

BULK CARRIER FOCUS

TECHNICAL NEWS AND INFORMATION ON BULK CARRIERS

SEPTEMBER 2007 Issue 4

Welcome to the fourth issue of *Bulk Carrier Focus*, a technical publication produced by Lloyd's Register exclusively for the bulk carrier industry



Photo courtesy of SAFETY MANAGEMENT OVERSEAS S.A.

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Lloyd's
Register

Dry bulk growth gathers momentum

The continuing growth of the dry bulk market is bringing about dramatic changes in the composition of the bulk carrier fleet in terms of size, profile and age.

Since 2003, seaborne dry bulk trade has grown at an average of 7% per year, providing a stable platform for bulk carrier demand. Looking forward, the increase in seaborne trade of iron ore and coal is expected to remain firm through to 2010 with annual growth rates of 10% and 5%, respectively.

Commodity prices have remained at high levels, with steel prices firm during 2006 and into this year. Steel consumption is driven by population and GDP growth, so it is not surprising that China, which has shown year-on-year growth in production of more than 20% since 2002, produced some 420 million tonnes steel last year, representing 34% of the world total.

Steel production has, in turn, driven iron ore demand. During the first quarter of 2007, China imported more than 100 million

tonnes of iron ore, primarily from Brazil and Australia. The trend is expected to continue with China forecasted to import more than 400 million tonnes iron ore by the end of 2007, representing a 470% increase since 2000.

Meanwhile, growth in the coking coal and steam coal trades, linked to both steel production and power generation, is forecast to continue moderately at around 4% year-on-year through to 2010.

Building the fleet

As a result, orders for bulk carrier newbuildings have risen to unprecedented levels. The orderbook currently consists of 1,650 vessels totalling 147 million dwt, while the existing bulk carrier fleet has risen to over 350 million dwt and the orderbook-to-existing-ships ratio has surpassed 40%. This momentum has been maintained throughout the first half of 2007.

Last year, bulk carrier orders totalled 37 million dwt. This year's orders already total some 65 million dwt, representing 46% of the total bulk carrier orderbook.

The resulting surge in fleet supply means that fleet growth is expected to be maintained at around 6% to 7% per year through to 2010.

A significant trend is China's growing market share of the shipbuilding industry. China has confirmed its status as the market leader for bulk carrier newbuilding, winning 48% of all contracts placed during the first quarter of 2007.

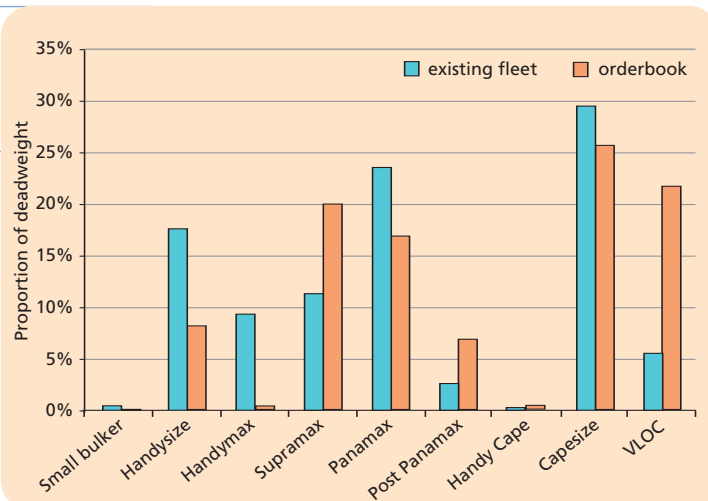
During 2006, South Korea accounted for 10% of all bulk carrier contracts placed worldwide. So far this year, 26% of all contracts have been placed in South Korea, where shipyards can offer relatively early newbuilding slots to owners eager to capitalise on the buoyant markets.

Size matters

The composition of the fleet is changing dramatically with respect to size, with larger vessels being favoured to capture economies of scale. Capesize vessels comprise 30% of the existing bulk carrier fleet and over 25% of the orderbook. Very large ore carriers (VLOCs) represent only 5% of the existing fleet, but high demand for iron ore from China has sent the number of VLOCs on order soaring and they now cover some 20% of the total orderbook.

Chart 1 shows the distribution of the existing bulk carrier fleet and orderbook for each size segment as a proportion of the deadweight total.

