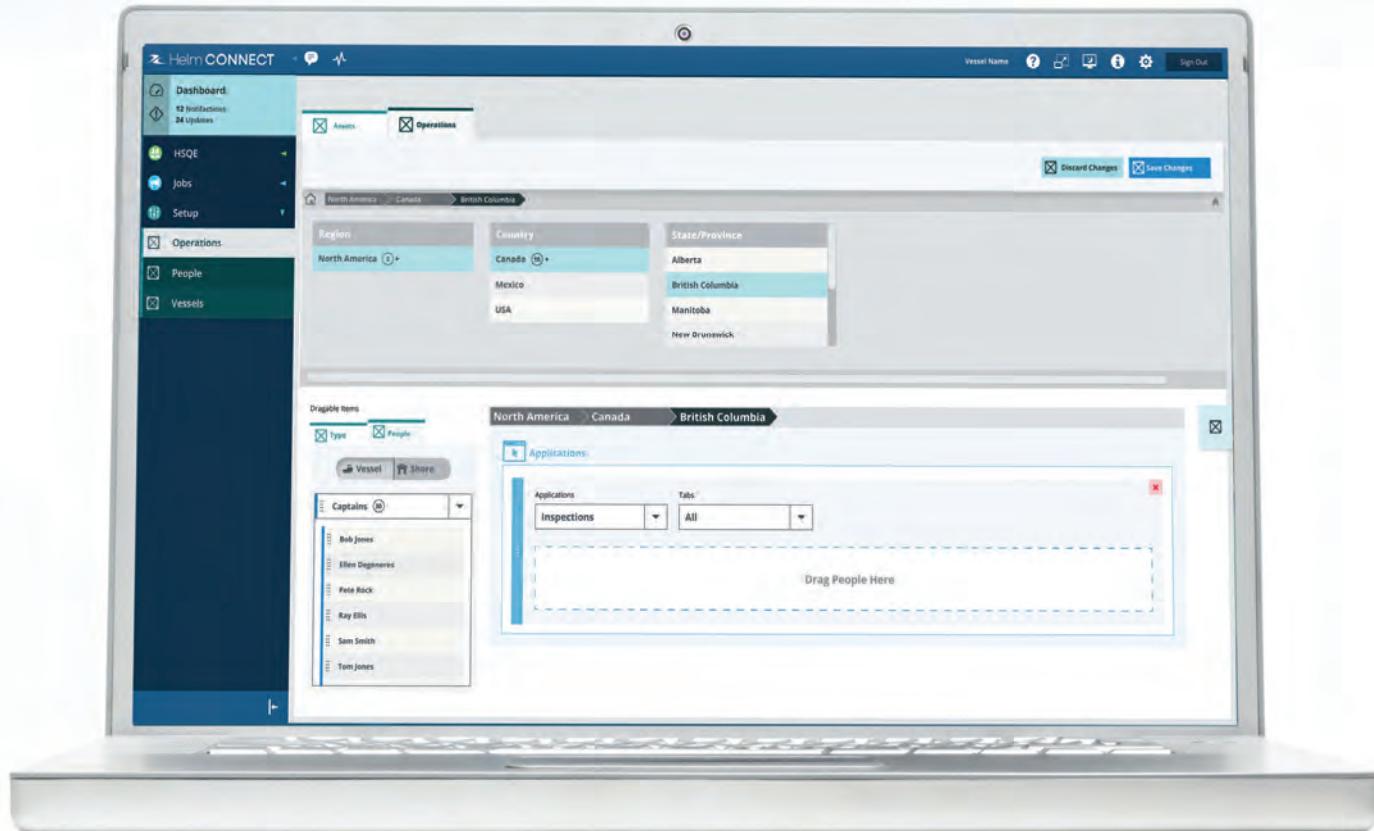
How do you see the Helm platform improving vessel surveys and the certification process in line with the variety of international conventions that the maritime industry needs to face?

We are incredibly impressed by the quality and usability of Helm CONNECT, and think that its use can be expanded across a much wider spectrum of the maritime industry – including the potential for use in auditing as well as survey work. One key aspect of Helm CONNECT is that it is also a database which contains vast amounts of information on each vessel in a fleet. We think that linking classification with owners and operators on a single platform would be incredibly beneficial for the entire maritime industry, and that is definitely an area we intend to explore further in the future.

What are your plans for Helm's future and how will ClassNK be supporting its development efforts?

While Helm will continue to operate independently, ClassNK is devoting resources to expand the scope of these operations, and the further development of Helm CONNECT.

We believe Helm CONNECT has the potential to become the de facto standard for HSQE and vessel management across the maritime industry and that is why we are supporting Helm's efforts to expand Helm CONNECT to a wider variety of vessels as well as to shipowners and operators around the world.



Interview: Ron deBruyne: Next step to CONNECT



Ron de Bruyne, CEO and Founder, Helm Operations
talks about the new partnership with ClassNK

What opportunities does the partnership with ClassNK open for your tech community and what benefits will it bring to the global maritime industry?

The acquisition of Helm Operations by ClassNK opens up new extensive opportunities for our Canada-based software company. The main one is that it will allow us to enter into a new potential market and expand the use of our software to the global shipping industry.

We are aware that this industry is based on trust and is all about building and maintaining the confidence of clients. Therefore, we are very excited about the partnership with ClassNK because it will give us the opportunity to start strong relationships with workboat companies across the world and expand our business from a regional North American hub to a well-respected global group.

At the same time, we are convinced that the whole maritime industry can capitalize on the cooperation between Helm and ClassNK. The barriers of this sector to the efficient use of technology are well-known and the industry needs a software that can make procedures more intuitive and easy to accomplish.

