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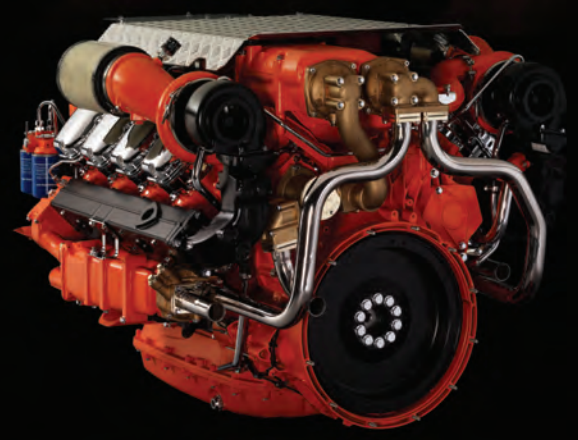

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Offshore is hot, and Brazil leads the way. But doing business efficiently and profitably here is no easy task. Claudio Paschoa, our resident writer, photographer and surfer in Rio, weighs in with tips to navigate business in country. **page 10**

(Photo: Claudio Paschoa)

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ECONOMICS (PART II)

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ON THE COVER

Pictured is Able Seaman Zay Nander Soe, as photographed by Alex Sergienko, one of the hundreds of participants in this year's Third Annual Don Sutherland Photo Contest.

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(Image courtesy Alex Sergienko)

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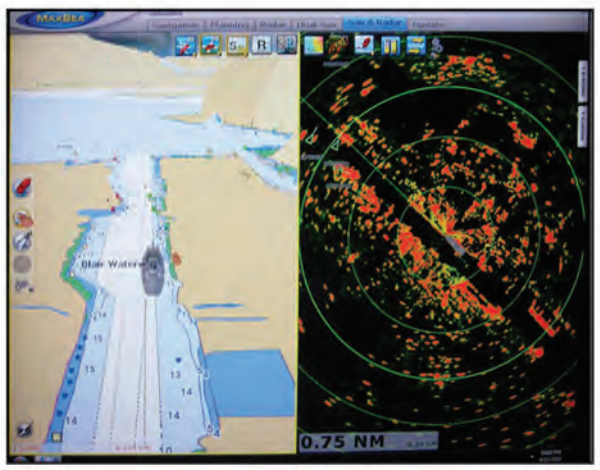

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"Lies, damned lies & statistics"

Popularized by **Mark Twain** and generally credited to 19th-century British Prime Minister **Benjamin Disraeli** (1804–1881)*, the above line, which in its full form is "There are three kinds of lies: lies, damned lies, and statistics" is one of my favorites. This being our June 2013 "Yearbook" edition, a publication literally packed with – statistics – I will leave it up to you, the discriminating reader of our pages, to determine the veracity of the numbers reported within.

I start with a sincere thanks to **Dr. Shashi Kumar** for carving precious time from a busy schedule at the last minute to discuss with me a wide range of topics pertaining to the global maritime market. Dr. Kumar – a Master Mariner, Fulbright Senior Specialist Fellow and Professor Emeritus of International Business and Logistics. Dr. Kumar was kind enough to field my questions regarding the recent history and future direction of maritime, and I found the discussion to be one of the most informative and influential I've had in quite some time. I think you'll find the snippets from our conversation intriguing, starting on page 44. For example:

- Not only does Dr. Kumar see a vigorous rebound in the industry in 2014, he's already talking about the "next shipping recession" in 2016.
- As the global energy picture gets turned on its head with increased production of oil and gas from the United States, and the strong emergence of China as the leading petroleum consumer, he predicts mighty swings in traditional tanker trade patterns, starting now.
- While the world fixates on fewer, bigger players across nearly every maritime sector, and as commercial ships – particularly in the container and dry bulk markets – get ever bigger, he questions the logic and floats the notion of a "cap" on ship sizes, contending that changing manufacturing and consumption patterns … patterns that are happening today … will not support the mammoth ships in the long run.

A compelling maritime mind and a good read, I hope you will find. The overriding feeling in completing this edition is one of optimism in a growing number of sectors, though there are still several areas experiencing and expecting great pain, such as the battered containership market (pgs. 8 & 46).

THE COST OF TECHNOLOGY

Reporting on new and emerging marine technology is the core of our being, and while the maritime industry is generally tagged as conservative, I'd say that is changing rapidly, particularly among many of the industry leaders. The advent of LNG as a marine fuel, the creation and adoption of numerous technologies, from Ballast Water Management Systems to ECDIS and the overall adoption of a "green" stance which is taking environmental initiatives from marketing slogan to action items is truly transcendent in maritime history. While ship owners generally bang their head, fists or feet with the introduction of new regulation, the question begs: how much does new technology really cost?

I am pleased to offer in this edition an insightful article from Gary English – "Breaking Down the Costs of MARPOL" (starting on page 36) – which is one of the most thorough and detail packed pieces which presents to our readers in dollar terms the impact of MARPOL the bottom line. In a similar vein, CDR Emil A. Muccin looks at the economic impacts of STCW 2010, starting on page 34.

Leaving the exact and switching to the interpretive, I am once again happy to share the results of our Third Annual Photo Contest, starting on page 62, and including our cover. With the arrival of the Maritime Labor Convention (MLC) in 2013 and the continued focus on "Mariner Matters" across the industry, I thought this an apt and elegant way to start our June edition. The photo contest is our annual ode to Don Sutherland, a long-time contributor to both Maritime Reporter and sister-publication MarineNews, and this year the results did not disappoint again, with thousands of photos from hundreds of photographers from dozens of nations.

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When you leave the page and head to the screen, Maritime Reporter offers the most digital and online news offerings. Here are select stories from last month on MaritimeProfessional.com

Maersk Rate Hikes

Hitting the High Notes

Do we sense a touch of desperation from the executive corridors of Maersk Line as the Triple-E delivery dates approach? **Posted on MaritimeProfessional.com by Greg Knowler**

Maersk Line boss Nils Smedegaard Andersen was in a confident mood after his carrier posted a decent US$204 million profit in the first quarter. Making a profit when Asia-Europe is a disaster and many other carriers are wallowing in red ink is impressive enough, but the Maersk CEO raised eyebrows when he addressed the rates issue.

He told Reuters he had "no doubt" the carrier could increase rates from their current level of $730 to $1,481 per TEU on July 1. That means doubling freight rates in a market that is being flooded with shipping capacity and has very little to put on the vessels. Seriously?

It is belligerent stuff, but maybe this is why: Next month, the first of a series of 20 triple-E container ships will be launched in the blue Maersk Line livery. By the end of the year, another five 18,000 TEUs vessels will be delivered, and all 20 will be in service by 2015.

That is a tremendous amount of capacity all headed for the Asia-Europe trade, currently embroiled in a rate war that has seen freight rates plummeting to record lows. Lines are desperate to raise rates to more sustainable levels but are finding it particularly difficult. One carrier, Hyundai Merchant Marine, has already postponed a planned May 15 GRI, saying the weak market cannot sustain that sort of increase. The Korean carrier will now try to impose the GRI on June 1.

3% vs. 790%

Between 1998 and 2013, average container freight rates increased by 3%. Over the same period, fuel prices rose 790%. Source: Alphaliner

The market is still trying to digest Hapag Lloyd's announcement a couple of weeks ago that it will bludgeon customers with a July 1 general rates increase of US$1,000/TEU and $2,000/FEU. MSC is also trying to extract a GRI of $750/TEU and $1,500/FEU on Asia-North Europe from July 1.

When pigs fly past your office window you will know they have all been successful.

The market has resisted rates increases for the better part of a year and Maersk Line must be looking on with mounting concern as it prepares to enter the megaship era, so the aggressive stance on freight rates is understandable. It also happens to be the second time this year the carrier has pushed its rate boat out, so to speak.

On January 1, the carrier began levying an additional US$1,500 per reefer FEU on all trades, a sudden increase that shocked the market. Tired of pouring money into reefer investment while losing money on the trades, the line raised prices and said it was prepared to lose business if that's what it took. Whether the strategy will work long term is open to debate, but Maersk has been standing by the new rates with mixed results, with other carriers following suit.

The difference is that there is sustained demand for reefers on many trades with the huge investment required a barrier to entry. But for dry boxes, this latest price hike has been announced at a time when rates are at their lowest, volumes are weak and the once traditional peak seasons now appear to be an anachronistic concept. You will search hard, but in vain, to find a Maersk executive making negative comments about the carrier's new Triple-Es. However, as the line gets closer to opening its newbuilding floodgates, the pressure to increase rates and ensure the profitability of the giant vessels must be mounting.

Maybe there is something in the pipeline that we don't know about, like a significant capacity withdrawal of some kind. Because in the absence of any real demand, that is about the only thing that would support such a radical increase in freight rates.

SVITZER Does it Dominate the Indian Salvage Scene?

Svitzer claims to be better placed than most salvors operating in the country? **Posted by Joseph Fonseca, Mumbai**

"There are not many Indian salvors to take care of the prospects that exist here, so I feel all global salvors need to come into India." says Bas Wiebe, Regional Manager of Svitzer Salvage Asia Pte Ltd., who have plans to increase their footprint in India. "Expertise is one factor that gives us the edge over competition. In case some agency was to make an assessment of the various salvaging companies operating here today, they will find us to tower over others."

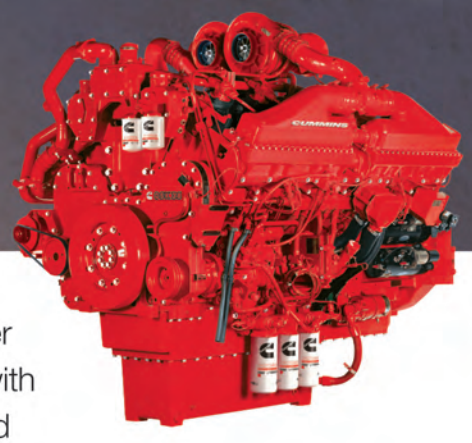
Speaking on the sidelines of the conference on "Salvage and Wreck Removal" organized by Hinode Events and Services Pvt Ltd., Bas Wiebe informed that while Svitzer had experts mobilizing their back office and making the assessment, they have their own vessels and equipment in India which they use. The special equipment employed by them is not available in India but they are the only ones who have them. Above all being a member of the A.P. Moller - Maersk Group, which is well established in India, clearly indicates that they have someone to fall back on in case of any contingencies.

Svitzer have had their hands full with their recent salvage operation having successfully handled the salvage of M.V. Amsterdam Bridge. The 4,380 TEU, containership had caught fire when it was near Mumbai. Fire occurred shortly after the vessel departed the Indian port of Nhava Sheva enroute to Colombo, Sri Lanka with approximately 1,550 containers. All 20 crew members on board were evacuated without injury. "Having Maersk in India, we are better placed as we can expect to get certain assistance during salvage operations," says Bas Wiebe. "They can help us bring down some costly equipment if required. Being ship owners we know the various expenses involved. I think there are several benefits being part of the bigger group."

Bas Wiebe is focused on India and has plans to expand here because he says that India is an interesting market. "I feel the regulations here are in place," he says. "But at the moment we feel we can continue with our present set up and mobilize any additional equipment needed from overseas. Worldwide we do about 40 to 60 cases a year. But in India it is relatively slow. We need to spread our resources. At the moment we have an office in Singapore and from the logistic point of view the location is very convenient."

Talking about his response plan he points out that every salvage operation is different. They try to get as much information as possible for which he says that he is the person responsible to make the decisions in all incidents. Of course at sometime it is delegated to a consultant or a legal expert, or insurer broker, etc. "We try to find out who is making the decisions and what information is available. We will go directly to the owners and try to approach the authorities to get more information. From this we know what kind of response we need to provide."

Always
Pushing For More.



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What You Need to Know to Operate

Offshore Brazil

Inside Syndarma and Abeam:
Organizing Brazil's Maritime and OSV Markets

By Claudio Paschoa

For companies interested in operating in Brazil, it is important to understand the country. MR's Editor in Rio breaks it down

Syndarma – National Syndicate of Maritime Navigation Companies

Founded on October 5, 1934, as the official representative of the Brazilian commercial maritime navigation, Syndarma is comprised of two associations:

- **ABEAM** – Brazilian Association of Maritime Support and
- **ABAC** – Brazilian Coastal Ship Owners Association.

In addition, it also lodges the companies of the Port Support segment. Syndarma is a proponent of the Brazilian maritime sectors, demonstrating to the public the importance of the employment of Brazilian registered vessels in Brazilian waters as well as the necessity to expand the Brazilian merchant fleet, the return of its position of importance to the country's external commerce and its participation on the exploration of the O&G reserves on the Brazilian coast.

Syndarma has 48 associated companies in the coastal, oceangoing, offshore and port support segments, generating around 16,000 direct jobs (12,000 seafarers and 4,000 administrative jobs).

There are a total of 373 vessels under the Brazilian flag, separated in the following classes:

- 139 tugboats on the port support (BHP>1.000)
- 175 offshore support vessels (TPB>100 and BHP>1.000)
- 59 ocean going vessels/coastal ships
- 21 container vessels/general cargo ships
- 23 bulk carriers/ocean barges
- nine chemicals/gas carriers
- six high seas pushers

The Brazilian maritime legislation emphasizes that the maritime transport of cargo between ports in the national territory (coastal shipping) is reserved to Brazilian Navigation Companies in Portuguese "Empresas Brasileiras de Navegação (EBN)," operating a vessel of Brazilian registry, which is common in most countries.

Brazilian legislation concerning coastal navigation is flexible, allowing the employment of a chartered foreign vessel to an EBN to perform the domestic transport in case of the lack of a Brazilian flagged vessel.

This greatly helps in keeping with the rising demand for cargo ships and OSVs in Brazil.

(Photo Bram Offshore)

Bram PSV in Rio

Brazilian Merchant Marine in Numbers - Source: ANTAQ

General cargo:

- Bulk Liquid carriers: 109,573 thousand tons
- Offshore support: 71,352 thousand tons
- Non-offshore support: 38.222 thousand tons
- Solid bulk and projects: 17,057 thousand tons
- Containers: 811,000 TEU; 7.121 thousand tons
- Others: 4,894 thousand tons

ABEAM

Abeam was founded in April 1977 with a main objective to contribute to the development of the national offshore support sector for the oil and gas E&P along the Brazilian continental shelf and exclusive economic zone. The Offshore Support activities in Brazil had grown continuously from the mid 1970s until 1985, when it started to decline. By 2005 growth in the segment started anew, and the last eight years have shown a marked growth trend that is expected to continue until 2020 and beyond.

"The support from bioth Syndarma and Abeam are vital to reach solutions for the bottleneck that exists today in the Maritime and OSV segments in Brazil, they are fundamental links between the vessel and ship operators and the Brazilian Government," said Douglas Moura, Operations Coordinator for SulNorte Shipping, regarding the importance of Syndarma and ABEAM in Brazil. "Subjects that are relevant to the development of the market, such as lack of a specialized workforce base, legislation that favors the segment, along with systematic questions that impact company costs are the main focal points of Syndarma and Abeam meetings."

With the present policy of Brazil to increase O&G production along its East coast, where the Campos, Santos and Espirito Santo Basins are located and more recently with the tendering of Block along Brazil's Equatorial Margin or North coast, there is now a demand a much larger fleet of OSVs.

Since the Brazilian O&G market is open to foreign companies, it is not only Petrobras that is expanding its activities. All players require OSVs for activities ranging from environmental research for field licensing, to equipment and workforce transfer to offshore units, to anchor handling, pipe laying, ROV, AUV and Diver operations. Abeam has 34 associated companies prepared to operate most types of vessels employed in offshore support.

Today, the OSV market in Brazil has a limited growth due to the fact that the last bidding round for offshore blocks was in 2007. But with the 11th round that took place recently, the market should see further expansion in the near future. The spot market for short duration vessel leasing is still heated, and there is a new demand for vessels specialized in support of environmental accidents, the OSRVs. This market will expand further as the 11th bidding round was a success and those acquiring Offshore Blocks will have a large (but still undefined) demand for OSVs for new exploration

OSV Fleet
Source: ABEAM (12/2012)

Class	Brazilian	Foreign	Total
PSV	88	86	174
AHTS	19	93	112
LH / SV	57	2	59
OSRV	15	15	30
Crew / FSV	14	8	22
DSV / RSV	3	13	16
PLSV	2	9	11
MPSV	2	5	7
WSV	2	2	4
Total	**202**	**233**	**435**

campaigns.