Chart 1: Orderbook and existing fleet by size category



With more than 1,500 handysize vessels over 20 years of age, the potential for fleet renewal is vast. Supramax tonnage would appear to be replacing the older handymax tonnage, where ordering has not been as active.

Longer voyages and a substantial increase in demand for major commodities have meant increased deadweight demand for bigger ships to capitalise on economies of scale. By 2010, the bulk carrier fleet will look somewhat different with an expansion of the capesize segment and contraction of the handysize/max segment to 41% and 37% of the overall fleet, respectively.

The increase in ship prices reflects the trend towards conversion (see box below); the average price of a capesize bulk carrier newbuilding has now converged with that of a suezmax tanker at around \$88 million. Meanwhile, second hand prices have also soared to record levels as a result of the vast earnings potential of capesize vessels. A 10-year-old capesize can command prices of more than \$75 million.

Converting to bulk

The desire to capitalise on the buoyant dry bulk market coupled with the ongoing regulatory phaseout of single hull tankers has tempted tanker owners to exploit the opportunity to convert single hull tankers to VLOCs. We have been able to support owners to achieve this goal on a consultancy and classification basis, drawing on the vast knowledge and experience of our surveyors.

Rates

Since the summer of 2006, average spot earnings for bulk carriers have increased steadily across all ship size segments. Prior to this, rates had been in gradual decline. So far, 2007 has yielded average spot rates of \$92,000 per day for a modern capesize. Meanwhile, panamax and handysize vessels have been commanding rates of \$38,000 and \$37,000 per day, respectively.

Strong demand for commodities is a key factor in maintaining firm freight rates, but other factors such as weather and port delays have limited the supply of bulk carriers by between 10% and 15%, exerting further upward pressure on rates.

In summary, the bulk carrier market faces some remarkable transformations. Enthusiastic ordering of capesize and VLOC tonnage has elevated the bulk carrier market to unprecedented heights. As things stand, more than 140 million dwt bulk carriers will be delivered throughout the next five years, representing annual fleet supply growth rates of between 6% and 7%. The future for dry bulk markets is a bright one owing to strong demand growth rates; but, as usual, freight earnings will remain volatile along the way.

Spotlight on Asia

Lloyd's Register class has proven popular among Chinese and South Korean yards across all the bulk carrier segments, from handymax to capsize, and is taking a leading position in both markets. In China, the volume of bulk carriers ordered to Lloyd's Register class in the first half of 2007 totalled 4.05 million gt across 11 shipyards, encompassing 14 designs and more than 100 ships. Meanwhile in South Korea, Lloyd's Register has been well placed to take advantage of the unexpected rush of orders for bulk carriers. Since the introduction of Common Structural Rules (CSR) last year, seven South Korean yards have taken a total of 113 orders (8.23 million gt); of which Lloyd's Register's share was 65 ships at four shipyards – more than half the South Korean market share.

Greek Shipowners have taken the lead in placing these orders, a significant proportion of which are being built to Lloyd's Register class. Apostolos Poulouvassilis, Lloyd's Register's Area Manager for Greece & Eastern Mediterranean says: "We are glad to be in the position to make an active contribution to the quality improvement of the Greek fleet."

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Eagle Bulk Shipping relies on relationships for success

The company is young, but the industry views Eagle Bulk Shipping as an established management team growing in a new corporate structure. Within this structure, relationships are the cornerstone of success.



Sophocles N Zoullas, Founder, Chairman and Chief Executive Officer of US-based Eagle Bulk Shipping Inc.

Traditional values, modern philosophies and deep relationships have helped Eagle Bulk Shipping Inc flourish since its inception in early 2005. Headquartered in New York, Eagle Bulk is the largest US-based owner of handymax and supramax dry bulk vessels transporting a broad range of major and minor bulk cargoes along worldwide shipping routes, including iron ore, coal, grain, cement and fertilizer.

Sophocles Zoullas, founder, chairman and chief executive officer, has spent his entire life in the shipping industry, continuing the family tradition as the fifth generation of shipping professionals. "We took family outings to the decks of bulk carriers while other families were going to the park," he remembers.