Workboat companies often use very complex software which is likely to be under-used by their crew simply because they do not know how to use it properly; this means that companies investing in technology face add-on costs when it comes to implementation and training. That is why we designed Helm CONNECT on user experience principles; it is an intuitive, app-based, web-based easy-to-use software system that can greatly contribute to the safety and efficiency of the maritime industry.

On the other hand, we also believe that the change in the regulatory environment could make workboat companies require class societies to support their safety management system. As ClassNK begins laying the groundwork to support the North American brown water industry, we believe that Helm can help the expansion of the Society's services in this region. We have many large brown water operator customers, including Florida Marine Transporters (FMT), Enterprise Marine, and Blessey Marine, and we are delighted to introduce them to ClassNK.

ClassNK very much respects your achievements. Can you explain from your own point of view why you believe your talent and company culture suit the maritime industry?

At Helm we measure our achievements internally and we have the data that can demonstrate why our innovative culture is the best for the maritime industry. We develop our software in such a way that we bring individual customers together to discuss workflows so that we can map them out. This is a pivotal moment in the design process of Helm CONNECT because it anticipates the customer's demands and so achieves customer satisfaction on implementation.

Once we have mapped, designed and tested a customer's workflows, we start the development of a step by step process to create standardized single apps that can solve specific problems (e.g. Maintenance, Repair or Inspections), meaning that a workboat company only buys solutions for areas that are essential for them.

Special feature - Helm acquisition

The apps effectively act as a guide for users because they are broken down into simple components using simple language. This means that the user does not need to remember where to go or how to complete a task because with Helm CONNECT as the guide, the next steps are obvious.

What we want to bring to the shipping industry is simplicity for the end-user. We also strongly believe that software does not need to cost a fortune to get started and the best benefit it can bring to a company is the peace of mind that crew members understand how to use it.

How do you think your software platform can support the safety of merchant vessels at sea and their crews, whilst protecting the marine environment?

As we develop our software by mapping and testing our users' workflow, training time is drastically reduced. Another advantage is that all the Helm CONNECT apps are designed in the same way, so that once you have learned how to use an app you easily get to know how to use the others.

With user friendly software, people feel more engaged and they use the software more. By increasing communication and efficiency throughout the company, Helm CONNECT involves the team in the function of their day-to-day activities as well as making more data available and improving reporting activities.

The simplicity of the system is what will ultimately support the safety of merchant vessels and their crew. Making safety practices part of the activity promotes awareness and ensures that a vessel is operating with respect to its safety management system.

Do operators of seagoing vessels have lessons to learn from the application of your solutions in the inland and offshore sectors? What are they?

One lesson we want to share with them is that once installed on board, our system is easy and ready to be used. Our software is like an iPhone: everyone knows how to use it but it is actually a complex device which stores multiple data for better reporting. Because Helm CONNECT's apps are all workflow-based, people will never have to figure out what to do next.

How does Helm monetize its software offering? By license? Per ship? Per user? How do owners guarantee that charging

is transparent, in order to measure your solution against alternatives?

Our goal is to offer transparent pricing to our customers. Whilst many other software companies would charge by [vessel] foot, we charge per vessel per month. This allows our clients to understand clearly how much they pay.

One added benefit is that Helm CONNECT has an extensible application programming interface (API) that will allow for third party integration so that all of a customer's systems can talk to each other. This means that if customers want to customize or develop the software they can do it themselves or via a third party module.

Can you explain how Helm CONNECT can ease HSQE management for shipowners and operators?

Even though Helm CONNECT is web-based software, shipowners will not lose data if they lose a connection to the Internet. Helm CONNECT is built for disconnected use, so all data that goes into the system is automatically saved. Once there is a connection to the Internet again, all data in the system are then re-routed to their destination.

The software is easy to use, so owners can rest assured that it will be used in practice, while 'next step' guidance is explicit, which is particularly relevant in the HSQE management context.

We believe that data is the key: improved engagement means better data coming, better reporting going, which equals greater business intelligence and greater analysis of trends, which can contribute to increased safety practices.

Ensuring vessels comply with Port State Control (PSC) is a major issue for owners and operators across the board. How can Helm CONNECT HSQE contribute to PSC activities and inspections to verify transparency and compliance with international regulations?

Compliance in our industry is based on a very simple principle which is: "Say what you do, do what you say and prove it". In order to prove what you actually do, you need to make sure you have all information saved within a safe place. Our software system can help with this as our database enables the user to pull out any data, which makes it easy to find the information needed to prove compliance with international regulations.

By having all compliance data run through a database, Helm software can help in managing and reporting large amounts of complex safety and compliance information whilst increasing the transparency of the data.

How do you think ClassNK will help Helm develop?

We believe that ClassNK will give Helm access to global resources and global reach which in the end will support the development and promotion of Helm CONNECT as *the* software used by the maritime industry.

We think that ClassNK will help us achieve this by giving us the flexibility to improve the capabilities of the software so it can do whatever our customers want from their software system. Our core competency is in operations management software for maritime companies. But our software is built to be flexible to accommodate third party applications, just like an App store. For instance, third party developers can build software that is desired by the industry right into Helm CONNECT – applications like AIS Mapping or video-based training.