Support Vessel Overview

- 127 Brazilian companies authorized by ANTAQ.
- About 50 companies operating in the support vessel activities.
- 34 companies members of ABEAM.
- A fleet of 435 vessels (202 Brazilian / 233 foreign flag).
- Estimated $2.5b are spent annually with charter.

History of OSVs in Brazil

The evolution of maritime support activities in Brazil occurred in periods marked by the following phases:

- **Implementation** – 1968 - 1975 – The first offshore oil discoveries led to the import of the first 13 vessels for Petrobras.
- **Expansion** – 1976 - 1981 – Brazilian fleet totals 44 vessels. Petrobras transfers to Brazilian navigation companies OSV fleet operations.
- **Consolidation** – 1982 - 1989 – Operation of the first semi-submersible platforms. Procurement in public bidding for Brazilian ship owners. The Brazilian fleet of Maritime Support reaches 110 vessels.
- **Disarticulation** – 1990 - 1997 – The indiscriminate opening of the market reached the shipbuilding and maritime industries. Foreign companies come to dominate the market leading to a waste of developed shipbuilding technologies and massive loss of jobs. The fleet of OSVs with Brazilian flags drops to 43 vessels.
- **New proposal** (from 1977) – With the enactment of Law # 9432/97 providing for waterway transportation, through ABEAM, Brazilian OSV companies submit a fleet modernization program involving local construction of vessels appropriate for deep and ultra-deep water operations.
- The program is being implemented, allowing the increase of the Brazilian fleet with addition of new vessels equipped with modern facilities and equipment, appropriate to market demands.

The program has been implemented, enabling the enlargement of the Brazilian fleet by adding new vessels equipped with modern equipment and facilities, meeting market requirements.

OSV loading operations in Rio – HDR.

(Photo: Claudio Paschoa)

Why TWIC?

GAO finds it is broken, and now the question is; can it be fixed?

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Recently, the U.S. Government Accountability Office (GAO) issued a scathing report on the Transportation Worker Identification Credential (TWIC) electronic reader pilot test and on the TWIC program in general. The GAO said that the test of the electronic readers that are intended to largely automate access of credentialed maritime workers into secure areas not only failed, but that test results were so badly gathered that it is impossible to determine exactly where the problems lie and what needs to be corrected.

The GAO also said that the Transportation Security Administration (TSA), the agency charged with developing the TWIC program, has never determined whether the program has actually enhanced maritime security. It recommends that the proposed TWIC reader rulemaking be halted until successful completion of a security assessment of the effectiveness of using TWIC.

As Oliver Hardy said several times to Stan Laurel in some of their many movies of the 1930s: "Well, here's another nice mess you've gotten me into!"

It's time to go back to first principles and see how things got so far off track.

What is today the Maritime Transportation Security Act (MTSA) started life in 2000 when Senator Hollings introduced the Port and Maritime Security Act to establish a program to provide greater security for United States seaports.

The primary focus of the bill was deterrence of crime and cargo theft on the waterfront. A provision was included near the end of the bill, probably as an afterthought, about also reducing the risk of maritime terrorism. The bill was under active consideration in the Senate on September 11, 2001. Almost overnight, the legislation was flipped on its head. Combating maritime terrorism was moved to the forefront and those provisions were massively expanded. A requirement for maritime transportation security plans was cobbled together, copied liberally from the vessel response plan provisions of the Oil Pollution Act of 1990 (OPA 90).

Of significance here, the statute, which sailed through Congress with minimal debate, required that the Secretary of Transportation (this responsibility was later transferred to the Secretary of Homeland Security) prescribe regulations to prevent individuals from gaining unescorted access to secure maritime areas unless they possessed a "biometric transportation security card." There was no real consideration before or since by Congress as to whether possession of a biometric transportation security card would actually enhance security. How the biometric approach got inserted into the bill is unclear. Possibly it was suggested by a lobbyist. Regardless, the biometric approach has never been re-examined to determine whether it is the best, or even a feasible solution to an ill-defined problem. Even the scope and nature of the maritime terrorism threat has not been examined.

In the period immediately after the horrific terrorist attacks of September 11, 2001, the American public and the United States Government saw terrorists on every airplane and hiding behind every shipping container. Numerous innocent passengers were taken off commercial aircraft because they looked different or read the Koran or did something else out of the ordinary. The decision was made, with minimal deliberation, to compile an extensive list of people who should not be allowed to fly. It was also decided that people should not be allowed to work on U.S. vessels or on waterfront facilities unless they have undergone a successful background check. Persons who had undergone the background checks would be issued identification cards.

No identification card, no maritime employment. Terrorist threat eliminated.

As time passed, it was seen that the terrorist threat was not what was originally imagined and that the initial no-fly list program was seriously flawed. Many innocent persons were adversely impacted, with little opportunity for recourse. The program has since been severely constrained.

No such adjustment has been made to the maritime security program; it is largely the same as it was envisioned in 2002 when the legislation was adopted. The Transportation Security Administration has been diligently trying to implement a program that was fatally flawed from the outset. Certainly, there have been a number of missteps, but the course set by Congress has remained constant. With the maritime security program as enacted into law, the U.S. Government has been chasing ghosts for 11 years. The time has come to conduct a meaningful analysis of the extent of the maritime terrorism threat and the most efficient way to address that threat.

As a student of history, I recall the period following the attack on Pearl Harbor on December 7, 1941. Japanese-Americans were viewed with suspicion, if not downright hostility. Japanese-Americans on the West Coast (California, Oregon, and Washington) were moved into internment camps for several years, with no legal recourse. Curiously, Japanese-Americans on the East Coast and in Hawaii were unaffected. It was eventually recognized that Japanese-Americans were not a security threat, the internment camps were closed, and the federal government apologized and paid limited reparations.

This leads me to ask why individuals working at a grain elevator that loads wheat onto a barge or ship on the Mississippi River are potential threats to the security of the United States while individuals loading wheat onto a railcar twenty miles away are not. What security threat is presented by the three or four crewmembers on a whale-watching boat out of Maine or commercial fishermen on the Gulf of Mexico? National security checks are not undertaken with regard to the driver of a 30-passenger bus, but are with regard to the master and crew of a 30-passenger tour boat.

The GAO said that the test of the electronic readers ... not only failed, but that test results were so badly gathered that it is impossible to determine exactly where the problems lie and what needs to be corrected.

Why?

We have created a program that singles out one commercial sector for vastly heightened scrutiny and developed an overly-complex process for its implementation. I recommend that Congress immediately call a halt to further implementation of the U.S. maritime security program and direct the establishment of an independent commission to examine the threat and recommend a reasonable means of addressing that theat. We have spent 11 years trying to resolve a problem that may not have ever existed outside of our own overheated imaginations. Let's take a deep breath and examine where we are.

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Cargo Morphs in New Directions

As Exports Climb to All-Time High

Brendan Dunican,
Ocean Marine Regional
Vice President, Travelers

After a decline during the recession years, U.S. exporters today are pleased with the record-breaking value of overseas shipments. At the same time, they are learning to cope with shipping cargo that can be far different than the types of goods sold in the past. Looking back just a few years, exporters could often count on freight that was neatly contained and relatively impervious to long journeys. Today, they may be faced with goods that require special handling, or cargo with distinctive characteristics that must be taken into account during transit.

Getting cargo from 'Point A to Point B's has never been more challenging – and shippers who are caught unprepared may see loss claims soar and their business reputation damaged. When it comes to moving unusual cargo, the best protection is to work closely with your insurance agent and logistics provider to identify an effective strategy for managing risk.

The changing nature of cargo shipped from the U.S. is particularly evident in the U.S. Census Bureau's statistics that track the annual value of exports. Overall, 2012 ended at $1.55 trillion, an impressive 46% increase over the 2009 low-water mark for exports.

Digging into the numbers, the traditional cargo leaders – capital goods, automotive and consumer goods – all made healthy comebacks. However, the growth in industrial supplies was particularly strong, rising 68% off the 2009 low to account for roughly one-third of all exports in 2012.

A number of factors are contributing to the recovery in export value, including a weak dollar that makes U.S. products more attractive to overseas markets. One of the most prominent factors has been the rise of global technology that allows even the smallest seller to connect with and ship their products to willing buyers around the world. While the impact of technology on the movement of goods can be seen across all categories of exports, one example from the industrial supplies category illustrates both the opportunity and the challenge for shippers: used equipment. Manufacturing and construction equipment that owners in the United States are replacing with newer, more efficient models often have enough operational life left in them to whet the appetite of potential buyers in developing countries in Africa, Asia, Latin America and Eastern Europe. Rather than turning to the scrap metal market, these owners increasingly are striking deals and shipping their used equipment to new homes overseas. As a result, international transportation providers are seeing a range of industrial components, from complete manufacturing assembly lines to printing presses, heavy-duty cranes and textile machinery. This used cargo comes with a different array of risks that can present unexpected problems for buyers and sellers alike.

$1.55T

The changing nature of cargo shipped from the U.S. is particularly evident in the U.S. Census Bureau's statistics. Overall, 2012 ended at $1.55 trillion, a 46% increase over the 2009 low-water mark for exports.

A Mishap that Mushroomed

While overseas transit for the majority of cargo is uneventful, insurance is usually obtained to cover physical damage from mishaps that may occur during the voyage. When cargo consists of new merchandise, the insured value is typically easy to determine, and replacements are not difficult to find if something goes wrong. The story can end differently when second-hand cargo is involved.

One seller and insurer found this out the

hard way. The multiple pieces of a several million dollar production assembly line were in transit to an overseas destination when the container that held an elevator unit was swept overboard. The estimated replacement value of the elevator unit was about $100,000. However, production of the unit had ceased years before, and none were available on the used-equipment market. The cost to custom-manufacture a replacement was $1 million, a costly and unanticipated expense.

Even when a component is not lost, problems can arise, including:

- *Machinery that worked perfectly well at the point of disassembly may no longer function properly when installed by its new owners. Without careful documentation about cargo condition and expected functionality at destination, exporters and transportation providers may find fingers pointing at them as the source of the malfunctioning.*
- *Equipment that normally operates with precision may need to be recalibrated after a rough sea voyage. Establishing who is responsible for this cost before transit commences is important.*
- *Since some components may be oddly shaped or oversized, flat racks may need to be used instead of containers, increasing the risk of mishap. Shippers should take extra steps to ensure the flat racks are loaded and stowed securely, and they should prohibit goods from being moved from the flat racks during transit. And professional packing services should, of course, be utilized to help ensure a safe arrival.*
- *Loading and unloading the equipment, as well as stowing it securely on board each conveyance, may present significant challenges that the logistics provider will need to address. To illustrate what can go wrong, consider this recent example from a shipment abroad: the delivery of more than a dozen used construction cranes worth $20 million went from routine to disaster when straps, that were not adequate for the weight involved, broke during the unloading process. The dropped crane was heavily damaged.*
- *In each of these situations, it is critical that buyers and sellers understand who is responsible at every point of transit and mitigate their risk with appropriate insurance coverage.*

Taking the Right Steps

The sale of used manufacturing equipment starts a multi-step process. Take an assembly line: It must be dismantled and broken down into components at the originating site. Then it is placed in containers, crates or flat racks. Next, it is moved to the port and stowed onboard. Once the destination is reached, the process is duplicated in reverse: unloading, transporting to the new site, and installing the line in its new home.

By working with an experienced ocean marine insurance agent or broker, shippers can identify the requirements they need to put in place to protect themselves. In many cases, this may simply mean requiring documentation about the agreements between buyer and seller as to responsibilities, payments and processes. It could also often include requiring that the logistic provider be someone with experience in handling oversize, used cargo. Each move is different, particularly when non-traditional cargo is involved. By understanding the "cradle-to-grave" arrangements, shippers can have the most assurance that their risks are being managed and any potential damage is covered.

Annual Economic Sanctions Update

Iran Continues to Dominate U.S. Sanctions headlines

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This article reflects developments through May 15, 2013, the date of submission for publication. The views expressed herein are those of the authors, do not necessarily reflect the opinion of the firm or other members of the firm, and should not be construed as legal advice or opinion or a substitute for the advice of counsel. Please contact Barbara Linney (BLinney@milchev.com) at (202) 626-5806 if you have questions or desire assistance.

Since last year's update appeared in the May 2012 issue of *Maritime Reporter & Engineering News*, Iran has continued to dominate U.S. sanctions headlines. Significant actions by both the U.S. Congress and Department of the Treasury's Office of Foreign Assets Control (OFAC) over the past year have increased sanctions against Iran substantially, and further initiatives are pending. Our 2013 update concentrates on these key developments, with particular focus on Iran sanctions of interest to the maritime community.

The most sweeping legislative development during the past year was the August 10, 2012 enactment of the Iran Threat Reduction and Syria Human Rights Act of 2012 (the ITRA), which included amendments to the Iran Sanctions Act of 1996 (the ISA), the Comprehensive Iran Sanctions, Accountability and Divestment Act of 2010 (CISADA), and the National Defense Authorization Act For Fiscal Year 2012 (the NDAA 2012).

The ITRA expanded the categories of activities sanctionable under the ISA to include:

- *participation in certain petroleum joint ventures;*
- *provision of goods, services, technology or support that could directly and significantly contribute to the maintenance or enhancement of Iran's ability to develop domestic petroleum resources or its domestic production of petrochemical products;*
- *ownership, operation, control or insurance of a vessel used to transport crude oil from Iran to another country;*
- *concealing the Iranian origin of crude oil or refined petroleum products;*
- *export, transfer or facilitation of transshipment of goods, services or technology to Iran, directly or indirectly, that would contribute materially to Iran's WMD and conventional military capabilities; and*
- *participation in certain joint ventures relating to the mining, production or transportation of uranium.*

Several of these provisions, together with a broader definition of the term "services" used throughout the ISA, have a significant impact on the maritime industry. In March of this year, the U.S. Department of State acted to impose sanctions against a Greek national and shipping company for concealing the Iranian origin of crude oil – one of the new heads of sanctionable activity. At the same time, two insurance companies were sanctioned under the ISA for providing insurance or reinsurance to the National Iranian Tanker Company (NITC).

Other provisions of the ITRA, including amendments to CISADA and the NDAA 2012, imposed additional sanctions targeting Iran's petroleum, shipping, insurance and financial sectors.

In late 2012, Congress also included additional sanctions in the National Defense Authorization Act For Fiscal Year 2013 (the NDAA 2013). Building on the ITRA, the NDAA 2013 requires imposition of additional sanctions with respect to the energy, shipping and shipbuilding sectors of Iran for conduct occurring on or after July 1 of 2013, as follows:

- *subject to certain exceptions, including for transactions involving food, agricultural commodities, medicine, medical devices and humanitarian assistance, ISA sanctions are to be imposed against persons who knowingly sell, supply or transfer to or from Iran significant goods or services used in connection with the energy, shipping or shipbuilding sectors of Iran, including by companies such as the National Iranian Oil Company, the NITC, and the Islamic Republic of Iran Shipping Lines;*
- *subject to an exception for persons exercising appropriate due diligence, ISA sanctions are required to be imposed against persons who sell, supply or transfer, directly or indirectly, to or from Iran, precious metals or graphite,*

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certain raw and semi-finished metals, and software for integrating industrial processes determined to be used by Iran, among other things, in connection with the energy, shipping, shipbuilding and certain other sectors of the economy of Iran; and

- *subject to exceptions for transactions involving food, agricultural commodities, medicine, medical devices and humanitarian assistance and persons exercising due diligence, ISA sanctions also will be required against persons providing underwriting services or insurance or reinsurance for sanctioned persons and activities.*

In addition, the NDAA 2013 provides for sanctions against financial institutions that conduct or facilitate financial transactions related to sanctionable activities. Other provisions of the NDAA 2013 designate port operators and entities in the energy, shipping, and shipbuilding sectors of Iran as entities of proliferation concern and require blocking of the assets of such entities and placing them off-limits to transactions with U.S. persons effective as of July 1, 2013.