Despite the long tradition of shipping in his family, Zoullas adopts a non-traditional business model for his company. "Rather than put the majority of our ships on the spot market, as many handymax owners do, we put our ships on medium-to long-term fixed rate time charters and enhance them with profit-sharing charters," he explains. "Because we greatly value our relationships with our counterparties, we are very pleased to be the first US-listed dry bulk carrier company to enter into profit-sharing contracts with our charterers, which produces a close partnership and aligns the interests of both sides." This model insulates the fleet from the traditional volatility of the dry bulk market, provides visible cash flow and allows effective planning for growth.

The recent acquisition of 26 new supramax ships to be delivered from 2008 to 2012 will make Eagle Bulk the largest supramax owner in the world with a fleet of 49 vessels, and proves the company to be a lead consolidator in the dry bulk industry. "With this acquisition we will have one of the youngest fleets in the industry with an average age of two years, and we are positioned to continue to grow in this market, servicing tomorrow's transportation requirements in developing regions around the world," Zoullas says. A large number of the new ships will be built to Lloyd's Register class.

Next generation of Supramax ships

"The key to building a world-class shipping company is buying world-class assets. We don't just buy young ships, we buy young ships from high-quality shipyards," Zoullas explains. To underscore the philosophy, Eagle Bulk recently entered into a partnership with Japan's IHI Marine United shipyard to construct five 56,000 dwt supramax ships. "These are the next generation of supramax ships and they will represent the future of this company. We are extremely pleased that IHI has decided to partner with us in a very competitive marketplace for high-quality ships. Additionally, with the acquisition of 26 supramaxes that we announced in July, we are very happy to forge a new partnership with the Sinopacific Shipbuilding Group, which is a leading builder of supramaxes in China. I believe this shipyard has a very bright future."

Eagle Bulk Shipping vessels classed by Lloyd's Register

SHIP NAME	DWT
<i>Heron</i>	52,827
<i>Jaeger</i>	52,483
<i>Kestrel I</i>	50,351
<i>Merlin</i>	50,296
<i>Peregrine</i>	50,895
<i>Sparrow</i>	48,220
<i>Termin</i>	50,209

"I very much value our relationship with Lloyd's Register because our experience has shown that it is extremely responsive to shipowners' ongoing needs and to the rapidly changing regulatory environment."

Its focus on one particular asset class differentiates Eagle Bulk from other US-based dry bulk carriers and provides important flexibility to charterers. "With their smaller size, our ships can serve port systems that can't be accessed by larger ships. And, we carry 15-20 different types of commodities in a typical three-month period rather than one or two, which gives us a more accurate view of the movements in the market," says Zoullas.

Same issues, different markets

As a member of Lloyd's Register's US Advisory Committee, Zoullas works with other representatives from key markets to address issues facing the maritime industry. "My time on the US Advisory Committee for Lloyd's Register has been personally rewarding because it allows me to contribute to a world class organisation on the major topics in shipping today," he says. "It's clear that many of the issues are the same no matter what the market. For example, crew shortage is a pandemic in shipping and we need to address it today and not tomorrow." Eagle Bulk takes a strong public stance on the issue and backs it with a new cadet programme in partnership with the Ukrainian Maritime Academy in Odessa. Top students are paid for a first hand experience on Eagle Bulk's ships, enabling them to apply academic knowledge and enabling Eagle Bulk to be a positive, contributing force in training the officers of the future.

Eagle Bulk is well-positioned to take advantage of the healthy future predicted for the industry. "If you combine the demand characteristics out of China with the growing demand from India, the Persian Gulf, certain developing areas in Asia, Latin America and northwest Africa, the demand for the different types of commodities that we carry and the multi-year contracts between users in the Atlantic and Pacific markets, there are strong indications for a very healthy market for years to come." Eagle Bulk has already proven that its fleet is highly sought-after by charterers, enjoying a 99.6% utilisation rate in 2006. "We think that is exceptional," Zoullas concludes.

Quality, consistency, transparency

Zoullas welcomes a more stringent regulatory environment in the future. "The more regulations the more we will benefit, because tighter regulations will help to underscore the quality of our company. I very much value our relationship with Lloyd's Register because our experience has shown that it is extremely responsive to shipowners' ongoing needs and to the rapidly changing regulatory environment."

Eagle Bulk prides itself on providing a quality service with consistent performance while operating in a shareholder-friendly, transparent structure where the ambitions and goals of the management team are directly aligned with those of its shareholders.

"Our mantra is 'quality, consistency and transparency'," says Zoullas. "Now is the time for responsible companies to create the seaborne transportation companies of the future and public companies must act in a socially and environmentally responsible way. In recognition of our environmentally friendly ships, I'm very proud to say that the Port of Long Beach, California recently presented us with its prestigious Green Flag Environmental Achievement Award."