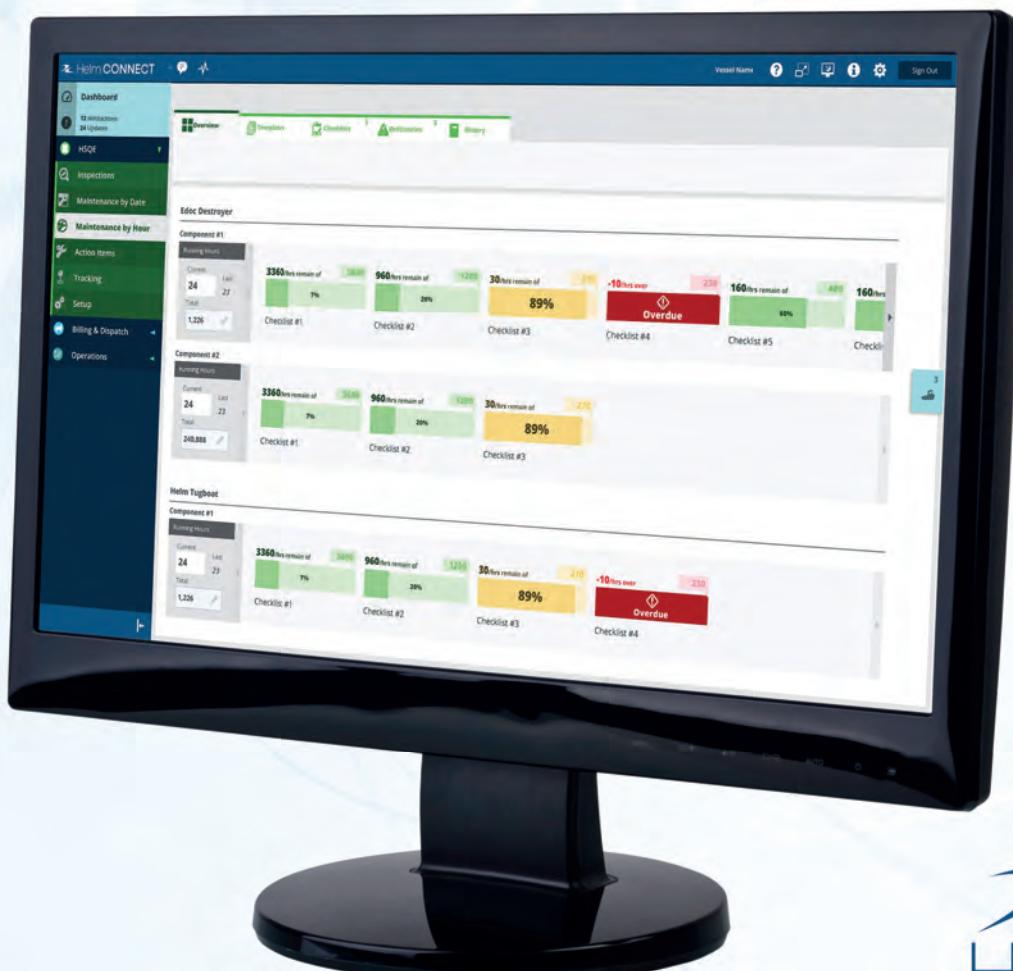
Helm CONNECT is designed to serve as the platform for all of these applications.

What practical steps in terms of geographic representation and technical support will the ClassNK takeover confer?

We have already been introduced to ClassNK's regional offices in North America, Singapore and Europe. Our company is already well-known in North America but we believe that the Society can introduce us to owners and operators located in those areas where Helm is not popular yet, such as the Middle East, Europe, Singapore and Southeast Asia.

How will Helm retain neutrality when it comes to supplying software to owners classed by other Classification Societies?

We believe that ClassNK is a very well respected name and we do not see any issue in respect of keeping neutrality when dealing with shipowners classed by other Classification Societies. Therefore, we can say that there is no cross-over with them.



Gas-fuelled ambition

More than 40 LNG fuelled ships have been built for worldwide operation, but LNG's wider adoption as a marine fuel will rely on rigorous oversight of design, safety and regulatory compliance.

The imminent arrival of Europe and North America's Emission Control Area (ECA) sulphur emissions limit of 0.1 percent on 1 January 2015 under IMO MARPOL Annex VI, and the prospect of global limits by 2020 has placed shipping under significant pressure on future fuel use.

Among the alternatives to heavy fuel oil, liquefied natural gas (LNG) reduces sulphur oxide (SO_x) emissions by almost 100 percent, whilst its lower carbon content enables a 20-25 percent reduction in carbon dioxide (CO_2) emissions.

The environmental case is increasingly supported by economic drivers. Natural gas prices fell roughly 50% between 2008 and 2013, according to International Monetary Fund figures. While subject to considerable variation over a comparable period, spot prices ex-Rotterdam for 380 cst Heavy Fuel Oil stood at \$603.50/t in March 2013, compared to \$344.50/t in 2007, according to the International Energy Agency.

To date, over 40 LNG fuelled ships have been built and operate worldwide, including coastal ferries, offshore support vessels, patrol vessels, chemical tankers and Ropax vessels. However, there are challenging barriers blocking shipowners from a wholesale switch to LNG as a marine fuel, not least of which are the massive costs involved in bringing the necessary bunkering infrastructure on stream.

The European Commission has offered significant support in port investment, in addition to subsidies released to shipowners via the TEN – T Programme that looks to unlock private investment. As of 1 July 2014, though, Port of Rotterdam was the only facility in Europe where vessels can bunker LNG. Looking ahead, its new Gate jetty and associated breakbulk facilities will provide up to 280 berthing slots per year when they are commissioned in the first half of 2016 to offer a full range of LNG supply options.

As the lack of infrastructure for LNG retailing and the limited number of LNG-fuelled vehicles creates a challenge, the emergence of an LNG market for marine and heavy-duty transport mainly depends on the fundamentals being in

place to break the stalemate. More particularly, countries with gas reserves have an interest to promote the use of LNG as fuel in order to benefit from their resources.