These Congressional initiatives led to the amendment and restatement of both the Iranian Financial Sanctions Regulations (IFSR) and the Iranian Transactions Regulations (now the Iranian Transactions and Sanctions Regulations, or ITSR). The Administration also issued five Executive Orders targeting Iran in 2012. Two of these targeted human rights abusers and foreign sanctions evaders, respectively, while the other three primarily implemented new statutory provisions. In addition, OFAC continued to add Iranian and Iranian-related parties to the Specially Designated Nationals and Blocked Persons List (SDN List) of individuals, entities, vessels and aircraft that are "off-limits" to U.S. persons. As noted above, the U.S. Department of State also meted out additional sanctions under the ISA. However, as a result of the removal of sanctions against three companies determined to have provided reliable assurances that they will not knowingly engage in sanctionable activity in the future, the list of persons remaining subject to ISA sanctions now stands at fifteen (fourteen companies and one individual).

Challenges in the coming year will include reconciliation of the general licenses contained in the ITSR designed to facilitate agricultural, medical and humanitarian trade with the mandate under the NDAA 2013 to block the property of and prohibit transactions by U.S. persons with all Iranian port operators and entities in the shipping sector of Iran. Implementation of the NDAA 2013 will substantially increase obstacles to delivery of and receipt of payment for legitimate trade with Iran by both U.S. and foreign companies unless Congress or the Administration take steps prior to the July 1 to ameliorate the impact of the new NDAA 2013 sanctions on such trade. While the primary target of the ITRA and the NDAA 2013 was foreign involvement in various significant sectors of Iran's economy, two key provisions of ITRA – Sections 218 and 219 – and related provisions of the ITSR will have a significant impact on U.S. corporations whose subsidiaries engage in trade with Iran.

First, foreign entities owned or controlled by U.S. persons now are prohibited from knowingly engaging in any transaction directly or indirectly with the Government of Iran or any person subject to the jurisdiction of the Government of Iran that would be prohibited if the transaction were engaged in by a U.S. person or in the United States. However, Section 218 of ITRA and Section 560.701 of the ITSR provide for imposition of penalties on the U.S. person who owns or controls the offending foreign entity, rather than against the foreign entity.

Section 219 of ITRA amended the Securities Exchange Act of 1934 to compel issuers required to file reports with the Securities and Exchange Commission (SEC) to disclose and provide detailed information regarding certain activities of the issuer or its affiliates that are sanctionable under the ISA or certain provisions of CISADA or involve blocked persons or the Government of Iran. Such notices are to be transmitted to the President and certain congressional committees, and the President must undertake an investigation and determine within 180 days whether sanctions should be imposed under the ISA, CISADA, or any other applicable U.S. laws relating to sanctions with respect to Iran. However, Guidance issued on December 4, 2012 by the SEC makes it clear that disclosure of lawful activities under OFAC general or specific licenses is not required. These requirements will apply to both U.S. and foreign issuers, and will serve to draw the attention of investors and regulators alike to companies continuing to do business with Iran. More recently, OFAC has focused on Iran's use of exchange houses and trading companies to evade sanctions against Iran. Guidance issued on January 10 urges U.S. persons to exercise enhanced due diligence in connection with transactions with such exchange houses and trading companies, and two such entities were added to the SDN List on May 15.

Eager to maintain the anti-proliferation momentum, Congress currently is considering proposed legislation that would, among other things, impose sanctions similar to those enacted under the NDAA 2012 against foreign persons who engage in certain financial transactions related to purchase of petroleum or petroleum products from Iran. If passed, the proposed legislation would require sanctions to be imposed against foreign persons who engage in certain financial transactions related to the purchase, directly or indirectly, of any goods or services by or from a person in Iran, subject to exceptions for transactions related to sales of agricultural commodities, food, medicine and medical devices to Iran or involving countries that have significantly reduced their trade with Iran.

Other Developments

Over the past year, OFAC also took action on several other fronts, including imposing further sanctions against Syria and persons threatening the peace and stability of Yemen and making numerous additions to the SDN List under various sanctions programs, while gradually easing sanctions against Myanmar (Burma). A comprehensive discussion of all recent changes in U.S. and international economic sanctions is beyond the scope of this article, but readers are cautioned to consider all potentially applicable sanctions laws and regulations before proceeding with international transactions.

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Infrastructure for Alaska's LNG and Other Resources

Trans Arctic Shipping Routes (TASR)

Joseph N. Fields III,
Alaska International
Development Corporation.

It is time for the global maritime industry to push development of Trans Arctic Shipping Routes (TASR) and port facilities along Alaska's northern coast. Not only for shipping goods from the Pacific to Atlantic and vice versa, but specifically to facilitate development of specialized ports for LNG exports from Alaska to global markets.

Alaska has a limited maritime community mostly in the south: Southeast Alaska is a maritime community; South Central, Valdez, The Kenai Peninsula and Anchorage much less so; Southwest Alaska and Aleutians have fishing fleets and the Western, North Slope coasts and, the Interior have only marginal connections to large scale maritime activities. Nearly all Alaska's vast energy resources, LNG and coal, are on the North Slope.

Today in Alaska there is a heated debate over LNG pipeline routing, as all scenarios call for LNG pipelines from the North Slope to Valdez (for export) or Anchorage for electricity production, domestic heating and in-state industrial use. To my knowledge, no studies of impacts of increased ship traffic into the small Port of Valdez or the limited Port of Anchorage have been done.

Both proposals call for an 800-mile pipeline: One, a large diameter high-pressure pipeline to Valdez, the other, a smaller, low-pressure line to Anchorage with a possible spur to Fairbanks. And, separately, there is a proposed gas conditioning plant on the North Slope for a trucking operation to bring heating fuel to Fairbanks.

Under either scenario, not all regions of Alaska share in utilization of North Slope LNG which is in conflict with Alaska's economic construct as an "Owner State," wherein all parts of Alaska are accorded equal benefit from Alaska's natural resources.

Developing maritime infrastructure on the North Slope will facilitate development of the TASR and transit across the Arctic Basin between the Pacific and Atlantic and it should be part of the debate. Thinning arctic ice, purpose built ships and specialized port facilities for exporting LNG from North Slope tidewater to world markets would establish an anchor for commerce across the TASR. For the Alaska's LNG producers and the state, a North Slope LNG export facility makes economic sense for all. Exporting LNG directly from the North Slope eliminates 800 miles of pipeline and about $50 billion in development costs. It also creates a revenue stream for the producers and the state faster.

For Alaska's residents, North Slope LNG Export means a more rapid distribution of resource revenue to them, and developing Alaska's North Slope LNG export infrastructure does not impair additional development of in-state energy, domestic heating or industrial use through appropriately sized LNG pipeline projects.

As background, in 1992 I joined an Alaskan delegation to Finland for the International North Sea Routes Conference hosted by the Finnish Foreign Trade Association, The Finnish-American Chamber of Commerce and the State of Alaska. My interest was development

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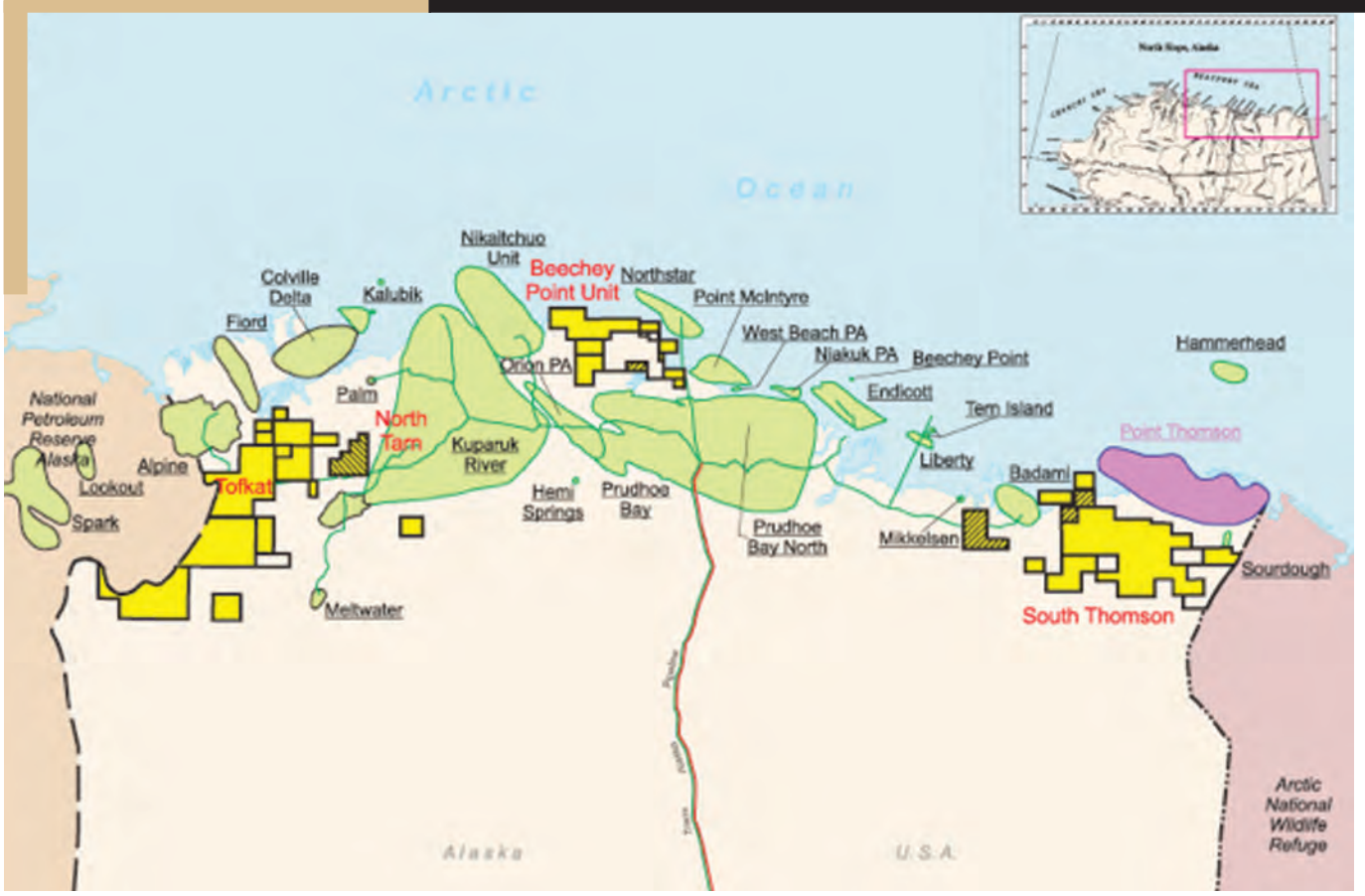


North Slope Oil Map

and financing a transshipment cargo port at Dutch Harbor in the Aleutians.

In preparation, I gathered National Oceanic and Atmospheric Administration (NOAA) charts and polar maps and read volumes of reports. Delegation members also made an inventory of Alaskan products for export and products being shipped between the Pacific and Atlantic via the Panama Canal. Also studied were statistics on products shipped from Europe to Asia via Suez Canal or around the Capes.

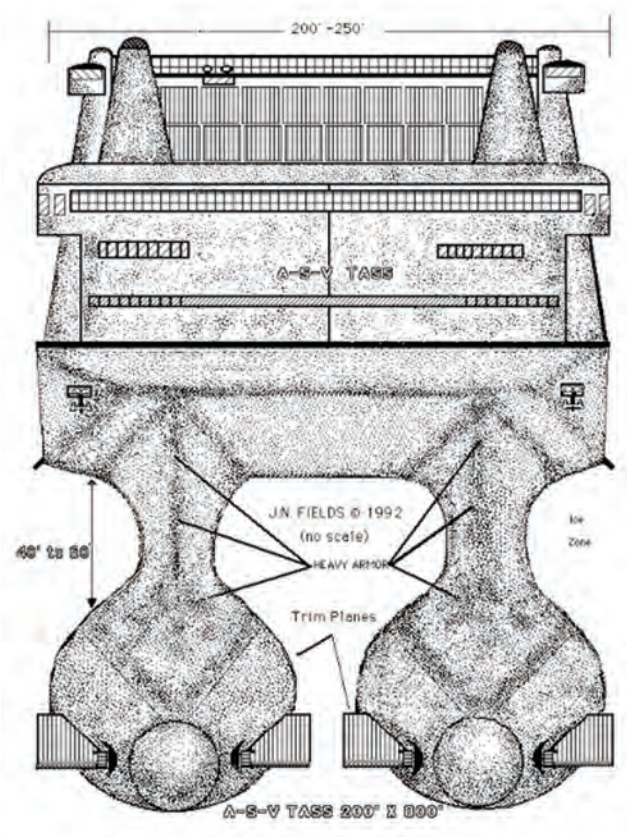
In doing so, we came to believe the TASR offered an opportunity for the global shipping dynamic: vastly shorter distances offer shorter port-to-port transit times that will potentially amount to hundreds of billions of dollars in reduced operating costs and saving to clients, not to mention reduced energy use, emissions as well as less exposure to disasters inherent on current routes.

Weather and ice conditions do present formidable challenges. We also learned other Arctic nations had more focus on the Arctic than the U.S., and that Alaska had no authority to create or operate the TASR. Finland was building icebreakers and assisting Russia with the Shtokmanovskoye Gas Prospect in the Barents Sea. And as we grew familiar with the Shtokmanovskoye Project, we realized Alaska's resources had commercial volumes of natural gas that could support creating necessary LNG conditioning, pipeline and loading facilities on the North Slope. Not to mention the potential of exporting the Point Lay High-BTU, Low-Sulfer, low ash exportable "clean" coal. We toured icebreakers, reviewed remote sensing technologies capable of providing real time analysis of ice conditions and we visited facilities that simulate ice conditions on ships. With all this enhanced knowledge, we became convinced of the technical ability to construct purpose built ships (see attached student drawn SWATH concept drawing below) and loading facilities suited for the TASR.

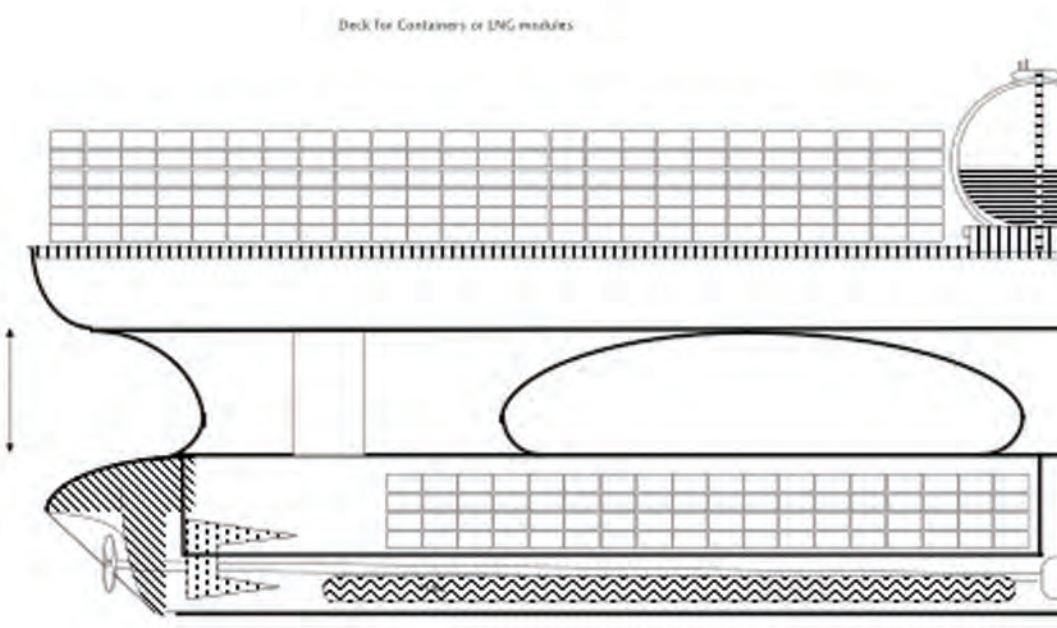
We envisioned a "mirror" development to the Shtokmanovskoye project in Alaska. Instead of bringing natural gas onshore for conditioning and shipment south, Alaska's natural gas (and high BTU, low sulfer coal) could be sent offshore three to five miles through a pipelines inside sub-surface tunnels to loading platform where purpose built Very-Large Ice-Classed LNG Ships could transport the gas to markets in Asia or Europe. We were confident of the Finnish shipbuilders experience and ability to build the ships.