But with the daily focus on safety, cost-effective operations, protecting the environment and maintaining high-quality ships, there is one more important element. "It is our relationships with our charterers, bankers, shipbuilders, insurers and classification societies that allow us to thrive in the dry bulk market," he says. "Relationships for us will always be paramount and will be the foundation for cultivating the success of Eagle Bulk into the future."

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CAP for bulk carriers



Bulk charterers are now showing an increased interest in ship quality.

Owners of aging capesizes and panamaxs are increasingly being required to demonstrate the quality of their tonnage.

In the tanker sector, Condition Assessment Programme (CAP) surveys have long been required by oil majors and charterers, as part of their comprehensive ship vetting programmes. CAP provides third parties with an objective indication of a ship's condition above and beyond class requirements. CAP ratings range from 1 to 4, with 1 being considered the highest quality. Most tanker charterers will only accept vessels over a certain age with a CAP rating of 2 or higher.

Ship vetting and CAP have not historically been significant features in the bulk carrier sector, but bulk charterers are now showing an increased interest in ship quality as operators continue to trade elderly vessels for longer to take advantage of the boom in freight rates in the bulk market.

The increased demand for risk-based vetting of bulkers has led to the formation of vetting companies such as Melbourne-based RightShip (www.rightship.com).

"An increasing number of bulk charterers are vetting bulkers and becoming more safety conscious," says Warwick Norman, CEO of RightShip. "We have seen an increase of 20% to 30% in the number of vettings taking place each year since 2004 and we are now carrying out more than 1,400 vettings per month."

RightShip implements a 'star rating' system, with one star representing the lowest quality (highest risk) and five stars the highest quality (lowest risk).

Its Ship Vetting Information System is an online tool that enables users to obtain an instant risk rating on an individual vessel. The instant rating is the result of the application of a risk matrix, which assesses more than 50 different factors, including yard of build, owner, operator/manager, vessel age, casualty history, port state control record, flag, conditions of class and terminal inspections.

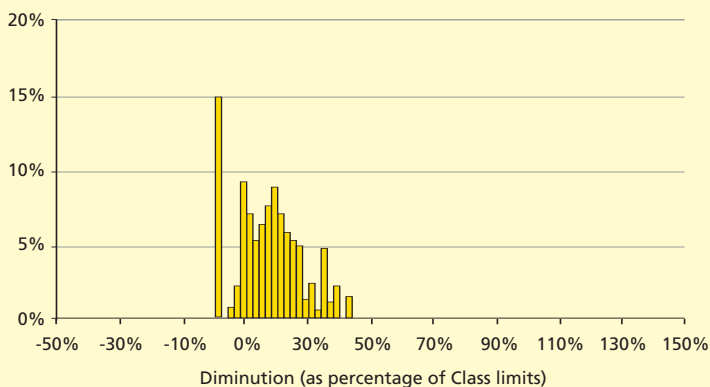
"An increasing number of bulk charterers are vetting bulkers and becoming more safety conscious."

“Lloyd’s Register has provided RightShip with input regarding the standards and survey process for CAP.”

The parallels between CAP and the RightShip system are evident, and a ship’s CAP rating can have a direct impact on its star rating. “We provided RightShip with input regarding the standards and survey process for CAP,” says Ehud Bar-Lev, Global Ship Inspection and Assessment Services Manager, Lloyd’s Register EMEA, “We used the latest version of our bulk carrier CAP book, an encapsulation of our extensive experience of carrying out CAP surveys on bulk carriers.”

In addition to a successful history of providing CAP to ship owners since 1992, Lloyd’s Register also leads the field in CAP for tankers and LNG ships.

RightShip represents a number of charterers or shippers who generally require that all bulkers over 90,000 dwt, have a minimum CAP rating of 2 at their fifth Special Survey.



Typical statistical analysis of a transverse web frame, based upon relative criticality of structural grouping used for the hull structure rating.

Lloyd’s Register CAP

We play an important role in ship safety by providing high-quality CAP reports to clients who are seeking the widest possible array of charterer approvals. Surveys and reporting are co-ordinated by our Ship Inspection and Assessment Centres in Southampton, Piraeus, Singapore and Houston. Defined requirements and guidance are published by Lloyd’s Register in three documents: the general ‘CAP book’, The ‘BC CAP book’ for bulk carriers and the ‘LNG CAP book’.