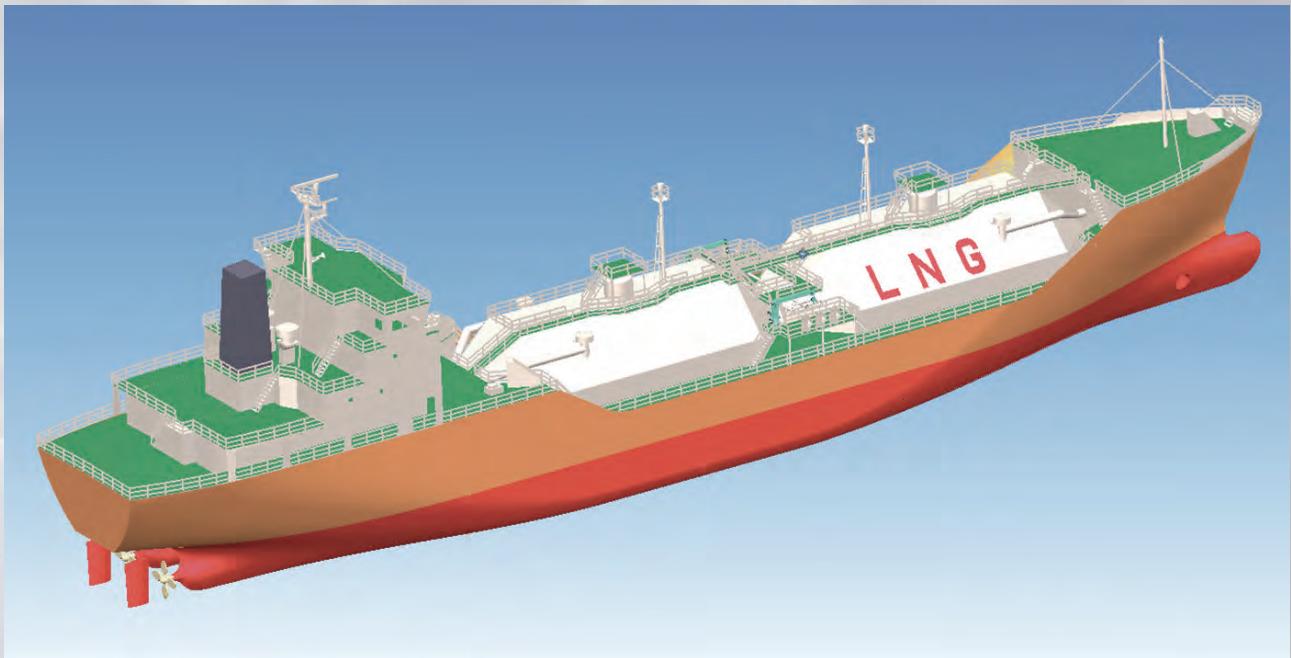
Other drivers are nonetheless changing attitudes to gas at a profound level. Exploitation of shale gas resources, for example, is transforming the US from a gas importer into a gas exporter. As a result, LNG bunker facilities are likely to be developed very quickly in North America. New York, Los Angeles, Seattle, Vancouver, Tacoma and the Great Lakes have already been identified as key locations for bunkering stations, although here too infrastructure investment for use by shipping is an issue.

In fact, however the dash for gas surfaces in the public conscience, it is fair to say that the bunkering of ships is still a very new way of using LNG that demands more than investor willingness. The safety issue - and specifically the development of regulations, codes and standards that apply to handling and storing LNG as a marine fuel – must be resolved in a way that makes use of LNG not only desirable, but also governable.

Given Japan's position as the world's largest LNG importer, ClassNK has long experience in the maritime transportation of LNG. It continues to play a leading role in both the development and the implementation of the new technologies that ensure safe and efficient use of LNG at sea.

ClassNK is the verifying third party behind what are acknowledged as some of the most forward-looking gas handling projects in the industry today. Exemplary has been the Society's research support and AIP (approval in principle) for the MODEC LiBro FLNG, Gas to Liquids FPSO unit.

"Japan will become more dependent on LNG to compensate for the loss of nuclear power. In 2020, the expectation is that 88.1 million tonnes of LNG will need to be imported," observes Hayato Suga, ClassNK Operating Officer and General Manager of the Natural Resources and Energy Department. "ClassNK is closely involved in all Government activities aimed at the early commercialization of LNG fuelled vessels



and is honored to be supporting the national research committee in evaluating safety measures. These include provisions for fuel itself, physical safety inspections of vessels, and the creation of guidelines of LNG bunkering and safety requirements for high pressure gas supply systems".

ClassNK is also at the heart of international efforts to guarantee the safety of ocean-going LNG fuelled vessels and the associated supply infrastructure. The Society is engaged in the ongoing discussion at IMO to finalize the International Code of Safety for Ships using Gases or Other Low-Flash Point Fuels (IGF Code), and chairs Japan's own research committee responsible for reviewing and developing national policy related to the new code.

"We believe LNG will become one of the main marine fuels of choice in the coming years," says Mr. Suga. "Therefore, it is imperative that shipyards and designers understand the requirements proposed as part of the IGF Code. With this in mind, ClassNK released its new edition of *Guidelines for Gas Fuelled Ships* in December 2013 to reflect the discussions on the IGF Code as well as the development of new technologies".

While small LNG fuelled vessels are already being built for use in regional and short range shipping, many technical issues still need to be addressed in order to expand the use of LNG to a wider variety of vessels and operating conditions. In addition to its regulatory role, ClassNK is working both independently and with industry partners to carry out the research that will make wider adoption possible. Its projects range from general topics, such as the commercial viability

of ocean going LNG vessels and the development of bunkering vessel designs, to the particulars of the feasibility studies of LNG fuel tank materials.