With this knowledge we returned to Alaska and presented the possibilities. Unfortunately, interest in exporting LNG via the TASR waned as then Governor Hickel left office and a new Environmental Industry backed anti-development administration took control.

Fast forward 20 years and technology has advanced non-stop, from computers and communication to LNG transportation and distribution. In maritime LNG transportation, Submerged Turret



Concept drawing of a purpose built SWATH for Arctic Ops.



Loading (STL) Buoys and Icebreaking Offshore Facilities exist. Tunnel Boring Machines (TBM's) can tunnel the subsea floor, eliminating many environmental impacts, and, the development can be done at a considerably lower cost than a $70 billion dollar large-diameter line proposed from the North Slope to Valdez or Anchorage.

In October 2012, The TransCanada Corporation proposed a rerouted project to Anchorage and detailed it to Alaska's Governor Parnell. The update reportedly claims it will cost about $70 billion for a North Slope gas treatment, conditioning plants, and 800-mile pipeline to South-central Alaska including a LNG storage facility and tanker terminal to export 15 to 18 million metric tons of LNG annually.

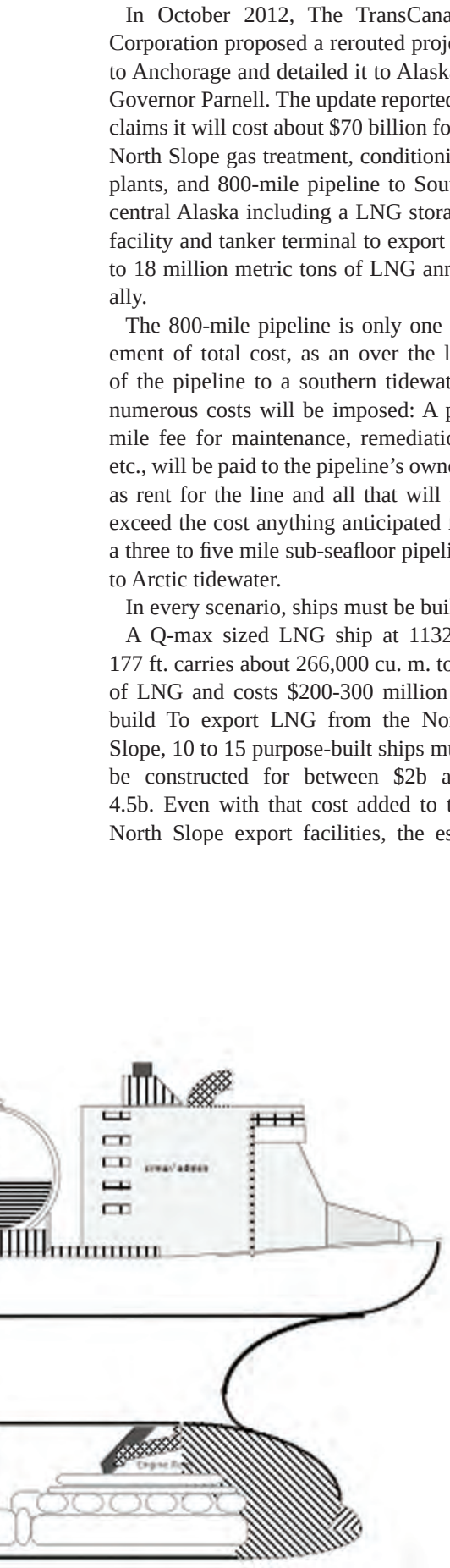
The 800-mile pipeline is only one element of total cost, as an over the life of the pipeline to a southern tidewater, numerous costs will be imposed: A per mile fee for maintenance, remediation, etc., will be paid to the pipeline's owners as rent for the line and all that will far exceed the cost anything anticipated for a three to five mile sub-seafloor pipeline to Arctic tidewater.

In every scenario, ships must be built.

A Q-max sized LNG ship at 1132 x 177 ft. carries about 266,000 cu. m. tons of LNG and costs $200-300 million to build To export LNG from the North Slope, 10 to 15 purpose-built ships must be constructed for between $2b and 4.5b. Even with that cost added to the North Slope export facilities, the estimated development should be $50b less than crossing Alaska to Anchorage, and the timeline is compressed.

Most importantly for Alaskans, the differential capital cost between proposed pipelines going south, plus facilities and ships and, TASR North Slope LNG export will be significant. On the surface it is $50b, ample capital to fund both in-state domestic gas heating distribution systems as well as, a full spectrum of in-state industrial developments when practical and profitable.

So, does the TASR development benefit Alaskans more than 800-mile pipeline south? In a word, yes. Alaska's leaders say Alaska's resources belong to "us," the people. However in reality, Alaska's resources belong to the State and the State is mandated to manage them for the highest benefit of the Alaskan people. If that is correct, then producing resource revenues for less cost on a shorter schedule brings the highest benefit.



Non-Tankers are Next on OPA 90 List

In 2008 the USCG issued the tanker final rule for salvage and marine firefighting (SMFF) under the Oil Pollution Act of 1990. This rule primarily required tank ships and barges carrying oils as defined in the 33 CFR 155 as cargo to pre-contract qualified salvors to promptly respond to a marine casualty in U.S. waters.

While tankers were the primary focus of the new rules, Non-Tankers – defined by the USCG as any vessel over 400 gross tons – waited quietly for a likely turn with SMFF requirements. Long stalled in Washington, the Non-Tanker rules were recently accepted by the Office of Management and Budget and will likely be issued as Maritime Reporter goes to press.

(Image: Donjon-Smit)

Why the Delay?

Raymond Lord, President of Donjon-Smit, explains succinctly: "Slow and steady often wins the race. Since the concepts of OPA90 regulations were first introduced in the wake of the Exxon Valdez disaster the world of emergency maritime response has continued to be an ongoing evolutionary process. Granted that was over 20 years ago but we need to step back and give credit to the progress that has been made thus far."

As is the case with most new rules to industry, prudent evaluation instead of an emotional rush often yields stronger rules for the good of all.

"Many factors must be taken into account when proposing legislation that will have a profound effect upon what may be considered the back bone of U.S. commerce - the shipping industry" Lord continued. "The new non-tank regulations will effect close to 20,000 vessels. The additional administrative burden for vessel owners, the USCG, as well as the approved salvage companies will be substantial. Again, the considerable time taken to develop and institute these new non-tank regulations will only be of benefit to all parties involved giving everyone time to make the proper adjustments and to ensure a smooth implementation process."

"The expected economic and procedural implications of the OPA-90 Non-Tank SMFF regulations on both government and industry are notable, so it was important to take the time to align all stakeholders prior to its implementation," said Maurice Denis, Regional Manager, SVITZER Salvage Americas. "However, with the successful entry of the Tank sector into SMFF compliance in February 2011, both the public and private sectors are now better prepared to take on compliance for the 16,000 vessels in the Non-Tank segment, which is likely driving the recent push we see now for Non-Tank SMFF enforcement."

Implementing SMFF rules for tankers first made sense, since their cargoes presented the greatest risk of a major disaster. Also, this created several indirect advantages to regulators. Working with an industry considerably smaller than the non-tank market, the already heightened regulatory culture for tankers resulted in a much easier implementation process, Lord said.

At sea or at berth, shipowners never know when potential disaster could strike. Per the soon-to-come Non-Tanker rules, which has been stalled for several years but is expected out soon, More than 16,000 ships currently operating in and out of U.S. waters will be required to update their Vessel Response Plans (VRP) by contracting with a qualified salvor.

(Image: Svitzer)

The new non-tank regulations will effect close to 20,000 vessels. The additional administrative burden for vessel owners, the USCG, as well as the approved salvage companies will be substantial.

Raymond Lord, President, Donjon-Smit LLC

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FIREFIGHTING

OPA-90 SALVAGE & MARINE FIREFIGHTING SERVICES

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SVITZER is a truly global salvage solution. Our unique position allows us to offer our customers not only a comprehensive OPA-90 salvage and marine firefighting service solution, but also a second-to-none global emergency response solution. With experienced salvage professionals stationed in over ten countries worldwide and a specialized US-based organization to serve customers under our USCG approved OPA-90 SMFF compliance program, SVITZER is able to serve the marine industry with unparalleled experience in emergency response.

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SVITZER

OPA 90 regulations place strict liability on the shipowner himself and as such it is critical for them to diligently evaluate to select the best contractor, and not just go by third party recommendations or fancy websites,"

Mauricio Garrido, President, T&T Salvage

What does it mean to you?

The new regulations address the need to identify appropriate response resources, including diving, salvage, firefighting or lightering equipment and personnel, within Vessel Response Plans (VRPs). Expected to impact some 16,000 vessels, shipowners likely have already examined the new rules and their likely impact. That said, there remain as many unanswered questions as answers on what this means for shipowners and salvors alike.

Several leading salvage companies weighed in on the new rule, and the preparations necessary to ensure a seamless and painless implementation for shipowners.

"OPA 90 regulations place strict liability on the shipowner himself and as such it is critical for them to diligently evaluate to select the best contractor, and not just go by third party recommendations or fancy websites," said Mauricio Garrido, president, T&T Salvage. He added, USCG regulations concentrate on industry's ability to deploy proper equipment and personnel to a casualty in U.S. waters, no matter the cause.

"The OPA-90 Non-Tank SMFF regulations will now put emergency response and preparedness front and center within the vessel owner's business," said Denis. "The regulations will require shipowners to take more proactive measures to prepare for and mitigate the impact of an emergency situation, and at the same time will offer vessel owners more commercial predictability in case of a response."

Each firm contacted for this story insisted that shipowners first and foremost be diligent in vetting the prospective salvor to ensure that it is qualified, as well as being a match to the operator's global fleet profile.

"Salvage is a relationship-based business, where reliability and trust between shipowner and salvor is paramount for a successful emergency response," said Maurice Denis, Regional Manager, SVITZER Salvage Americas. "(This presents a) very unique opportunity for shipowners if they select a SMFF Provider which can offer them truly-global emergency response coverage and thus fully capitalize on these benefits anywhere their vessels transit worldwide."

Making the Case

Never shy about most things, Marine Salvors did not disappoint when queried about the road ahead and what each needs to do to be ready for what comes next.

Citing an inventory of prepositioned owned salvage and firefighting equipment, Garrido said that T&T Salvage meets compliance in all USCG Captain of the Port Zones and stands ready to support Non-Tankers for compliance with the new rules, as well as with capable response to actual emergences. According to Garrido, T&T Salvage holds more than 60% of tanker market share, with a client list that includes BP, Chevron, Conoco-Phillips, Kirby, SeaRiver, Mitsui OSK, Aramco and Maersk.

High profile, experienced players Smit Salvage and Donjon Marine teamed years ago to create Donjon-Smit; their OPA 90 face to the market. Today, they are considered by many as the leading provider of worldwide emergency response salvage services, said Raymond Lord, President Donjon-Smit LLC. "Currently we have a majority of the present tank vessel clients under contract and anticipate we will continue to lead with a dominant share of the non-tanker market as well."

At Resolve, Joe Farrell and his crew pride themselves on differentiation, finding and exploiting market specialties, while maintaining a full menu of salvage and emergency response.

"For response, non-tank owners can trust the same guys that met them in their office, or talked to them on the phone or communicated by email to be on the other end of the phone in an emergency," Matthew Hahne of Resolve Salvage & Fire (Americas) Inc. "In the early days, it was Joe Farrell that answered the phone and Joe that responded. Now, Joe has ensured ev-

Resolve has been providing nontank fleet coverage in the U.S. for 20+ years already. This ... simply makes our existing process and existing U.S. coverage a requirement.

Matt Hahne, Resolve Salvage & Fire (Americas)

There is also a unique opportunity for shipowners if they select a SMFF Provider which can offer them truly-global emergency response coverage and thus fully capitalize on these benefits.

Maurice Denis, SVITZER Salvage Americas

eryone in his company has the same passion for response and customer service that he always showed."

Hahne pointed to three reasons that sets Resolve apart:

1. **Firefighting.** Continuously improving its response posture, it is the only emergency responder with a live-fire academy; one that has produced 30,000+ marine firefighters.

2. **Commitment.** Resolve has invested close to $20m on its equipment, ensuring compliance for not only Resolve, but clients fleets as well.

3. **Funding Agreement.** Resolve's funding agreement – as required by regulations – is owner friendly. It commits Resolve to immediate response and materials while mutually approved contracts are negotiated.

Hahne adds that Resolve has added more firefighting and emergency lightering equipment to the coasts and Great Lakes areas, equipment that is tailored to meet the needs of new non-tank peculiarities. Beyond this, Resolve has adjusted and increased staff. Lana Farrell is interacting with QI's and Owners on Client Services, and Daniel Dettor moved to London to better serve European clients.

Denis points out that Svitzer has been in the salvage business since 1833, providing a depth of experience that cannot be matched. "Secondly, being a truly global company, with offices and operations in more than 40 countries, enables us to offer customers a unique value proposition for OPA-90 response and compliance as well as global support," Denis said. Additionally, Svitzer has made a number of investments in anticipation of the Non-Tank regulations, including emergency response equipment that includes generators, compressors, firefighting pumps and foam, lightering pumps and subsea oil removal systems. "Our largest and most important investment thus far has been on human capital, including strengthening our own operational, technical and administrative organization, building relationships with key subcontractors, and training our marine firefighting assessors and response teams," Denis said.

SailSafe
BC Ferries' Safety Initiative

Murray Goldberg is CEO of Marine Learning Systems (www.MarineLS.com). An eLearning researcher and LMS developer, his software has been used by 14 million people worldwide.

BC Ferries cut time loss injuries in half; it reduced serious injuries by two-thirds; it slashed annual insurance claims costs by more than three-quarters. What are you waiting for?

Can a vessel operator completely reshape its safety culture? Can it transform communications, training, operational practices and even employee engagement? And most importantly, if an operator is able to make such sweeping changes, what measurable difference will it make? It turns out it can make a huge difference to almost every meaningful key performance indicator, as the experience at British Columbia Ferry Services Inc. (BC Ferries) demonstrates. At BC Ferries time loss injuries have been cut in half. Serious injuries have been reduced by two-thirds. Annual insurance claims costs have been reduced by over three-quarters. And BC Ferries was able to do all this even though it was a relatively safe organization before its culture shift. This article describes SailSafe, the BC Ferries' safety initiative and the impressive, measurable improvements in safety metrics that have been experienced as a result.

SailSafe

About five years ago BC Ferries embarked on SailSafe, a major, multi-phased initiative to improve safety. In the words of Mike Corrigan, BC Ferries President and CEO, SailSafe "reevaluates every aspect of BC Ferries safety culture, and empowers all employees to develop solutions."

The all-encompassing SailSafe is built on the four pillars:

- **Safety of People**
- **Safety of Assets**
- **Safety through Procedures**
- **Safety through Communication**

But these pillars, as telling as they are, only barely begin to describe the direct and indirect goals of SailSafe. Aside from being about safety, SailSafe is about engagement, inclusivity, and co-operation. It is a joint program between union and management. It involves every division, every line of business, and it recognizes that nobody understands the job better than the people doing it. As such, it is driven by people at the top, by front-line employees, and by everyone in between. The key to the program's success is that all BC ferries' employees have a place, all have a stake SailSafe.

Phase One

SailSafe, which today is in phase three, was launched in late 2007 with the help of maritime safety and human factors experts from Force Technology and WrightWay Training. Phase one began with a series of workshops and the creation of a website designed to identify learning opportunities (or "gold dust") to be converted into actions plans centered on the four pillars. In all, more than 400 employees contributed to the gathering of gold dust to inform these action plans.

The resulting plans included items from all areas of BC Ferries operations. It included simple items like the assessment of dollies and oil spill equipment, as well as more complex items like the assessment of operations in areas of restricted visibility. It created plans around communication, employee recognition, mentoring and access to information. It addressed topics such as wet weather gear, security planning and MED record books. In all, 49 safety-related action plans - from simple to complex - were addressed in phase one. Forty-four action plans were created, documented and approved, with five of the more complex plans being carried over to phase two.