The CAP survey process begins with discussions between Lloyd’s Register and the shipowner to plan forthcoming ship inspections. Prior to the onboard examination, a fatigue screening analysis is carried out to highlight any potential areas of concern and all classification records are examined to identify any recurring failures or areas which have previously undergone repair. The owner’s maintenance records are also scrutinised to determine and assess the maintenance regime and history of repairs.

The four main areas we look at in determining a CAP rating are hull structure, fatigue, machinery and cargo and ballast systems. Once onboard, our surveyors look at the hull, machinery and cargo systems. They also examine the outer hull below the water line, rudder, thruster units and propeller either during a drydocking or, where permitted by the charterer, an underwater examination. Meanwhile, thickness measurements are carried out by a specialist company.

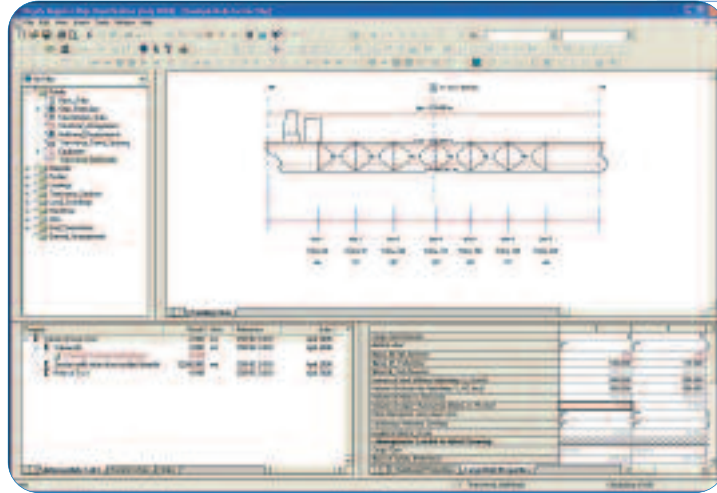
We assess and award CAP ratings on the basis of the information obtained by our attending surveyors and subsequently issue a CAP report (in both hard copy and electronic format) and certificate to the shipowner.

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Joined-up thinking

New versions of Lloyd's Register's ship design software tools RulesCalc and ShipRight SDA have been developed to help ship designers deal with the challenges posed by the Common Structural Rules for bulk carriers.



RulesCalc 2007's clear interface provides a platform for designers to learn and apply the CSR for bulk carrier designs.

Since the introduction of the International Association of Classification Societies' (IACS) Common Structural Rules (CSR), which concern all new bulk carrier and double hull oil tanker construction contracts signed since April 1, 2006, the industry has been faced with the mammoth challenge of understanding and applying them to forthcoming designs. This initiative by the classification societies to raise structural standards and further harmonise the Rules across tankers and bulk carriers has dramatically altered the approach to bulk carrier design.

Ship designers in particular have had to grapple with the time-consuming process of checking that existing designs are compliant with the CSR. Inconceivable at all before the advent of powerful computers, this onerous task remains difficult while a lack of integration between computer aided design (CAD) and class rule assessment tools exists. In answer to this, Lloyd's Register has developed updated versions of two of its leading software packages geared towards different parts of the ship design process,

each one compatible with mainstream software packages. New releases of RulesCalc, used to help establish that designs are compliant with CSR in the first place, and ShipRight SDA, which then helps model those designs, are now available for download on the ClassDirect Live website at www.cdlive.lr.org.

Sticking to the Rules

The new version of RulesCalc, a software tool developed to enable ship designers and builders to quickly assess designs against the *Lloyd's Register Rules and Regulations for the Classification of Ships* and CSR, is now faster and more efficient and offers greater transparency with regard to the application of CSR. We believe this transparency allows the designer to understand the drivers behind a rule requirement and allows more time to concentrate on critical design issues.

Dubbed RulesCalc 2007, this latest software offering integrates ship design assessment with classification knowledge and experience, leading to significant savings in time and cost at the initial design stage.

Lloyd's Register has prioritised the development of a simple to use interface in RulesCalc 2007 in order to allow ship designers to gain an understanding of the new rules as quickly and efficiently as possible. In addition to this, RulesCalc 2007 facilitates two- and three-dimensional data import from several third party ship design packages, enabling designers and shipbuilders to make rapid model changes in their CAD application of choice and then quickly check for compliance using the software. This radically reduces modelling time while using the structural design and expertise optimisation features built into the software.