For instance, the Society and its partners are currently studying the principal design of a small scale LNG carrier and bunkering ship with a Dual Fuel engine and aims to develop a vessel that is gas-fuelled, operates with electrical propulsion and also satisfies the requirements of LNG bunkering. With an LNG cargo tank capacity of 3,500m³ in total, the ship can be used for short-distance LNG transportation. The small LNG carrier could transport LNG from Tokyo Bay to Hokkaido, for example, covering approximately 600 nautical miles at a speed of 13.0kt, with the complete cargo unloading operation taking approximately three hours.

"The past few years have seen a growing interest of LNG as marine fuel and IMO regulations provide a watershed moment for LNG demand from the shipping industry," says Mr. Suga. "As the deadline of January 2015 fast approaches, the question is no longer related to LNG as a potential solution but rather how to best introduce LNG as a preferred fuel, and how to make the switch to LNG workable.

"Based on many years of experience, ClassNK is supporting the concrete development of a variety of new technologies related to the maritime transportation and offshore production of LNG, as well as the use of this gas as marine fuel. Now and in the future, ClassNK will continue to dedicate its resources to the further development of new technologies for the benefit of the entire maritime and offshore LNG industries."

Big Easy puts in hard yards

ClassNK's 35% share of the registered bulk carrier fleet worldwide is three times that of its nearest Class Society rival. As well as expertise, the position demands readiness for regulatory change.

The US Coast Guard's 'Subchapter M' vessel safety and inspection rules for inland operations are set for finalisation in March 2015, bringing a long-anticipated regulatory regime for which ClassNK has been preparing a coordinated response since 2009. Dry bulk trades are the largest contributor to cargo exports through the US inland waterway system.

The 2015 finalization of 'Subchapter M' will, in fact, coincide with the 50th anniversary of ClassNK activities in New Orleans, the US port whose location at the mouth of the Mississippi is emblematic of US inland waterway operations. According to industry organization The American Waterways Operators, the US inland sector is served by 4,000 tugboats and towboats and more than 27,000 barges, and moves more than 800 million tons of America's commerce each year on inland and intra-coastal waterways.

In North America as a whole, ClassNK surveyors annually carry out more than 1,000 surveys and audits, serving not only the U.S. Coast Guard and U.S. flag interests, but also more than 100 different foreign governments.

In New Orleans, for the past 50 years, ClassNK's local role has been sea-facing, with the regional office responsible for around 300 ship surveys a year right across the Central US Gulf region, taking in Louisiana, Mississippi, Alabama and the Western Florida panhandle. However, the regional office has inevitably focused on the ships loading exports along the Mississippi River itself, and in particular the stretch covering Baton Rouge south to New Orleans south to mouth.

Established only three years after the Society's first US operation in New York, ClassNK New Orleans is by no means unique among ClassNK's nine survey offices in North America in being able to claim continuity in its relations with Tokyo based on family ties. C Ronald Riemer, General Manager, New Orleans,

ClassNK, believes that being "brought up in the local surveying and auditing business" has brought invaluable experience when it comes to facilitating entry into force of new maritime regulations. A high proportion of exports through New Orleans and its surrounding berths consist of agricultural products, moving to Asia on Asian ships. "This office is well grounded in the bulk carrier type ship/trade - the type of ship that constitutes the vast majority of our surveys," says Mr Riemer.

"Keeping pace with the survey demand of the ever increasing ClassNK fleet at the busy Port of New Orleans/Mississippi River and surrounding central US gulf region has been a challenge in itself. Add to that the number of SOLAS and MARPOL amendments, the introduction of the ISM/ISPS Code and the revised Convention on STCW, and it is fair to say we have never been short of work."

Last year, ClassNK received expanded authorization from the US Coast Guard (USCG), through which it can carry out a full range of SOLAS, MARPOL and AFS conventions, as well as ISM Audits on behalf of the United States flag administration. This sees ClassNK expanding its business to cover domestic and offshore shipowners, as well at the international sector it traditionally covers.

"For this office, the USCG authorization ClassNK received reinforces its sound reputation with local USCG/PSC," says Mr Riemer. "Secondly, it adds marketability to the local US customer base of OSV/Offshore support fleets/companies. It should also have resonance among the regional workboat companies"

Mr Riemer also believes that experience of change by the New Orleans operation through a period of growing responsibility positions the local office to respond effectively and sure-footedly to any disquiet arising from the introduction of Subchapter M.



Subchapter M instigates a new, comprehensive inspection, standards, and safety management regime for inland towing vessels. Not only does it call for each vessel operator to develop a Towing Safety Management System; it envisages enforcement and certification by third-party auditors and surveyors. For the moment, only Class Societies have been explicitly mentioned.

Operators who have voluntarily adopted an audited plan that passes the International Safety Management Code guidelines will automatically be compliant. ClassNK was deeply involved with the development ISM Code, and annually conducts more than 3,000 vessel ISM audits.

The roots of Subchapter M can be traced to the 1993 collision of the towboat MAUVILLA with the Bayou Canot Railroad Bridge on the Mobile River, which resulted in 47 deaths and 103 injuries when the bridge collapsed. Subsequent progress towards stricter regulation has been glacial, even though incidents fuelling a mood for change are not infrequent.

Mr Riemer cites a recent collision when a tanker hit a tanker barge, with the latter breaking in two and sinking, spilling 283,000 gallons of fuel and closing 100 miles of the river, including New Orleans, for six days.

"New Orleans is a hub in the entire US waterway system and, with surveyors along over 200 miles of the Mississippi River, it is not possible to avoid having a view of the current situation," he says. "Collisions involving inland vessels are not uncommon and, on top of the safety and pollution issues around any incident, having to shut down a waterway like the Mississippi for a week is an economic catastrophe. That, in particular, is why the new oversight is coming down."

ClassNK can play a pivotal role in easing adoption of the new regime by the inland sector, he says. "The rigor of approach developed for the blue water bulk trades will be of particular value as it comes into force for brown water operations around New Orleans.