There were many notable Phase 1 achievements. For example, rigorous risk assessment and local site investigations processes were created and rolled out. Phase 1 also resulted in the creation of a tool called the ALERT handbook for reporting. ALERT stands for "All Learning Events Reported Today," a program

Chart 1

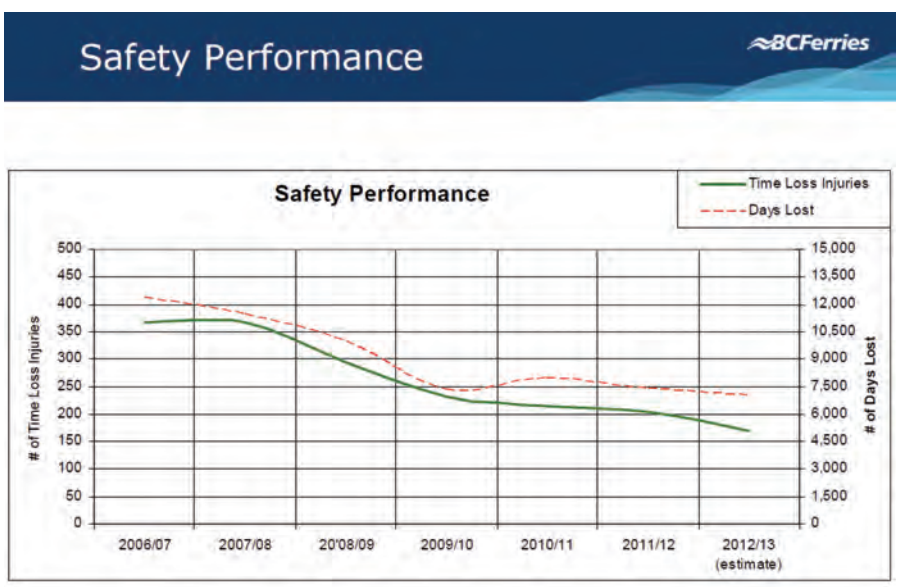
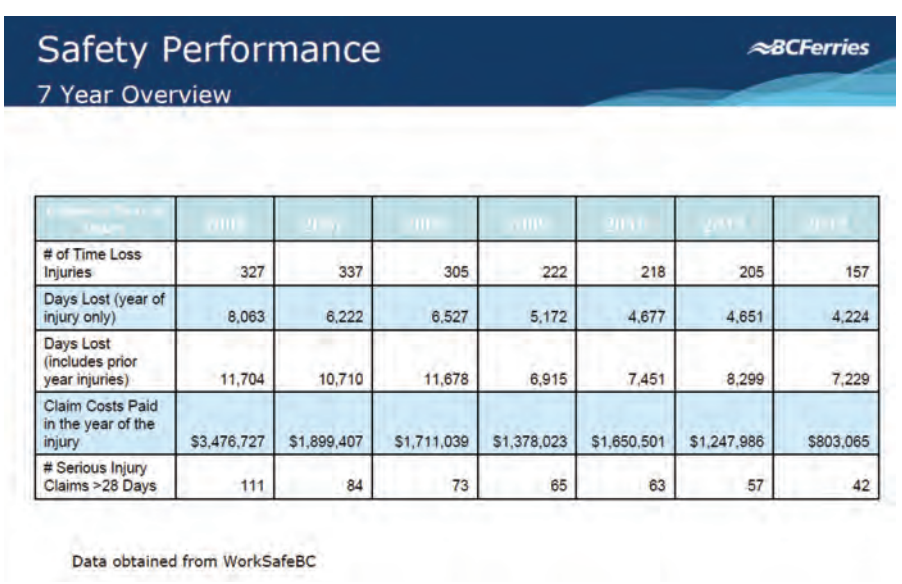


Chart 2



# of Time Loss Injuries	327	337	305	222	218	205	157
Days Lost (year of injury only)	8,063	6,222	6,527	5,172	4,677	4,651	4,224
Days Lost (includes prior year injuries)	11,704	10,710	11,678	6,915	7,451	8,299	7,229
Claim Costs Paid in the year of the injury	$3,476,727	$1,899,407	$1,711,039	$1,378,023	$1,650,501	$1,247,986	$803,065
# Serious Injury Claims >28 Days	111	84	73	65	63	57	42

Data obtained from WorkSafeBC

by which all employees are encouraged to report any safety-related issue. The ALERTs are quickly addressed and have resulted in everything from small changes in procedures to large construction projects.

By April of 2013 approximately 4,000 ALERTs had been submitted, and this wealth of learning opportunities was fostered by a shift in BC Ferries' safety culture. Specifically BC Ferries has adopted a "just culture," wherein employees are not punished for honest mistakes or errors in judgment, and instead learning is gleaned from all opportunities. Because of this, employees never have a reason to conceal an incident or near-miss that can serve as a learning experience for the entire company.

Phase Two

Phase two of SailSafe was an extension of phase one. In addition to addressing the five action plans carried over from phase one, phase two focused on continuing and improving safety performance while addressing an additional 36 recommendations from the original action plan. The end of phase two also saw the creation of the SailSafe Ambassador Team – more than 350 BC Ferries employees volunteered for the job of being SailSafe representatives. Team members act as a two-way information conduit - disseminating SailSafe information, answering questions of employees, and collecting and reporting on safety suggestions.

Phase Three

As of April, 2012, SailSafe moved into phase three. This phase marked the transition from the implementation of a safety program to embodying safety as a normal part of all business activities. There were no new action plans introduced in phase three - instead it is the point where safety becomes an integral part of BC Ferries' culture. The ultimate goal of SailSafe is for the program, itself, to no longer be necessary as safety becomes completely ingrained in every activity undertaken every day at BC Ferries.

Specifically, along with a focus on safety committees and team building, some of the primary phase three goals include the following:

- **Monitoring of phase one and two action plans to ensure that their goals are realized and outcomes sustained**
- **Expanding awareness of SailSafe and safety in general, and engaging more employees in the process**
- **Continuing to build understanding of and use of the highly effective ALERT process.**

In the words of a BC Ferries communication to employees, SailSafe will be successful when BC Ferries has, "…seen and experienced a cultural change in [our] workplace…When safety practices are fully known and practiced by all employees in all areas, all departments, and at all levels - from the President to the newest hire. We will be successful when all aspects of safety are accepted as '*just the way we do it around here*'".

Training Effects

SailSafe is all-encompassing and there are concrete effects to be observed throughout the company. These include the ALERT process, open communication from the CEO to the employees, new procedures, the work of hundreds of SailSafe ambassadors, and more. In addition to all of these effects, one area greatly affected by SailSafe is training at BC Ferries. There are many aspects to this including a new and comprehensive simulation training program, leadership training, apprenticeships, certificate de-

(Continued on page 33)

Chart 3

Simulation Trends of Tomorrow

Transas SIM UC 2013 User's Conference, July 15-19, 2013, Maryland

In the middle of the summer more than 200 maritime professionals from marine simulation training centers from around the world will migrate to the U.S. east coast for four days of hands-on demonstration, topical conferences and a full slate of social events courtesy of Transas' third user's conference, Transas SIM UC 2013 – "Future Trends and New Challenges in Maritime Simulation" – to be held July 15-19, 2013 in Maryland. While the user conference is split between two locations, MITAGS and Calhoon MEBA, the majority of the program takes place on the sprawling complex and campus of Calhoon MEBA Engineering School (CMES) in Easton, Md.

According to Neil Bennett, Vice President, Transas USA, the user conference format is an efficient and economical means to deliver full-style demonstration to a broad group of like-minded individual.

"Transas has grown significantly and we have a very large customer base now," Bennett said. "We have always tried to get personal face-time with our customers, time to talk with them about the issues that are important to them. As you grow larger, it becomes increasingly difficult, so this is a great opportunity to get to know them better, and also, them get to know our people better. Perhaps most important: it is a chance for us to listen and learn, to get their feedback good and bad, to learn and integrate this into the products of the future."

While Transas is a global leader in maritime simulation, it has not simply rested on the laurels of the Transas name and has crafted a well-rounded program that includes a diversity of high level presenters, plenty of hands-on demonstration time, but just as importantly a well-rounded social program that allows users from different centers, from different countries, to meet, mingle and learn from each other perhaps new ways to make its training center profitable. (Full program details are available on: **http://www.transas.com/simuc/**)

"For the customers, it's an opportunity to connect with counterparts from other schools, not just from around the U.S. but from around the world, learning trends and training requirements to help generate more business," Bennett said. Transas' global draw means that approximately 40% of attendees will come from the U.S., while the balance will be evenly split from customers in Europe and Asia.

Dubbed "Future Trends and New Challenges in Maritime Simulation," Bennett said that the focus of the event is of course on new and emerging technologies, but this year's program will take that a step further. "We are trying to look a bit further ahead than the short term challenges," Bennett said, "and we will be looking at, for example, internet based solution, maritime distance learning, new technologies and their impact. We hope that the UC will open some positive discussions related to is 'E-Navigation' or 'E-Maritime' and its future effects on training."

What	Transas SIM UC 2013
When	July 15-19, 2013
Theme	"Future Trends and New Challenges in Maritime Simulation"
Where	Calhoon MEBA Engineering School (CMES) & MITAGS
Info	http://www.transas.com/simuc/

This is the third Transas User's Conference, with the first at MEBA in 2005 and the second in Sweden in 2007. While the intent is a similar meeting every second year, a global and maritime economy meltdown has conspired to put the program on hold since 2007. But according to Bennett, positive movement in the market suggested that this year was a good time to restart the program, and strong participation numbers has proven the company correct. "You can definitely see that confidence is growing," Bennett said. "The shipping industry is still in a difficult place, but we see a positive increase in training initiatives."

SailSafe: BC Ferries' Safety Initiative

(Continued from page 31)

velopment programs and others.

One notable training initiative which embodies the philosophy of SailSafe is the SEA program - standing for "Standardized Education and Assessment". The SEA program is an intensive blended (online and in-person) approach to job-, vessel-, and route-specific training which replaces the previous job-shadowing approach to vessel/terminal familiarization. It is supported by a new learning management system called MarineLMS (the company I work for), which was built in conjunction with BC Ferries and is specifically designed to support training in the maritime context. The SEA program is structured and sustainable, and produces consistent and reliable training outcomes - unlike job shadowing. Like other SailSafe initiatives, the SEA program involves all employees in its creation and maintenance.

SailSafe Outcomes

"We do SailSafe because we know it is the right thing to do," said Mike Corrigan, President and CEO, BC Ferries. "If it saves us from one injury, it has been worth it." But the results of SailSafe, as measured by BC Ferries since 2007 indicate multiple benefits - some expected, many more surprising. Of value for the industry as a whole is that the results are now quantified and documented - proving that attention to the safety culture and training work.

Safety Performance

The goal of SailSafe was to improve safety. It has done a remarkable job at doing so. Since 2007, the number of time loss injuries experienced at BC Ferries each year has dropped from approximately 360 to just over 150. Over the same period, the number of serious injuries has been reduced from roughly 100 to just over 40 and the days lost due to injury has declined from over 12,000 to under 7,500. These results are illustrated in Chart 1.

Cost Savings

It turns out that transforming the safety culture in a maritime organization is also good for the bottom line. When BC Ferries analyzed its insurance claims costs in the period leading up to 2012, they found that these costs had declined from roughly $3.5m to just over $800K, as shown in Chart 2.

On-time Performance

As part of improving safety at BC Ferries, one of the initiatives of SailSafe was to remove on-time performance from the employee assessment criteria for all but top level management. The intent of this was to ensure that an operational employee never compromised safety in the name of ensuring that the ferry arrived at its destination on time. Safety has to be paramount and this rule change sent that message loud and clear.

The concern of such a change was that although worthwhile it in the name of safety, this change would cause on-time performance to suffer. However, when BC Ferries looked over its on-time performance leading up to 2012, it found a remarkable thing. On-time performance had actually improved significantly, rising from approximately 85% to 92% (See Chart 3). While difficult to say why this happened, it is clear that factors such as reduced accidents, employee engagement, and a broadly improved working culture at BC Ferries all played significant roles.

SailSafe has been a successful initiative, but it is far from over. "Experts tell us [safety culture transformation] is a seven to 10 year process and we're only [six] years into it," said Captain Jamie Marshall, VP of Fleet Operations, BC Ferries. There is more to come - further training enhancements, further cultural transformation, and an ongoing process of continuing improvement. As such, we are observing the results of a transformation which is still underway. In some ways, it will never be over.

Economic Impacts of STCW 2010

CDR Emil A. Muccin, USMS, is an Assistant Professor in Nautical Science/ Marine Transportation at the U.S. Merchant Marine Academy. The views here are his own and not those of the Academy, the Maritime Administration or any other branch of the United States Government.

Our global economy and the maritime community have been greatly impacted by the implementation of the International Convention on Standards and Training, Certification and Watch keeping (STCW) 2010 Manila Amendments that went into force on January 1, 2012. Although it has been 18 years from the prior revision of the Convention and Code in 1995 and 35 years since they were adopted in 1978, the maritime industry was not fully prepared for the far reaching changes and implications to operations, training and technology. These amendments were promulgated to improve the global standards of mariner competence. The following is a summarization of the most important changes to the Convention and Code that were adopted by the Manila Amendments with a description of the effected parties and the level of economic impact (See Below). What was impacted immediately when the Manila Amendments went into effect on January 1, 2012 were the new minimum rest hours. This was done to synchronize the STCW requirements with the work hour requirements adopted by the International Labor Organization including the ILO Maritime Labor Convention (MLC). To prevent fatigue and ensure that mariners are fit for duty, all seafarers must have 10 hours rest in any 24-hour period with no exceptions, except during an emergency. Additionally a minimum amount of rest in any 7-day period is increased to 77 hours from 70 hours. The increase to 77 hours rest in a week has unfortunately increased the potential work hours to 91 and with an exception clause to 98 hours. This of course has an economic impact that is favorable to the shipowner and a potential added burden to the mariner. A prudent shipowner should disregard the maximum allowance and adhere to a normal schedule to avoid any potential fatigue issue and subsequent lawsuit if an incident arises.

Of paramount importance is that the rest hour limits now apply to most seafarers onboard, including masters and those who's duties involve safety, prevention of pollution and security, not only watch keeper's as had previously been the case. To top this all off mariners will need to review and sign a record of their work and rest hours periodically normally on a monthly basis to ensure they comply with the minimum rest hours stipulated. In reality this has had a moderate economic impact on shipowners, but from a risk management standpoint it is long overdue and increases the focus on having crew members that are well rested, prepared and alert. **2013 is a major transition year for all mariners as governments will continue to renew and revalidate pre January 1, 2012 certificates and endorsements as well as issue, recognize and endorse certificates for all mariners that commence training prior to July 1, 2013.**

In the cross over period from the commencement of 2013 until July 1, 2013, all maritime education training facilities are in the process of finalizing and obtaining approval from their respective entities, in the U.S. it is the USCG for their new 2017 STCW curriculum. This includes a comprehensive review of all existing courses to take into account the new 2010 Manila Amendment requirements along with the generation of new courses. Modified or new syllabi have to be generated along with STCW Control Sheets that will provide a mechanism for instructors to evaluate students for the required competencies. Implementation of the new curriculum will commence this summer (2013) for the incoming class of 2017. This is having a substantial impact on the maritime training institutions and will require a dual set of courses be established and run until the existing classes of students (2014-2016) graduate.

All maritime training schools at this juncture in 2013 are well underway in finalizing details of the syllabi with new STCW Control Sheets as well as preparing detailed lesson plans prior to arrival of the class of 2017 freshman/plebes.

What has happened for students graduating in the middle group of years from 2014-2016 is that they will be required to complete the delta difference from the old 1995 Amendments to the new 2010 Amendments. Most training institutions have identified that difference and titled it Gap Training for Deck and Engine with associated courses, syllabi and STCW Control Sheets. That way when the students complete the gap training and pass their respective USCG Merchant Marine license exam their new license will truly be good for five years and not only to 2017. On January 1, 2014 another mandatory requirement comes into effect and it is for security training. Maritime piracy has become a main issue of concern world wide in the last 10 years. Piracy has impacted the global economy in the cost range of $10 billion dollars a year. How this will be addressed through the Manila Amendments is via new mandatory security training that encompasses three specific areas: security familiarization training, security awareness training and designated specific security duties.