Users of RulesCalc are guided through a series of simple, logical steps to quickly determine net scantlings, global bending and shear strength, end connection fatigue and ultimate strength. Scantling requirements for plates and stiffeners in the intact and flooded loading conditions can be easily and quickly determined at a very early stage in the initial design process. Critical location indicators, enhanced display features and intuitive colour coded graphical calculation results guide the user through the many inbuilt assessment tools.

Built on the well established success of RulesCalc for other ship types, this release has been heralded as a major step forward for ship designers requiring fast and transparent compliance assessment of their new CSR bulk carrier designs. RulesCalc 2007 is a progressive and consistent

RulesCalc at a glance

- *Transparency of intermediate calculations and easy reference to Rules requirements*
- *Automatic calculation of all load cases*
- *Automatic conversion from gross scantlings input to net scantlings output*
- *User-friendly visibility of net and gross scantlings*
- *Data export to ShipRight SDA*
- *Data import from and export to third party applications.*

ShipRight SDA – the benefits

- *Modelling, FE analysis and post-processing in one package*
- *Thickness increase for buckling requirements by iteration*
- *Sub-model generation for detailed stress assessment and hot spot stress analysis using SDA modeller*
- *Calculation of detailed stress assessment*
- *Calculation of hot spot stress analysis for fatigue assessment using coarse and/or very fine meshes*
- *Export of relative displacement for ordinary stiffeners to RulesCalc*
- *Interface with Nastran solver*

extension of the design assessment capabilities for CSR double hull oil tankers, thereby providing a one stop shop classification tool.

Getting things ShipRight

The latest version of ShipRight SDA, a special purpose structural design assessment (SDA) tool which uses finite element (FE) meshing and analysis, also now fully supports the direct calculation of CSR, in addition to the existing Lloyd's Register ShipRight SDA procedures for tankers and bulk carriers. Powerful automatic utilities for applying CSR loading requirements and boundary conditions, hull girder properties and loading adjustments, and automatic stress and buckling assessments have been included to speed up design and analysis.

ShipRight SDA comprises individual modules covering modelling, meshing, loading, analysis and post-processing, which can be used together, either as one self-contained system, or individually to supplement existing systems. Each module is highly automated and can be easily adapted to work with

existing processes through its interface with design and analysis tools Nastran and Patran. The interface uses a converter facility to import either the gross or net scantling model from the Nastran bulk data file, and the latest version features an interface to other major CAD tools used in the shipbuilding industry.

Three-dimensional ship oriented modelling is done using the step by step Ship Modeller component of the software, which is based on the real structure to be modelled, rather than geometric objects, thus making the task of modelling features such as plates and stiffeners easier.

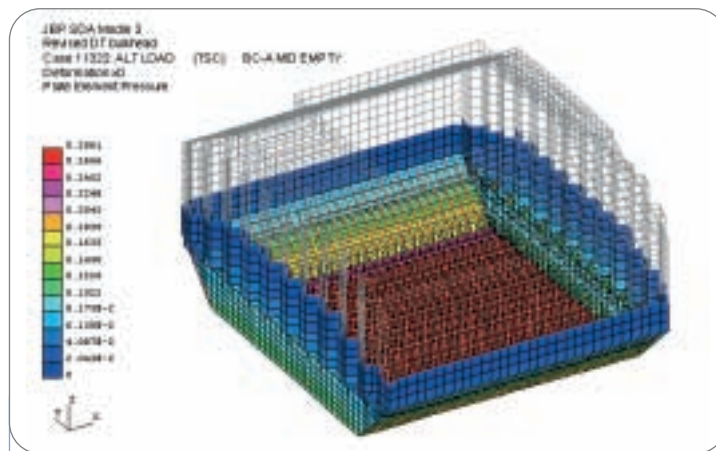
The CSR bulk carrier net scantling FE model is generated by means of structure type selection and the setting of the correct FE meshing model for exposure conditions, enabling fast and easy buckling panel generation. Furthermore, powerful CSR-based fine meshing requirements are also made effortless using the plating tool features.