"We are aware that inland operations are a distinct industry. However, staff at this office have a credible background in the sector. Vessel inspections are standard practice along the wa-

terway system, of course, but we believe we have a great deal to offer as the sector moves from self-policing to hard regulatory oversight, and into a new and harmonized safety culture.

"All of our surveyors are not only trained to conduct ship surveys but also ISM, ISPS, and MLC audits. The addition of Subchapter M audits and implementations to that suite of services is a natural follow-on."

The local knowledge is being fully supported from the center. ClassNK has been developing new updated training programs to ensure its surveyors effectively translate their extensive experience in ISM/ISPS safety and security management certification to assist the brown water industry when the new Subchapter M regulation comes into effect.

Mr Riemer adds that, while his own focus necessarily remains at the sharp end of Class surveying and auditing, he sees valuable synergies with the recent acquisitions made by ClassNK in the run up to Subchapter M's finalization. The recent acquisitions of Maine-based SMSLLC and software specialist Helm Operations, of Canada, both bring new expertise to the Society's offering, as well as yielding mutually beneficial business opportunities.

"Helm's customer base adds an avenue of referral to US-flagged/inland fleet/Subchapter M business as a Recognized Organization/consultancy. Safety Management Systems could most immediately offer ClassNK customers in-house audit services for routine Internal Audits and on demand basis for PSC matters, but we also foresee them as the foundation/facilitation into inland fleet/Sub Chap M business.

"We know that inland operations are different and involve a different mind-set and different risks from the blue water sector," he says. "But we also know that we have impeccable relations with the Coast Guard and, if a pilot reports a mishap to them for example, it is part of our everyday business to work hand in hand with the Coast Guard to ensure that the vessel gets underway safely, as seamlessly as possible. This, along with our expertise – not least in bulk carriers – is part of the experience and understanding that we hope to offer to owners and operators along US rivers."



Expanding in South America

With the aim to increase its presence in the emergent South American market, ClassNK continues to assist the development of the shipping industry in Brazil and throughout the region.

Despite slower than anticipated growth in 2014, Brazil's emergence as the seventh largest economy in the world by Gross Domestic Product, and the continuing drive to exploit its massive oil and gas reserves are having a considerable impact on the shipping industry.

Rapid expansion has brought demand for offshore oil production, in turn stimulating demand for oil tankers, drill ships and new support vessels. At the same time, new field development off Rio de Janeiro has given impetus for the refurbishment of shipyards in Brazil, in addition to driving semi-state controlled energy company Petrobras in its ambitions to control a 700-ship strong fleet by 2020.

With a history in the Brazilian shipping sector spanning more than 30 years, ClassNK opened its first office on 1 October

1980 in Rio de Janeiro and became a well-established regional organization with more than 10 exclusive offices throughout its South American service network. The ClassNK commitment to providing quality services to South American maritime communities was most recently recognized by the Paraguayan government, which granted the Society authorization to carry out surveys on its behalf.

In line with this regional expansion, one of ClassNK's primary medium term goals is to bring its share of the South American market into line with its global position. In addition to Rio de Janeiro, ClassNK has two exclusive survey offices in strategic cities of Brazil: one is in Santos, the busiest container port in Latin America; the other is the recently opened office in Belem, the second largest city in northern Brazil. Located adja-

cent to the Para River, whose mouth joins the Amazon River, Belem is also one of the largest and busiest ports in the region. Over recent years, it has played a significant role in the growth of export volumes of aluminium, iron ore and other metals from the Amazon region.

With the establishment of the new Brazilian office, ClassNK now operates a global service network of 130 exclusive survey offices, and ClassNK believes Belem's strategic location will allow the Society to respond swiftly to clients across the northeast of the continent as well as helping to improve the scope of ClassNK activities throughout Brazil.

The extended commitment demonstrates ClassNK's strong conviction that it has a major contribution to make to regional shipbuilding, and in supporting those overseas investors who partner Brazilian interests as part of local content requirements. As an international classification society, ClassNK can provide technical expertise in the construction and survey of offshore platforms, and is also authorized by the Government of Brazil to provide local content certification.

As well as representing a new market for providing certification services, developing new production offshore platforms demands the type of technical expertise that takes in forward-looking technical solutions. ClassNK believes its

extensive CV as a partner in relevant joint research and development projects will offer a platform on which to build wider confidence in the Society within Brazil's offshore industry.

ClassNK's regional growth and its commitment to serving the local maritime communities is certainly the key driver for newly appointed ClassNK Regional Manager of South America, Mr. Daikichi Nomura.

"The appointment of a Regional Manager in South America is a clear signal to this market that the Society is fully aware of its importance in the global maritime industry. My main role as Regional Manager can be summed up as acting as the direct connection between key players in the local maritime community and the Society, in addition to supporting all of the regional General Managers in their activities.

"ClassNK has three management offices in South America, located in Brazil, Argentina and Chile, and these operated independently until the establishing of this position. However, in order to achieve real success in the inland waterways sector, which is rapidly gaining momentum worldwide and particularly in this area, it is essential for each office to work together towards a common goal, and my role must be to act as the coordinator of these activities to facilitate borderless operations throughout South America."

Forte de Sao Felipe

Photo courtesy of Empresa de Navegação Elcano S.A.



In Brazil itself, ClassNK is fully authorized to act on behalf of the Brazilian Maritime Authority for surveys, inspections and for the provision of all certification services related to both ISM and ISPS Codes. The Society is also authorized to act on behalf of the National Agency of Petroleum, Natural Gas and Biofuels - ANP – for providing services of local content certification.

As part of an unfolding strategy to establish a network of offices across the country, the Belem Office currently acts as an outpost for the Rio de Janeiro Office, but its impact is already being felt in terms of geographic reach.