The USCG issued a Policy Letter on October 11, 2012 concerning Vessel Personnel with Designated Security Duties (VPDSD). This new STCW rating is above Maritime Security Aware-

Changes	Effected/Impacted Party	Economic Impact
1. Improved measures to prevent fraudulent practices associated with certificates of competency and strengthen the evaluation process (monitoring of Parties' compliance with the Convention)	Regulator	Moderate
2. Revised requirements on hours of work and rest and to harmonize as much as possible with the provisions under the Maritime Labor Convention 2006 adopted by the International Labor Organization	Regulators, Shipowners Seafarers	Moderate
3. New requirements for the prevention of drug and alcohol abuse, as well as updated standards relating to medical fitness standards for seafarers	Regulators, Shipowners, Seafarers	Moderate
4. New certification requirements for able seafarers	Regulators, Seafarers Training Schools	Moderate
5. New requirements relating to training in modern technology such as electronic charts display and information systems (ECDIS)	Regulators, Seafarers Training institutions	Moderate
6. New requirements for marine environment awareness training and training in leadership and teamwork	Regulators, Seafarers Training Schools	Minor
7. New training and certification requirements for electro-technical officers (ETO's)	Regulators, Seafarers Training schools	Minor
8. Updating of competence requirements for personnel serving on board all types of tankers, including new requirements for personnel serving on liquefied gas tankers	Regulators, Seafarers Training schools	Moderate
9. New requirements for security training, as well as provisions to ensure that seafarers are properly trained to cope if their ship comes under attack by pirates	Regulators, Shipowners Seafarers, Training Schools	Moderate
10. Near coastal trade voyage	Regulators, Shipowners	Minor
11. Introduction of modern training methodology including distance learning and web-based learning	Regulators, Training Schools	Moderate
12. New training guidance for personnel serving on board ships operating in polar waters	Regulators, Ship owners Seafarers, Training Schools	Minor
13. New training guidance for personnel operating Dynamic Positioning Systems (DPS)	Regulators, Shipowners Seafarers, Training Schools	Moderate

ness (MSA) but below Vessel Security Officer (VSO). It would be desirable for maritime school graduates to have obtained this training, however it is not currently required for initial issuance of a Merchant Mariner Credential (MMC) with a license endorsement. Most maritime schools will be looking into how to incorporate this training in the curriculum as it is highly desirable and probably will be an additional requirement in the near future.

The new Manila Amendments have addressed mandatory minimum requirements for all mariners to obtain instruction, basic training and familiarization in safety. All basic training courses will require refresher training after five years. Similar to what is now required by the USCG for merchant marine license renewal. Courses that will be subject to this provision include: Advanced Firefighting (AFF), Basic Safety Training (BST), Medical Training, Fast Rescue Boat (FRB) and Survival Craft and Rescue Boats. One other significant impact of the 2010 Manila Amendments has been the mandatory carriage of ECDIS equipment aboard vessels per the following phase in period: already phased in on July 1, 2012 were for new passenger vessels above 500 GT and new tankers above 3000 GT, on July 1, 2013 it will be for all new cargo ships above 10,000 GT and on July 1, 2014 it will be for all new cargo ships above 3,000 GT.

These requirements will have an economic impact as all existing licensed deck officers that will serve on these vessels will be required to have an ECDIS familiarization training certificate. This will be an added cost burden on shipping companies but a boon to the training facilities. ECDIS has shown to increase the situational awareness of mariners when properly setup and used. Unfortunately it has been shown that their have been many instances due to improper settings and use that have led to maritime allusions that have been attributed to insufficient training. One potential solution might be if the IMO and other authorities continue to push for standardization of ECDIS design, layout and features. This will allow all mariners trained in ECDIS to be able to move from one vessel to another and operate another brand of ECDIS without a steep learning curve.

In summary STCW as one of the cornerstones of the maritime compliance and regulatory fields along with the International Convention for the Safety of Life at Sea (SOLAS) and International Convention for the Prevention of Pollution from Ships- Marine Pollution/ (MARPOL) has proven to be an instrumental factor in setting the minimum competency and training standards for the maritime industry. Worldwide economic impact from a cost perspective has been substantial and will increase as more stringent rules and regulations come into force in the near future including new Emission Control Areas (ECA's) that will spur on power plant improvements or shifts to alternative fuels including LNG. Continual improvements in electronics, propulsion, technology and computing power have made it apparent that minimum standards in equipment and training need to be continuously re-evaluated with new levels and standards set as improvements are made. From a financial standpoint this has created a capital and resource impact on the maritime community that is weeding out shipping companies that are not cash rich or leveraged to obtain new sources of funding. Those companies that are prospering are the ones that have strategically planned for the long term and have been able to evolve and change to meet the new requirements thrust on them.

For with stagnation comes extinction.

Breaking Down

The Cost of MARPOL

by Gary English

Since January 8, 2009, United States (U.S.) and foreign flagged ships operating in the waters of the U.S. have been subject to MARPOL Annex VI. The Marine Environmental Protection Committee (MEPC) of the International Maritime Organization (IMO) adopted amendments to Annex VI and the nitrogen oxides (NOx) Technical Code, collectively referred to as Annex VI (Revised). Annex VI (Revised) entered into force on July 1, 2010. These amendments include significant and progressive limits for sulfur oxide (SOx) and NOx emissions from marine engines and for the first time addressed emissions of Particulate Matter (PM). The amendments replaced the SOx Emissions Control Areas (SECA) by introducing the concept of Emission Control Areas (ECA) for SOx, NOx, and PM.

On March 26, 2010, MEPC at its 60th session adopted amendments to MARPOL Annex VI to designate the new North American ECA and at its 62nd session, July 2011, to designate the U.S. Caribbean Sea ECA. The North American ECA entered into force on August 1, 2011 and took full effect on August 1, 2012; the U.S. Caribbean Sea ECA entered into force on January 1, 2013 and shall take full effect on January 1, 2014. The boundaries of the North American and the U.S. Caribbean Sea ECA are defined in Table 1.

Annex VI (revised) implements a three-tier structure for new engines.

- Tier I applied to a diesel engine that was installed on a ship constructed on or after January 1, 2000, and prior to January 1, 2011, and represents the 17 g/kWh standard, as stipulated in the existing Annex VI.
- For Tier II, NOx emission levels for a diesel engine installed on a ship constructed on or after January 1, 2011, would be reduced to 14.4 g/kWh.
- For Tier III, NOx emission levels for a diesel engine installed on a ship constructed on or after January 1, 2016, would be reduced to 3.4 g/kWh, when the ship is operating in a designated ECA. Outside a designated ECA, Tier II limits apply.

The Coast Guard has entered into a Memorandum of Understanding (MOU) with the Environmental Protection Agency (EPA) dated June 27, 2011, to set forth the terms by which the USCG and EPA will mutually cooperate in the implementation and enforcement of Annex VI to MARPOL as implemented by the Act to Prevent Pollution from Ships (APPS).

The EPA has conducted an analysis of the expected economic impacts of Annex VI (Revised) on the markets for marine diesel engines, ocean-going vessels, and the marine transportation service sector. The EPA examined the impacts of all components of the markets for marine diesel engines, ocean-going vessels, marine fuels and international marine transportation services. This included the cost of the Clean Air Act emission control program marine diesel engines for U.S. vessel owners and the costs of complying with the emission and fuel sulfur controls for all ships operating in the area proposed by the U.S. Government to be designated as an Emission Control Area (ECA) under MARPOL Annex VI. This analysis looked at two aspects of the economic impacts: estimated social costs and how they are shared across stakeholders, and estimated market impacts in terms of changes in prices and quantities produced for directly affected markets.

Annex VI (Revised) requires each party to take all reasonable steps to promote the availability of compliant fuel in its ports and terminals. For ships using low sulfur fuel oil, separate fuel supplies may be carried for use while operating worldwide and within the ECA's. Table 1 below provides the fuel oil sulfur limits referred to in Annex VI (Revised).

With limited exceptions, including for certain public vessels, all vessels that operate in the North American ECA are required to be in compliance with the Annex VI (Revised) ECA fuel oil sulfur

Table 1

Maximum allowable sulfur content in fuel oil by weight

Global Sulfur Cap	
On and after 1/1/2012	3.50%
On and after 1/1/2020	0.50%
ECA Sulfur Cap	
On and after 8/1/2012	1.00%
On and after 1/1/2015	0.10%

Table 2

Summary of Estimated Market Impacts – Medium Speed Tier 3 Engines and Vessels ($2006)

Ship Type	Avg. Propulsion Power	New Vessel Engine Price Impact (New Tier 3 Engine Price Impact)	New Vessel Fuel Switching Equip Equipment Price Impact	New Vessel Total Price Impact
Auto Carrier	9,600	$573,200	$42,300	$615,500
Bulk Carrier	6,400	$483,500	$36,900	$520,400
Container	13,900	$687,800	$49,200	$736,000
General Cargo	5,200	$450,300	$34,900	$475,200
Passenger	23,800	$952,500	$65,400	$1,107,900
Reefer	7,400	$511,000	$38,500	$549,500
Ro-Ro	8,600	$543,800	$40,500	$584,300
Tanker	6,700	$492,800	$37,400	$530,200
Misc.	9,400	$566,800	$41,900	$608,700

Table 3

Summary of Estimated Market Impacts – Slow Speed Tier 3 Engines and Vessels ($2006)

Ship Type	Avg. Propulsion Power	New Vessel Engine Price Impact (New Tier 3 Engine Price Impact)	New Vessel Fuel Switching Equip Equipment Price Impact	New Vessel Total Price Impact
Auto Carrier	11,300	$825,000	$48,000	$873,000
Bulk Carrier	8,400	$672,600	$42,700	$715,300
Container	27,500	$1,533,100	$63,900	$1,597,000
General Cargo	7,700	$632,900	$41,000	$673,900
Passenger	23,600	$1,385,300	$61,200	$1,446,500
Reefer	10,400	$781,000	$46,500	$827,500
RoRo	15,700	$1,042,100	$53,900	$1,096,000
Tanker	9,800	$744,200	$45,300	$789,500
Misc.	4,700	$453,600	$32,000	$485,600

standard. Most vessels under 400 gross tonnage are likely already in compliance with the standard as the majority of these vessels operate using solely distillate fuel oil that meets the Annex VI (Revised) ECA fuel oil sulfur limit.

The total estimated costs in 2030 are approximately $3.1 billion. These costs are expected to accrue initially to the owners and operators of affected vessels when they purchase engines, vessels and fuel. These owners and operators are expected to pass their increased costs on to the entities that purchase international marine transportation services, in the form of higher freight rates. Ultimately, these costs will be borne by the final consumers of goods transported by affected vessels in the form of higher prices for those goods.

With regard to market-level impacts, the EPA estimates that compliance would increase the price of a new vessel by 0.5 to 2%, depending on the vessel type. The price impact on the marine transportation services sector would vary, depending on the route and the amount of time spent in waterways covered by the engine and fuel controls. For example, the EPA estimated that the cost of operating a ship in liner service between Singapore, Seattle, and Los Angeles/Long Beach, which includes about 1,700 NM of operation in waterways covered the EMC, would increase by about 3 percent. For a container ship, this represents a price increase of about $18 per container, assuming the total increase in operating costs is passed on to the purchaser of marine transportation services. The per passenger price of a seven-day Alaska cruise on a vessel operating entirely within waterways covered by the EMC is expected to increase about $7 per day. Ships that spend less time in covered areas would experience relatively smaller increases in their operating costs and the impact on freight prices is expected to be smaller.

This analysis of the economic impacts relies on the estimated engineering compliance costs for engines and fuels. These costs include hardware costs for new U.S. vessels, to comply with the Tier 2 and Tier 3 engine standards, and for existing U.S. vessels to comply with the MARPOL Annex VI requirements for existing engines. There are also hardware costs for fuel switching equipment on new and existing U.S. vessels to comply with the 1.0% fuel sulfur limit; the cost analysis assumes that 32% of all vessels require fuel-switching equipment to be added (new vessels) or retrofit (existing vessels). Also included are expected increases in operating costs for U.S. and foreign vessels operating in the U.S. ECA and U.S. internal waters. These increased operating costs include changes in fuel consumption rates and increases in fuel costs.

Estimated price impacts for a sample of engine-vessel combinations are set out in Table 2 (see previous page), for medium speed engines, and Table 3 (see previous page), for slow speed engines. These are the estimated price impacts associated with the Tier 3 engine standards on a vessel that will switch fuels to comply with the fuel sulfur requirements while operating in the waterways covered by EMC, for all years, beginning in 2016.

The estimated price impacts for Tier 2 vessels is substantially lower, given the technology that will be used to meet the Tier 2 standards is much less expensive. Because the standards do not phase in, the estimated price impacts are the same for all years the Tier 2 standards are required, 2011 through 2015.

The EPA maintains that these estimated price impacts for Tier 2 and Tier 3 vessels are relatively small when compared to the price of a new vessel. A selection of new vessel prices is provided in Table 4; these range from about $40-$480 million. The program price increases range

Table 4

Newbuild Vessel Price by Ship Type and Size, Selected Vessels (Millions, $2008)

Vessel Type	Vessel Size Category	Size Range (Mean) (DWT)	Newbuild ($M)
Bulk Carrier	Handy	10,095 - 39,990 (27,593)	$56.00
	Handymax	40,009 - 54,881 (47,616)	$79.00
	Panamax	55,000 - 78,932 (69,691)	$97.00
	Capsize	80,000 - 364,767 (157,804)	$175.00
Container	Feeder	1,000 - 13,966 (9,053)	$38.00
	Intermediate	14,003 - 36,937 (24,775)	$70.00
	Panamax	37,042 - 54,700 (45,104)	$130.00
	Post Panamax	55,238 - 84,900 (67,216)	$165.00
Gas Carrier	Midsize	1,001 - 34,800 (7,048)	$79.70
	LGC	35,760 - 59,421 (50,796)	$37.50
	VLGC	62,510 - 122,079 (77,898)	$207.70
General Cargo	Coastal Small	1,000 - 9,999 (3,789)	$33.00
	Coastal Large	10,000 - 24,912 (15,673)	$43.00
	Handy	25,082 - 37,865 (29,869)	$52.00
	Panamax	41,600 - 49,370 (44,511)	$58.00
Passenger	All	1,000 - 19,189 (6,010)	$478.40
Reefer	All	1,000- 19,126 (6,561)	$17.30
Ro-Ro	All	1,000 - 19,126 (7,819)	$41.20
Tanker	Coastal	1,000 - 23,853 (7,118)	$20.80
	Handymax	25,000 - 39,999 (34,422)	$59.00
	Panamax	40,000 - 75,992 (52,300)	$63.00
	AFR Amax	76,000 - 117,153 (103,112)	$77.00
	Suezmax	121,109 - 167,294 (153,445)	$95.00
	VLCC	180,377 - 319,994 (294,475)	$154.00

Table 5

Summary of Estimated Market Impacts – Fuel Markets

Fuel	Units	Baseline Price	Control Price	Adjusted for Energy Density	%Change
Distillate	$/ton	$462.00	$468.00	N/A	+1.30%
Residual	$/ton	$322.00	$321.00	N/A	-0.30%
Fuel Switching	$/ton	$322.00	$468.00	$444.00	+38.90%

Table 6

Summary of Impacts of Operational Fuel Cost Increases

Vessel Type	Vessel & Engine Parameters	Operational Price Increase
Container North Pacific Circle Route	36,540 kW 50,814 DWT	$17.53/TEU
Bulk Carrier North Pacific Circle Route	3,825 kW 16,600 DWT	$0.56/ton
Cruise Liner (Alaska)	31,500 kW 226,000 DWT 1,886 passengers	$6.60/per passenger/day

from about $600,000 - $1.5 million. A price increase of $600,000 to comply with the Tier 3 standards and fuel switching requirements would be an increase of approximately 2% for a $40 million vessel. The largest vessel price increase is for a Tier 3 passenger vessel or about $1.5 million; this is a price increase of less than 1% for a $478 million passenger vessel. The EPA concludes that price increases of this magnitude would be expected to have little, if any, effect on the sales of new vessels, all other economic conditions held constant.

The market impacts for the fuel markets were estimated through the World Oil Refining Logistics and Demand (WORLD) model. The expected price impacts are set out in Table 5. Note that on a mass basis, less distillate than residual fuel is needed to go the same distance (5 % less). The prices in Table 5 are adjusted for this impact. Table 5 shows that the regulatory scheme is expected to result in an increase in the price of marine distillate fuel, about 1.3%. The price of residual fuel is expected to decrease slightly, by less than one percent, due to a reduction in demand for that fuel.