Lightening the load

ShipRight SDA 2007 provides extensive use of automatic loading, whereby local loads are easily generated through the use of predefined groups and space definitions. Clear load set generation gives the designer greater transparency and total flexibility. The application of hull girder loads are made as easy as possible by the use of the hull girder unit load case.

The CSR bulk carrier fatigue load generation and fatigue calculations are inbuilt features and include both simplified and non-simplified methods. Automatic stress assessment provides further insight to the causes of failure from any applied loading condition. The post-processing functionality for stress, buckling and fatigue assessments has also been greatly enhanced in this latest version.

Drawing on our leading technical track record and expertise in bulk carrier design assessment, both software systems continue to ensure accuracy, consistent rule interpretation and total transparency of the rule formulations for structural integrity. We are working closely with the other classification societies involved in the development of CSR to ensure consistency in the interpretation, application and outcomes of the new Rules. Users of both systems can be assured that we will continue to enhance and update the software capabilities of each product in line with this important work.



Modelling is based on real structures, not simple geometric shapes.

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Understanding the PSPC



Earlier this year, Lloyd's Register Asia held a number of seminars in China to help shipyards and owners better understand the PSPC.

As the industry begins to implement the new IMO PSPC, Lloyd's Register provides an insight into the challenges that lie ahead.

In adopting resolution MSC.215(82), the Performance Standard for Protective Coatings (PSPC), on December 8, 2006, the International Maritime Organization (IMO) mandated the coating of dedicated seawater ballast tanks for all new ships of 500 gt or more and the coating of double-sided skin spaces of bulk carriers of length equal to or greater than 150 meters.

The PSPC will come into effect for ships which are contracted on or after July 1, 2008; or, in the absence of a building contract, the keels of which are laid on or after January 1, 2009; or for vessels to be delivered on or after July 1, 2012.

However the PSPC is immediately binding for tankers and bulk carriers built to the International Association of Classification Societies' (IACS) Common Structural Rules (CSR), with contracts placed on or after the resolution came into force. This is a result of IACS pre-mandating the PSPC in the new Rules. Because the CSR apply to all bulk carriers contracted on or after April 1, 2006 of 90 metres and more, this effectively means that the application of the PSPC is extended to the ballast tanks of these ships. It remains the case that only bulk carriers of 150 metres in length and more are required to have protective coatings applied in their double-sided skin spaces.

The immediate entry into force of the PSPC for CSR bulk carriers has understandably given rise to some confusion within the industry. Usually shipyards, owners and operators have a long lead time to fully grasp the technical and cost implications of new legislation; in the case of the PSPC they have not had this luxury.

Lloyd's Register has been providing shipyards, owners and operators with extensive guidance on the implications of the PSPC, mainly around three key areas: coating type approval, coating application and inspection of coatings.

Coating type approval

We are working closely with coatings manufacturers to develop and agree a robust and satisfactory type approval process. This work is nearly complete, although outstanding issues remain with prefabrication primer compatibility. The PSPC sees the coating system as a whole; therefore the zinc silicate primer and epoxy corrosion control coating need to be tested as one. However, the reality is that the primer is often from one manufacturer and the corrosion control coating from another. The standard deals with this in two ways: either the primer can be removed by blasting before applying the corrosion control coating, or the compatibility of the two coatings can be demonstrated by following the test procedure set out in the standard.

A potential issue with the latter approach is that coating manufacturers will need to ensure that the appropriate tests are carried out, with class supervision, if either the primer or main coating manufacturer changes their paint formulation.

Application issues

In terms of application, the main issue remains the level of soluble salt on the prepared surface prior to coating application. The requirement for a maximum of 50 mg/m² has given rise to some concerns in the industry. If too high a level of soluble salt remains on the surface, blistering may occur at the coating interface. Salt contamination can arise from either the industrial or marine environment, from blast media contamination or even from the water used to remove the salts. It is common knowledge that some areas of the world have potable water with a high soluble

salt content; in these areas, it is important that water is carefully selected or treated.

A further issue is the need for a common method for assessing coating damage. The level of coating damage present dictates the extent to which blasting is required prior to repair. Class is currently in discussion with shipyards and coatings manufacturers to agree a common method of assessment. It has already been generally agreed that areas intentionally left uncoated, such as erection butt welds, should not be included when calculating damage,

although reasonable limits need to be placed on such areas.

Other areas of concern, such as dust levels and measurement and the application of stripe coats by brush or roller, have been resolved with practical solutions that meet the requirements of the standard.