"Through this office we can dispatch a surveyor without delay to several remote locations that are otherwise difficult to access. Moreover, its location has been selected in anticipation of a growing demand for technical services in the Amazon Basin", says Mr. Nomura.

Mr. Nomura, who arrived in Rio de Janeiro in late July, only three months after the opening of the new Belem Office, has quickly made contacts with the local shipping community. His role also involves coordination of an existing project for the Brazilian market, through which the Society is providing classification services covering the construction of five AFRAMAX tankers that are to commence next year.

He adds: "Considering the 'hot' demand expected for OSVs in Brazil to support the development of its Exploration and Production (E&P) programs in ultra-deep waters, we are now looking for opportunities to provide classification services in the Brazilian market, and ClassNK is continuously working on joint Research and Development (R&D) projects with the industry for new technologies in this sector."

In light of the rapid expansion of inland waterway transportation across Latin America, the Society recently released new *Rules and Guidance for the Survey and Construction of Inland Waterway Ships* (see p21-22).

We can dispatch a surveyor without delay to several remote locations that are otherwise difficult to access

"This covers safety and structural requirements for pushers, tugs, and barges in a single convenient document to provide our clients in this important sector with a straightforward way of ensuring the safety of their ships. Through these rules and guidelines we can facilitate the rapidly growing number of orders for barges, tugs and pushers by ensuring their safe design and construction."

For many years providing class surveys for the maintenance of ships in service was the core business of ClassNK in the region. However, from the start of the decade ClassNK intensified its marketing of other areas of its expertise, with the aim of expanding market share. In 2014, the opening of its third office in Brazil and the appointment of a new Regional Manager located in Rio de Janeiro indicate that significant progress is already being made.

Forte De Sao Jose

Photo courtesy of Empresa de Navegação Elcano S.A.



Inland reach

ClassNK's recently published Rules and Guidance for the Survey and Construction of Inland Waterway Ships demonstrates the Society's sharpening focus on a segment with its own culture and safety requirements.

Inland waterway transport is big business, particularly where goods are homogeneous and move in large volumes, and speedy delivery is not a factor. Certainly, no other mode of inland transportation comes close in terms of fuel efficiency and avoiding emissions. A 2013 Congress Research Service report cited various industry studies as concluding that inland waterways are 28.3% more fuel-efficient than railroads, and that inland vessels contribute lower greenhouse gas emissions per mile than other forms of freight transportation.

Strong growth in South American exports of both agricultural products and raw materials over the last two decades has created a significant opportunity for the inland waterway transportation sector. Accordingly, ClassNK has identified South America as one of its key markets for growth, having established ten offices across the region, with the most recently opened being Belem – the Society's third dedicated office in Brazil.

Particular opportunities demand market-specific attention. ClassNK recently secured authorization from the Paraguayan Government to carry out surveys on its behalf, for example, while the Society has 29 Paraguay-built barges within our registry.

The authorization is certainly timely. In 2011, traffic through the Paraguay-Paraná Waterway exceeded 58 million tons, with main shipments consisting of grain, oil and bio diesel. However, the unfolding *Hidrovía* project looks to expand the efficiency of commodity transportation through the inland system. Plans in train demand the purchase, operation and maintenance of a push boat and barge fleet to move 3.25 million tons of iron ore each year from Corumbá, Brazil to Argentina or Uruguay via the waterway.

“ We believe these new rules and guidance are particularly timely because they provide a framework within which export shipments through South America’s inland waterways can flourish safely ”

Studies from local agencies show that about 2,100 ships transit this waterway every year, 45% of which are Panamax size. Once the *Hidrovía* project comes on-stream, the number of vessels is expected to increase by 75% within 10 years.

As with any other type of shipping, inland shipping demands strict attention to safety, but this is a sector facing specific challenges that include close maneuvering, close passing vessels, and variable drafts, not to mention variable communications capability between vessel and vessel manager. As independent third party regulators, classification societies play a pivotal role in improving the safety of inland waterway ships, especially in developing the rules governing the strength and stability of these vessels.

ClassNK recently published a completely new set of *Rules and Guidance for the Survey and Construction of Inland Waterway Ships*, which entered into effect in September. They cover inland waterway ships, such as barges, tugs and pushers registered with ClassNK and have also been added to the Regulation and Guidance for the Classification and Registry of Ships of the Society.



"The growing significance of inland waterway transportation, but also the growing number of inland ships in class has prompted ClassNK to develop a completely new set of technical rules and guidance for the survey and construction of inland waterway vessels," says Dr. Toshiyuki Shigemi, Director of ClassNK's Development Operations Headquarters. "South America has been at the forefront of our thinking with these new requirements, which have been developed to ensure that emergent markets harmonize with standards set for the world's inland waterway fleet".

As well as reorganizing its rules covering inland vessels into one document, the new rules include revised requirements for specific environmental and operating conditions, taking into account national, regional and ClassNK rules.

In addition to offering general rules, the harmonized document provides guidelines on hull construction and equipment for tugs, pushers and barges, including expectations for rudders and engine rooms of tugs and pushers, plus requirements covering the construction and required strength of barges.

Taking into account the operational differences between ocean going and inland waterway ships, the Society has set the same wave loading requirement as for ships classed under Smooth Water Service. In addition, given the fresher conditions in which the inland waterway ships operate and the lower degree of corrosion that can be expected in comparison with an ocean going ship, ClassNK has reduced the required plating thickness by 1 mm.

The document also specifies requirements for barges using grabs for the handling of cargo. Since the damage caused by their use is purely related to mechanical factors with no relation to the operating region, no changes have been made to the thickness requirement from the existing rules. Ships that have reinforced inner plating will show the Classification Characters "GRAB" notation.