Because of the need to shift from residual fuel to distillate for ships while operating in the waterways covered by the engine and fuel controls (the U.S. ECA and U.S. internal waters), shipowners are expected to see an increase in their total cost of fuel. This increase is because distillate fuel is more expensive than residual fuel. Factoring in the higher energy content of distillate fuel relative to residual fuel, the fuel cost increase would be about 39%.

The EPA used the above estimates of engine, vessel and fuel price impacts to estimate the impacts on the prices

Table 7

Total Costs MARPOL Annex VI (Revised)

Year	Fixed	Variable	Operational	Total
2010	$477,020	$0	$0	$477,020
2011	$1,018,766	$2,497,657	$1,306,556	$4,822,979
2012	$1,056,245	$2,580,365	$6,431,250	$10,067,860
2013	$1,095,347	$2,667,173	$244,951,550	$248,714,070
2014	$1,136,035	$2,757,514	$260,810,043	$264,703,592
2015	$972,037	$13,954,191	$1,369,402,786	$1,384,329,014
2016	$0	$28,052,583	$1,438,235,966	$1,466,288,549
2017	$0	$29,154,639	$1,525,633,990	$1,554,788,629
2018	$0	$30,302,933	$1,622,800,854	$1,653,103,787
2019	$0	$31,499,499	$1,721,756,141	$1,753,255,640
2020	$0	$32,746,463	$1,820,614,217	$1,853,360,680
2021	$0	$34,046,049	$1,925,263,118	$1,959,309,167
2022	$0	$35,400,583	$2,028,002,568	$2,063,403,151
2023	$0	$36,812,494	$2,147,543,473	$2,184,355,967
2024	$0	$38,284,325	$2,266,962,666	$2,305,246,991
2025	$0	$39,818,735	$2,387,551,773	$2,427,370,508
2026	$0	$41,418,504	$2,512,510,228	$2,553,928,732
2027	$0	$43,086,539	$2,638,815,284	$2,681,901,823
2028	$0	$44,825,880	$2,774,457,455	$2,819,283,335
2029	$0	$46,639,709	$2,913,118,509	$2,959,758,218
2030	$0	$48,531,352	$3,063,782,201	$3,112,313,553
2031	$0	$50,504,289	$3,205,898,377	$3,256,402,666
2032	$0	$52,562,159	$3,358,465,311	$3,411,027,470
2033	$0	$54,708,770	$3,519,017,395	$3,573,726,165
2034	$0	$56,948,104	$3,689,819,658	$3,746,767,762
2035	$0	$59,284,330	$3,867,580,840	$3,926,865,170
2036	$0	$61,721,806	$4,056,506,472	$4,118,228,278
2037	$0	$64,265,093	$4,258,730,159	$4,322,995,252
2038	$0	$66,918,964	$4,465,788,635	$4,532,707,599
2039	$0	$69,688,411	$4,680,205,640	$4,749,894,051
2040	$0	$72,578,659	$4,905,310,074	$4,977,888,733
NPV @ 3%	$5,311,963	$683,356,096	$42,179,757,713	$42,868,425,772
NPV@ 7%	$4,805,557	$358,019,816	$21,724,932,914	$22,087,758,287

of marine transportation services. This analysis is limited to the impacts of increases in operating costs due to the fuel and emission requirements. Operating costs would increase due to the increase in the price of fuel, the need to switch to fuel with a sulfur content not to exceed 1.0% while operating in the waterways covered by the engine and fuel controls and due to the need to dose the after treatment system to meet the Tier 3 standards. Table 6 summarizes these price impacts for selected transportation markets. Table 6 also lists the vessel and engine parameters that were used in the calculations.

The total social costs of the coordinated strategy are based on both fixed and variable costs. Fixed costs are a cost to society; they displace other product development activities that may improve the quality or performance of engines and vessels. In this economic impact analysis, fixed costs are accounted for in the year in which they occur, with the fixed costs associated with the Tier 2 engine standards accounted for in 2010 and the fixed costs associated with the Tier 3 engine standards and the fuel sulfur controls for vessels operating on the waterways covered by the coordinated strategy are accounted for in the five-year period beginning prior to their effective dates.

These estimated social costs for all years are presented in Table 7. For 2030, the costs are estimated to be about $3.1 billion. It is expected that consumers of the marine transportation services will pay for these costs. Additionally, consumers will pay prices for the goods transported by sea.

The EPA estimated annual monetized health benefits of Annex VI (Revised) in 2030 will be between $110 - $270 billion, assuming a 3% discount rate (or between $99 - $240 billion at 7% discount rate). EPA believes by 2030 emission reductions associated with the ECA will annually prevent: between 12,000 - 31,000 premature deaths, about 1,400,000 work days lost: and about 9,600,000 minor restricted-activity days. Furthermore, the EPA predicts the following important ecosystem benefits: NOx, SOx and direct PM reductions reduce deposition in many sensitive ecosystems, improve visibility – especially in Class I federal areas; and reduce ozone damage to many ecosystems throughout the U.S.

The bottom line is every consumer will be paying more for the goods used in everyday life and more in taxes for governmental regulatory enforcement in order reduce NOx, SOx, and PM in the atmosphere. Finally, under the law of unintended consequences, will this cause a consolidation in the industry? The larger carriers could absorb some of these additional costs, potentially squeeze out smaller carriers and then purchases these assets and make up profits on the back end. We are seeing a similar scenario playing out in the airline industry.

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The Year in Review

The Year in Review

The last 12 months has been one for the books ... or the trash.

By Dr. Shashi Kumar

There was no shortage of government inducements to turn the lackluster tide in 2012—stimulus spending in China and Japan, quantitative easing by the U.S. Federal Reserve, and multiple actions by the European Central Bank to strengthen the Eurozone. But as the year evolved, weak macroeconomic fundamentals decisively trumped monetary policy initiatives and continued their choke on global commerce, hence the maritime sector. Anyone who characterizes 2012 as even marginally better for shipping than 2011 can do so only because the bar was set far too low. Both last year and the current one will go down in maritime business annals as part of a bleak, monotonous, and particularly long period of volatility that began in 2009. This was yet another excruciating year for the global maritime community.

The Big Picture

Initial estimates from the International Monetary Fund show a 3.2% growth in the 2012 world gross domestic product, one of the slowest in recent years. Remarkably, even the Chinese and the Indian economies cooled and did not reach their anticipated targets. Rampant wage inflation is holding back the Chinese manufacturing prowess, and their containerized exports to the United States dropped for the second year in a row. India too is experiencing its slowest rate of economic growth in a decade. Russia's entry into the World Trade Organization in September 2012 did not have any perceptible effect on global commerce, unlike the Chinese entry a decade ago that unleashed an unprecedented shipping boom in 2003.

Overall, worldwide sluggish economic growth, along with prolonged excess capacity and escalating operating costs, worsened the market stagnation. The much-awaited resurgence in global commerce and maritime trade is still on hold, and instability continues to plague major trade regions and shipping routes.

The 2013 PricewaterhouseCoopers' annual Global Shipping Benchmarking Survey provides revealing insights on the sector's plight. It reports 1% average return on net operating assets for the shipping industry in 2011, well below the 18% that existed in 2007, when the shipping boom was at its peak. For the dry-bulk sector in particular, the return was 35% in 2007. Shipping companies included in this survey posted a negative 2 percent average return on equity in 2011, versus 21% in 2007. The ratios for 2012 are currently not available, but are estimated to be worse.

Not surprisingly, **a recent Moore Stephens report rated one out of every ten British shipping companies as a "zombie,"** a colorful addition to the shipping finance vernacular. These are companies with a low asset base, barely covering their variable costs and close to bankruptcy. Trade journals report that the value of publicly traded shipping companies has declined on average 75%, in some cases up to 90%. The general feeling among investment gurus is that few public shipping companies today have any equity, let alone goodwill value. The current risk exposure of banks engaged in shipping finance is $475 billion, according to an estimate from the shipping consultancy Petrofin. This explains the recent Lloyd's List finding that barely 15 banks are actively engaged in new shipping-finance initiatives.

Drewry Shipping Consultants believe the unprecedented 2004–2008 shipping-business peaks are unlikely to be repeated. We may indeed be back to the "old normal" cycles, with the last couple of years being extraordinarily humbling.

Market Developments

All major shipping markets experienced tough conditions in 2012, which ended somewhat similarly to 2011. But at least there is wider acknowledgment that—barring unpredictable happenstance—we have indeed reached the nadir; there is nowhere to go but up. The liquefied natural gas (LNG) market was one odd exception in 2012; it registered strong performance. Worldwide shipping capacity utilization dropped yet another notch, to 84%, per recent R. S. Platou statistics. This is the second lowest it has ever been during the past decade. Increased labor and fuel costs and new environmental regulations are escalating operating costs, while the freight revenue is declining or at best remaining stagnant.

On the positive side has been a sharp decline in orders for building new ships, even though the cost of construction today is the lowest it has been in a decade.

The **Dry Bulk Market** has been the posterchild for too much tonnage. Pictured is Vale Beijing, courtesy of STX.

The **Tanker** market has been one of the most complicated for a number of reasons. Pictured is Almi Sky, courtesy of DSME

This is not because the owners have suddenly become more rational in their investment decisions. On the contrary, most are experiencing a tough cash-flow situation, with bank loans hard to get. Furthermore, shipping asset values are still declining, although the rate stabilized somewhat in 2012. Thirty-nine percent of companies reported lowering the value of their ships, including two out of every three container shipping companies.

The recent Moore Stephens Shipping Confidence Survey registers a slight uptick, indicating signs of optimism in the market. Other promising developments include improving Chinese domestic consumption and anticipated good economic recovery by leading non-OECD (Organization for Economic Cooperation and Development) nations in 2013. The U.S. export of shale gas is another major positive change, though this may run afoul of domestic politics and seriously impact those making huge investments in LNG transportation.

Dry Bulk Market

The Baltic Dry Bulk Index (BDI), a barometer of that type of carrier's earnings, averaged 920 points in 2012. This is the second lowest it has ever been, the worst being 715 in 1986, shortly after the introduction of BDI in 1985. The main reason for this is ship owners' indiscretion and persistent overbuilding during the past four years. For example, Clarkson Research Services statistics show a 36 percent increase in the number of bulk carriers from 2009, despite worsening market conditions. In 2012 alone, while tonnage demand increased 7%, the fleet expanded 12%. The large bulk carriers (referred to as Capesize) that earned an average $116,049 per day in 2007 during the peak years averaged a meager $7,680 per day in 2012. The RS Platou–weighted dry-bulk index for 2012 dropped to $9,400 per day, from $15,200 in 2011. The figure here shows the decline in average daily freight rate for each of the four categories of dry-bulk carriers. Ship owners attempted to control the excess capacity by slowing the speed of their vessels and recycling older tonnage. This led to the removal of 529 bulk carriers, 37% of the total 1,414 ships recycled in 2012.

Vale, the Brazilian mining giant, has also inadvertently contributed to the extremis situation faced by Capesize bulk carriers. Its strategy revolves around using 32 very large ore carriers (VLOCs) of around 400,000 deadweight tons (DWT) to better control their supply chain and lower the total logistics cost. Twenty-four of these giant ships are now in operation, and 8 more are on order. A Lloyd's List analysis shows that the volumes shipped on Vale's own fleet went up as planned, from 30 percent in 2011 to 46.1% in the last quarter of 2012. However, contrary to Vale's expectations, the supply-chain costs including maritime freight costs escalated. There is widespread belief that the VLOCs are inefficient and costly, in addition to having various operational challenges. Nevertheless, these massive ships have directly impacted the demand for Capesize bulk carriers and worsened the excess-capacity situation.

Tanker Market

This turned out to be the most complicated shipping market in 2012 for a number of reasons. Major developments included a wide embargo on Iranian oil and the near-total return of Libyan oil, as well as the stunning bankruptcy of tanker giant Overseas Shipholding Group (OSG), a venerable name in American shipping. AP Moller-Maersk, another tanker giant, with 116 owned and 46 chartered ships, posted a net deficit of $314 million for the year, surpassing its $153 million loss incurred in 2011. The value of modern very large crude carriers continued its downward slide. The older tankers are now worth only their value in scrap iron.

The first half of the year provided good trading conditions for crude carriers, whereas the second half favored product carriers. Because the big Asian importers substituted Iranian oil with West African crude, while the United States replaced West African crude with Saudi Arabian exports, both the crude-oil and refined-product sectors benefited from increased sailing distances. Sixty-seven percent of the 1.1 billion tons of crude oil exported from the Middle East, the world's largest exporting region, went to the Indian subcontinent, Southeast Asia, and the Far East.

India in particular has also attracted sizable crude traffic from the Caribbean to source its 1-million-barrel-per-day super refinery in Jamnagar, from where the products are distributed globally. The combined effect of a small increase in total oil traded, greater sailing distances, and lower fleet productivity through slow steaming (with the average speed dropping to 12 knots from 12.5, per RS Platou statistics) was not enough to boost the market returns in this sector. The medium-size crude tankers in particular became victims of the change in the U.S. oil-sourcing pattern.

The current tanker fleet is exceptionally young, at an average age of eight years. Relative to its size, new orders placed in 2012 were the lowest ever. Among notable new-building orders was the recent decision by BP (British Petroleum) to build 13 new "green" tankers. Another was the Frontline plan to spend $2.6 billion on 53 new fuel-efficient tankers.

This will help it emerge as the world's largest eco-ship fleet and hopefully, the most profitable as well, taking advantage of the current low cost of new ship construction.

The global fleet of small-product tankers (27,000-42,000 deadweight capacity, often referred to as handysize tankers) is shrinking, whereas the medium-range tonnage is growing rapidly.

This reflects the changing dynamics in oil trade caused by India's and China's building of huge refineries, while several older refineries shut down in the Atlantic basin and Europe.

Shipbuilding Market

The prolonged uninspiring market conditions have had a perceptible impact on the shipbuilding sector. Furthermore, with all new shipbuilding orders, there is an emphasis on fuel efficiency and energy sustainability.

The South Korean lead in this field is now limited to tankers and LNG ships, while the Chinese have surged ahead in other sectors, including containerships.

Chinese yards received 40 %of all new orders in 2012, followed by South Korea with 38% and Japan with 15%.

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However, it is far from smooth sailing for the Chinese. The massive 13-fold expansion in their shipbuilding capacity from 2002 to 2011, discussed in reviews of previous years, has now become a liability, and the country cannot meet the planned $80 billion annual export value of ships constructed. Three large state-owned shipping companies placed a $4.5 billion order for 50 supertankers to be built in China in 2012, a timely gesture of solidarity with their struggling yards. This is also an important strategic move, as the nation will have greater control over its energy supply chain—critical for continued economic growth.

The tight market conditions again led to significant slippage in the delivery of new tonnage, and this is expected to continue. Furthermore, a number of dry-bulk and tanker new-construction orders were canceled despite unavoidable financial penalties. New-construction prices have been dropping throughout the year, not only because of surplus shipbuilding capacity and stringent bank financing conditions, but also a major drop in the price of steel. It is estimated that the cost of building new ships today is 40% below what it was in 2008; as evidence, the Clarksons' new-building price index dropped to 73 at the end of 2012, from 95 in 2011 and 124 in 2007. The 2013 RS Platou Report estimates the worldwide decline in steel price alone has brought down the cost of constructing a Korean-built Aframax tanker by $8 million. Global shipbuilding capacity has shrunk one-third from its 2008 peak through yard closures and cutbacks.

Cruise Market

On January 13, 2012, the Costa Concordia ran aground and capsized after the ill-advised decision by Captain Francesco Shettino to cruise too close to the shoreline of Giglio, an island off Italy. Thirty-two drowned, in tragic and avoidable stories and with legal repercussions that are covered here later. Despite that negative beginning for the cruise sector, 2012 turned out to be another banner year, attracting 5.4% more passengers worldwide than in 2011.

According to Cruise Lines International Association (CLIA) statistics, the total fleet today consists of 336 ships of 1,000 gross tons or more, with an annual passenger-carrying capacity of more than 17 million. Two of every three who boarded a CLIA-owned cruise ship in 2012 were from the United States or Canada, with Australia the fastest-growing market. The average fares dropped in 2012, reflecting the prevailing market conditions.

There are 24 cruise ships (valued at $15.8 billion) for delivery between now and 2017. All but six of are of the mega-ship type (2,000-plus berths), the biggest being the $1.32 billion Oasis-class ship for Royal Caribbean International, due for delivery in 2016. Another anticipated delivery that same year is a nostalgic replica of RMS Titanic.