Inspection issues

The question of who inspects the coating application is nearing resolution. However, there are major concerns over the lack of human resource in this area. One suggestion is to allow unaccredited individuals to carry out simpler tasks, such as measuring dry film thickness, under the supervision of a qualified inspector.

Obviously these assistants would require training and have to be proven competent. Controls would still be required to verify competency and training, and agreements as to the extent of inspection to be covered by this approach would have to be made.

How Lloyd's Register can help

Much good work has been done to help the industry understand the requirements of the PSPC. Examples include the work of IACS to develop its Procedural Requirement No 34 and the recent IACS facilitated joint industry working group to draft a common interpretation of the standard. Although good progress has been made, there is still much to do, and we are working closely with IACS and alongside industry to provide practical guidance.

Lloyd's Register provides PSPC training in China

In January this year, Lloyd's Register Asia held a number of seminars in China to help shipyards and owners to better understand the PSPC (see picture). Following this, we teamed up with coatings manufacturer International Paint to provide a PSPC 'gap analysis' to help Chinese yards prepare for implementation of the new standard.

The main objective of the gap analysis is to assess yards' current yard coating practices, identify problems and provide timely technical advice for yards to improve in order to meet PSPC requirement. The gap analysis looks at every stage of the coating process:

- *coating facilities: primer shop, blasting and painting cells*
- *current practice of surface preparation and coating application*
- *PSPC document preparation*
- *inspector training*
- *quality assurance and quality control procedures.*

At the end of visit, findings of the gap analysis and recommendations are presented to the shipyard.

Correctly understanding the PSPC requirements and identifying and closing any gaps between current practice and the required standard is critical for a shipyard. It should also be emphasised that compliance with PSPC is not only a task for the yard's painting department; good structural design, co-ordination of different production departments and management and supervision of production processes are equally important and relevant.

Many shipyards in China are now investing in painting facilities and training, and we will continue to support Chinese shipyards to achieve compliance with the PSPC.

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A team effort

Lloyd's Register has led the way in the development of bulk carrier classification from their beginnings as bulk freighters of the Great Lakes of North America through to their now familiar status as the workhorse of the sea. We constantly build on this foundation through our technical and commercial know-how and make full use of our sector and product specialists who provide our surveyors and clients with ongoing support.



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Nick joined Lloyd's Register almost ten years ago as a Field Surveyor in the Piraeus office, Greece. During his tenure he spent six years in Japan, where he gained experience as a field surveyor in new construction mainly for bulk carriers at shipyards IHI, Sumitomo, Sanoyas, Mitsui Tamano, Tsuneishi and Koyo.

He returned to Piraeus last year where he took up the role of Senior Surveyor, before joining the London team as Business Manager – Bulk Carriers, earlier this year.

Before joining Lloyd's Register, Nick spent three years as a superintendent engineer with Sea Pioneer Shipping Corp, where his main role was the repair and drydocking of bulk carriers and tankers.



Ehud Bar-Lev

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During his time at Lloyd's Register, Ehud Bar-Lev (Udi) has served in the offices of Kiel, Cape Town, Kaohsiung, Piraeus and Haifa. He now holds the title Global Manager for SIA Services. Besides taking responsibility for Lloyd's Register products such as our 'Hull Renovation Scheme' and 'Ship Life Extension Programme', Udi co-ordinates the work of the SIA offices in Singapore, Piraeus, Southampton and Houston. This work includes the global delivery of our recently launched Hull Integrity service.

Most recently, he held the title of Condition Assessment Programme (CAP) Service Manager in the Lloyd's Register's Piraeus office; a post he held jointly with Petros Patargias.



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In his current role as Common Structural Rules (CSR) bulk carrier implementation leader, Shinroku leads validation of our software tools RulesCalc and ShipRight for CSR bulk carriers. As a 'Senior User' of the RulesCalc, he is responsible for specification development and acceptance testing through verification of the CSR bulk carrier Rules.

Shinroku joined Lloyd's Register in 1981 as a ship surveyor in the Yokohama Design Support Office, where he gained experience of plan approval for a variety of dry cargo and tanker ship types. He is also a specialist in ro-ro equipment and hatch covers. After secondment to Shanghai Plan Approval Services in 2000 he returned to Yokohama Plan Approval Services in 2001.

BULK CARRIER FOCUS

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