Requirements for the protection of hatchways are normally set to protect them from weather conditions. However, since cargo moving inland is often stored outside, practical measures that the Society would deem appropriate such as the installation of a pump or drainage equipment, or the planning of shipping schedules in advance for certain weather conditions in accordance with the ship's operating conditions would mean that these requirements are omitted.

It is clear that the typical operational areas and operating conditions of inland waterway ships also determine specific requirements for machinery installations. Given the impact that these ships may have on the environment, for example, new requirements have been specified for electrical installations, such as generators and switchboards on inland vessels. One or more generating sets will be mandatory as the main power source whilst only one generating set, such as a battery, will be required as a reserve power source.

In fact, as can be expected of any such publication, the new *Rules and Guidance for the Survey and Construction of Inland Waterway Ships* drill down to the fine detail of ship installations, going so far as to specify pump attributes. However, their development is best considered in the context of the trade and operations they will support.

"It is critical that inland waterway vessels are built under the supervision of a recognized classification society and fulfil detailed technical requirements, issued by both the classification society and the local authorities," says Dr. Shigemi. "We believe these new rules and guidance are particularly timely because they provide a framework within which export shipments through South America's inland waterways can flourish safely. However, these rules will not only improve the design and development of this growing fleet of barges, tugs and pushers; they will also increase the audits and certification services provided to the numerous inland waterway ships registered with ClassNK worldwide."

Photo courtesy of Astillero Tsuneishi Paraguay. S.A.



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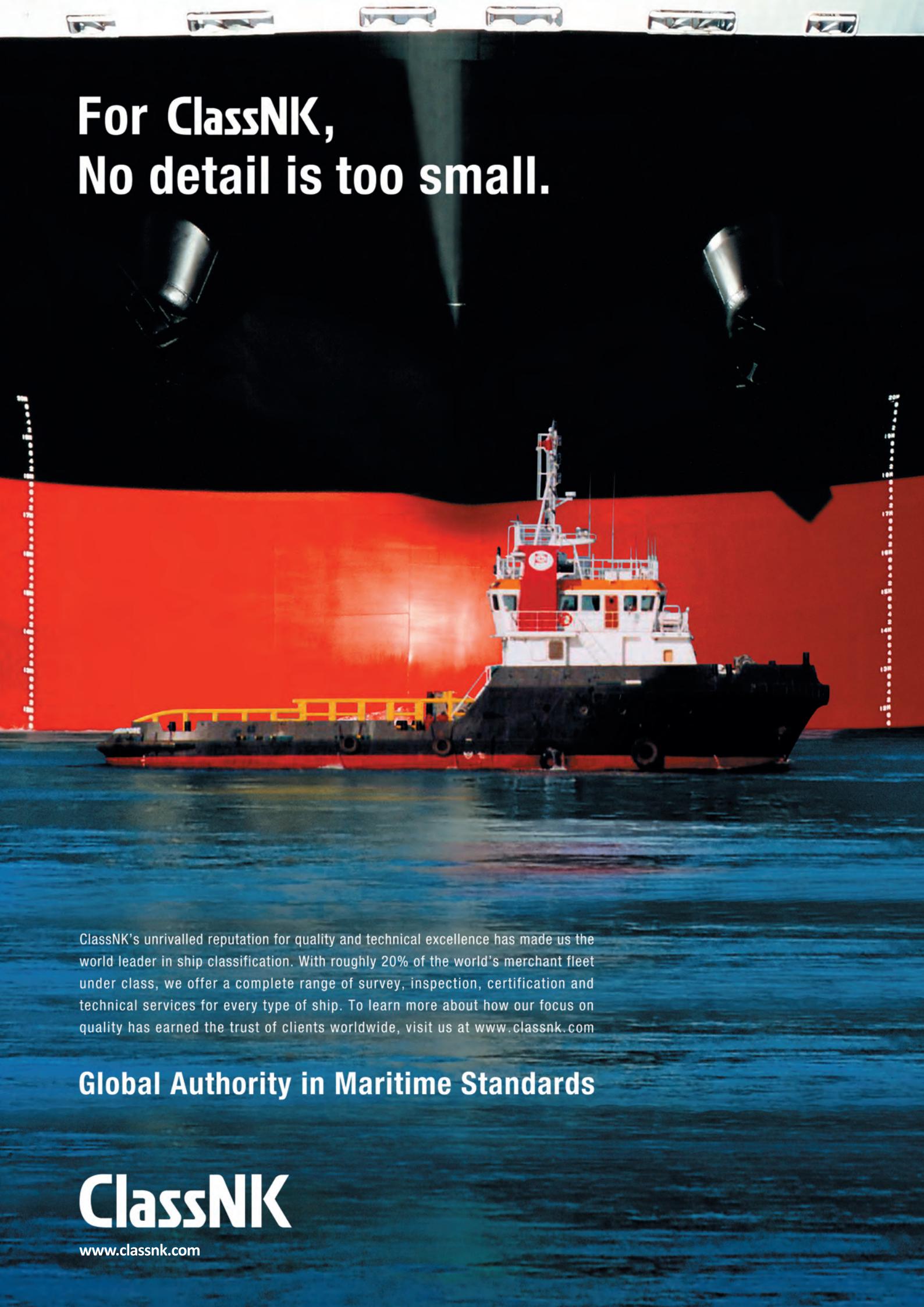
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For ClassNK, No detail is too small.

ClassNK's unrivalled reputation for quality and technical excellence has made us the world leader in ship classification. With roughly 20% of the world's merchant fleet under class, we offer a complete range of survey, inspection, certification and technical services for every type of ship. To learn more about how our focus on quality has earned the trust of clients worldwide, visit us at www.classnk.com

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