Dr. Shashi Kumar is a Master Mariner, Fulbright Senior Specialist Fellow and Professor Emeritus of International Business and Logistics. He is in his 26th year of distinguished leadership and educational services to the U.S. and global maritime community.

The views expressed in this article are the author's own and not those of the U.S. Merchant Marine Academy, the Maritime Administration, the Department of Transportation or the United States government.

The **Cruise Market**, despite some serious tragic accidents in 2012, continues to grow. (Photo: Fincantieri)

WORLD FLEET DEVELOPMENT

Start	Tankers	Chemical carriers	Bulk carriers	Combined carriers	Others	Total
2003	270.7	23.1	295	12.6	181.2	782.6
2004	279.1	25	303.3	12.1	189.6	809.1
2005	295	25.7	320.7	11.6	200.5	853.5
2006	317.7	26.9	341.9	11.6	213.3	911.3
2007	334.7	29	365.1	11.2	232.5	972.6
2008	352.3	31.7	392.9	11.2	254.2	1042.3
2009	369	34	420.8	10.4	278.3	1112.5
2010	396.2	35.8	459.2	9.6	300	1200.8
2011	413.1	3.1	533	6.8	315.1	1304.6
2012	439	36.5	609.2	*	330.9	1415.6
2013	460.5	36.6	673.5	*	350.1	1520.7

*From 2012 combined carriers are included in bulk carrier fleet.
(Source: The Platou Report 2013, RS Platou Group • www.platou.com)

DELIVERIES

Start	Tankers	Chemical carriers	Bulk carriers	Combined carriers	Others	Total
2001	13.1	0.2	20.6	N/A	10.5	44.4
2002	22.7	0.8	13.6	N/A	10.4	47.5
2003	27.9	2	11.8	0.2	11.2	53.1
2004	26.4	0.8	18.3	N/A	11.9	57.4
2005	28	1.5	22.3	N/A	13.8	65.6
2006	23	2.4	25.5	N/A	20.3	71.1
2007	28.7	3	28.6	N/A	23	83.3
2008	33.2	2.9	22.9	N/A	28.4	87.4
2009	45.7	2.2	48.3	-	28.4	124.7
2010	38.9	1	99.2	0.6	22.7	144.5
2011	39.7	1	99.2	1	22.7	163.6
2012	31.4	0.5	98.2	-	19.2	149.4

(Source: The Platou Report 2013, RS Platou Group • www.platou.com)

NEW ORDERS

Start	Tankers	Chemical carriers	Bulk carriers	Combined carriers	Others	Total
2000	34.9	0.9	14.5	0.2	17.5	67.9
2001	26.2	0.7	8.7	N/A	10.5	46.1
2002	17.7	1.6	21.9	N/A	8.4	49.6
2003	47.9	1.4	27.9	N/A	27.5	104.7
2004	34	2.2	28.8	N/A	28.1	93.1
2005	24	0.9	16.8	N/A	25.9	67.6
2006	74.7	6.8	39	N/A	25.7	146.2
2007	42.1	10.1	161.6	3.4	50.5	264.3
2008	47.4	2.7	91.4	N/A	50.5	192
2009	10.3	0.8	33.6	N/A	1.5	46.2
2010	38.5	1.6	83.5	N/A	10.8	134.4
2011	9.2	0.5	28	N/A	25.7	63.2
2012	14.2	0.9	18.6	N/A	11.1	44.8

(Source: The Platou Report 2013, RS Platou Group • www.platou.com)

Five Minutes with Dr. Shashi Kumar

Dr. Shashi Kumar

We had the privilege to pick the brain of Dr. Shashi Kumar (right) a Master Mariner, Fulbright Senior Specialist Fellow and Professor Emeritus of International Business and Logistics, for his take on a wide range of maritime matters near and far. ***A market boom starting in 2014? The long-term effects of Sequestration? A 'cap' on the size of ships? He covers it all.***

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By Greg Trauthwein, Editor

This maritime economy has been bad for a number of years. Put in perspective the downturn now vs. traditional downturns.

That's a very good question. When I look at it, what has happened is a clear demarcation in the economic fortunes of the traditional blue water fleet and the brown water fleet. There is tremendous growth taking place in the non-blue water segment in this country. However, the deep sea shipping sector is at a breaking point. If you look at the tonnage and the fleet that we control, those numbers have dropped. Any legislative changes in the food aid program and preference cargoes in future years will also impact the deep-sea fleet significantly.

Worldwide it is pretty easy to see what is going on. The U.S. market is the one that is a bit more complicated. I think globally the market will pick up quite smartly by 2014. In fact, they are already talking about the 2016 global shipping recession. The 2014 boom will undoubtedly lead to another round of overtonnaging, perhaps resulting in the 2016 downturn and the commencement of another Sisyphean recovery. So, assuming the global political leadership will make rational decisions, I am optimistic about global shipping markets.

Do you think that the industry ever learn to strike a balance?

I don't think so. If you look at the boom that began in 2003/2004, which was just after China got into the WTO, there was phenomenal growth with all major markets peaking concurrently. As you may recall at that time, some maritime economists were even debating whether a paradigm shift had happened in these shipping economic cycles. That particular boom did last longer than usual followed by reasonable market conditions until almost 2010. Unfortunately by the turn of the decade, the market had gone down precipitously, and that's when owners began to realize the true extent of the damage that they themselves caused at least in part. Will they ever learn … I doubt. Given the nature of the industry, there is always going to be some level of overbuilding which is to be expected. But going well beyond that in times of prosperity has become a true curse of the industry. So, all we can hope for is more rational thinking on the part of the CEOs and other leaders of the big shipping companies so that we see longer upward momentum followed by shorter troughs; it will be great if those troughs are compressed and flattened.

Where do you see opportunity today, pockets for growth?

I think the liner market is highly concentrated at this point with effective barriers to entry. This market is particularly dear to me—my Ph.D. was about the competition and the contestability in deep-sea liner markets. I'm not anticipating any major East/West growth. There's no way a new entrant can enter this market effectively today. More consolidations are only to be expected among the top tier carriers. There's going to be more growth in the North/South trade, for example the intra-Asia trade, and possibly also in the intra-America trade.

What about the dry bulk trade?

The dry bulk trade will continue to be driven by China. Their infrastructure investments and promotion of internal consumption will drive up dry bulk movements into China. To some extent, the Chinese trade policy reflects the market reality—that of China gradually becoming less of a solely export-driven economy.

And the tanker market?

The place where I think there are a lot of unknowns right now is the tanker market, especially with the possibility of U.S. oil exports; this is a surprise for which no one was prepared. It is still somewhat of a mystery as to how this will play out.

Obviously this [change in the U.S. energy profile] will be a driver for change; are you starting to see any changes?

Yes, there are changes some of which were set in motion even before the likely emergence of U.S. energy exports. As we know, the dynamics of the traditional "three arterial" petroleum routes have changed drastically. New crude oil routes are being created to serve the Chinese market, and enhancing the tonne-miles which is what the shipowners want. India has built huge refineries and has become a key player in distributing products which once again has created demand for huge volumes of crude oil transported over long distances. If and when the U.S. is ready to export LNG, Asian countries will become major buyers and I believe there is already pressure being exerted on the Panama Canal Authority to keep their future rates reasonable.

In the U.S., where do you see areas of opportunity?

As I remarked earlier, the brown water sector will continue its tremendous growth. But looking at the U.S.-flag deep-sea fleet, we are lagging far behind international growth trends. As an island nation, we need efficient shipping services and the U.S. companies should play an active role in this rather than become bystanders. Regretfully, shipping has lost its charm for many traditional players; it does not get the attention that it deserves. To some extent, it is of our own making as the efficiency in safe shipping movements and their predictability have made these deep-sea movements as unremarkable as a daily commute from the suburbs.

What can be done to raise its profile?

Shipping as a brand has suffered. Many years ago, after a series of major tanker disasters, there was a coordinated effort by key players in the European tanker market to undertake a major public education initiative. I thought they did a great campaign educating the average citizen about the role of oil tankers, their safety enhancements, and what they did to facilitate our life-style and the national economy at a relatively insignificant distribution cost. It was a very good initiative and succeeded in redefining the brand. I've not seen anything like that in this country. Perhaps the in-

dustry leaders and the trade associations here should undertake such an initiative and promulgate a different image about the industry, instead of being the butt of all the jokes when a cruise ship loses power or runs aground.

U.S. government Sequestration: What have been the effects to date?

As a trained economist, I view Sequestration as a supply shifter. If it is a short run phenomenon, perhaps some shipowners may ignore it but prolonged cutbacks may take away the owners' incentive to stay as part of the MSP fleet and will have serious implications from the national security perspective.

The Jones Act is a political hot potato. What is its status?

I certainly believe that a country such as ours needs the Jones Act. We need it for economic reasons as well as for "insurance" reasons and for providing critical logistical support. This is an island nation that needs maritime presence and capability, and that is exactly what the Jones Act has provided.

Where are we in terms of making shipping more environmentally friendly.

There is a debate going on right now as to whether the investment in green ships such as the planned Triple E Maersk ships makes economic sense. I personally think we're way beyond that point, and these initiatives are here to stay. There is significant pressure on the shipping industry, and they are genuinely concerned about environmental regulations especially in Europe. In general, the shipowners are serious about this and handling this proactively and becoming more socially responsible. I commend them for that.

Ship owners feel over-regulated, from the international, national and regional level. Will we ever get to a point where it will be more unified.

It is a wonderful question. My view is shipping is a very international industry, and we should not have unique rules for each region, each state, each country, etc. It just doesn't make any sense. When shipowners invest in new tonnage, they want the flexibility to take their ships and go where the market is. To be frank, I think the International Maritime Organization does a fantastic job; it's one of the most efficient UN agencies.

Is there anything else on the legislative horizon?

It would be interesting if the question would be asked: "What is the biggest size ship you should build?" I personally feel that there should be some sort of finite limit on ship sizes and believe me, it is coming from a market economist!

Let's look at the Maersk 18,000 TEU containerships. Can you build something bigger than that; yes you can. But does it make any sense? Take the case of the big bulk carriers the Brazilian's built; what is the point? The goal was to bring down the unit cost, but as we discovered in 2012, their unit costs went up. I hope they don't go with their original plan to build 40 or so of those VALEMAX dry bulk carriers. It seems like commercial dreams are overpowering rational thinking. Historically, looking back at the 1970s (known as the golden era of oil tanker), there was a plan to build million dwt crude oil tankers which thankfully did not materialize. The biggest ship they ever built was the Jahre Viking, which had a capacity of 574,000 dwt. That ship was so big that not one charterer could fill it by themselves; it always took two or three charterers, which was a problem in itself. The ship was eventually scrapped few years ago. But there is a clear realization in the tanker market today that you are better off to go with VLCCs rather than ULCCs. I hope something like this will happen in the container industry as well as the dry bulk sector. I would rather see the 18,000 TEU ship or the odd Valemax as a rare exception rather than the rule.

So then what are the drivers for building the mammoth ships?

I believe the expectation is that the current manufacturing and consumption patterns will continue forever, but we know that's not going to be the case. We are already seeing a decline in Chinese manufacturing of consumer goods bound for U.S. There is increasing interest in 'near sourcing' and signing contracts with manufacturers located closer to us in Latin and Central America. So, the big question is will the market support these huge ships in the long run.

The views expressed in this article are the his own and not those of the U.S. Merchant Marine Academy, the Maritime Administration, the Department of Transportation or the United States government.

The Containership Market

Boxed In

It is impossible to view the global container shipping business without looking at it through the prism of vessel capacity being added to the market. What happens over the next two years will be a direct result of the glut of newbuildings that are flooding into service and wrecking freight rates.

By Greg Knowler, Hong Kong

81%

Average vessel utilization percentage in the first three months of 2013, 9% down over the same period in 2012.

ORDERBOOK, BY YEAR OF DELIVERY - CONTAINERSHIPS

		Delivery Schedule		
Size	**Total on Order**	**2013**	**2014**	**2015**
Below 1,000	1.8	1.8	0	0
1,000-1,999	80.1	52	25.8	2.2
2,000-3,999	247.4	180.7	26.5	40.3
4,000+	3091.3	1644.8	1070.1	376.4
Total	3420.6	1879.4	1122.4	418.9

(The Platou Report 2013, RS Platou Group • www.platou.com)

Just consider these numbers. During the first four months of 2013, Alphaliner puts the new containership deliveries at 496,000 TEUs. According to data supplied by PR News Service ComPort, almost 250,000 TEUs of that will be comprised of vessels with a nominal capacity of 10,000 TEUs and up.

The vast majority of these vessels will have to be deployed on the Asia-Europe routes as they are too large to serve the emerging markets and cannot fit through the Panama Canal to cover the all-water route to the U.S. East Coast.

New capacity coming online is offsetting vessels being withdrawn as the shipping lines adjust or "upgrade" their services. For instance, the CES2/AEX 2 service - jointly operated by CSCL, Zim and Evergreen - is pulling out 9,000 TEU of its weekly capacity in June, only to see other services on the route, including the G6 and CKYH, injecting 16,500 TEU into Asia-North Europe.

Scrapping of containerships will not solve the problem, either. Even with scrapping expected to reach a record 450,000 TEUs this year – due to a surge in the axing of 3,000 to 5,000 TEU vessels, Alphaliner says – deliveries could top1.6 million boxes in capacity.

Curiously, the lines appear reluctant to increase the idle ship capacity, despite the impact on load factors and freight rates of the capacity overhang.

Economic models are very clear about the result when too much supply meets too little demand – prices fall. And nowhere has this pricing pressure been felt more keenly than on Asia-Europe where rates have collapsed.

Average vessel utilization in the first three months of this year was 81% on the trade, 9% down over the same period in 2012.

This has triggered a new rate war that has driven down freight rates by $600 per TEU since January. Alphaliner says spot freight rates from China to Europe are currently being offered at $700-800 per TEU compared to $1,300-1,400 a box at the beginning of the year.

"Carriers have failed to take any capacity response to the failing freight rates, and can now only rely on increased cargo demand in the coming summer peak season to stop rates from plummeting further," Alphaliner said in a report.

It doesn't help that 165,000 TEU of idle capacity has even been re-activated since March.

"The Shanghai Container Freight Index is now at its lowest levels since February 2012 and has fallen by 30% from its 2012 peak, with the rate erosion triggered largely by the excess supply that has resulted from the capacity additions," the report said.

Drewry also reported weakening load factors and pricing caused by the deluge of excess capacity. Its Hong Kong-Los Angeles Container Freight Rate Benchmark fell 11% in the first half of April, with Shanghai-Rotterdam benchmark rates down 18% by mid April.

Drewry also believes there is a psychological impact on the industry that has been created by orders for mega ships, such as China Shipping Container Lines' May announcement that it will order five 18,000 TEU giants, or "Maersk-max" ships. This will hold the focus of container lines on adding capacity when they should be heading in the opposite direction.

"Ocean carriers did a decent job over the winter months balancing supply to ensure that freight rates remained relatively firm, but the delivery of big new ships – leading to new services and upgrades of existing loops – will mean lines will find that task increasingly difficult for the remainder of 2013," said Simon Heaney, research manager at Drewry.

"These new orders and speculation of more to come could be having a negative impact on rates right now. Carriers cannot shift the paradigm from the supply pressure they are facing so that they can get rates moving upwards again," he said. Still with the market watchers, over at SeaIntel Maritime Analysis CEO Lars Jensen said the key lay in understanding the game played between carriers.

"As the container shipping industry is a zero-sum game, carriers are de facto forced to match each others' rate declines in order to maintain their vessel utilization," he said.

"This will continue until such a point where the losses per unit becomes unacceptable for all parties. Then discipline will be re-introduced, capacity will be reduced and rates will be increased drastically. This is also what we saw in late 2011 and early 2012."

Jensen's colleague Alan Murphy, COO and partner of SeaIntel – and former Maersk Line employee – said there was a fundamental supply-demand imbalance that would remain "for some time".

"There is a non-existent orderbook currently for 2015 and 2016, but we believe that will change, and Asia-Europe is key. All the larger mega vessels must go into Asia-Europe," he said.

Traditionally, the workhorse of the route has been in the 8,000-9,000 TEU range, but Murphy that would change dramatically over the next two years.

"In 2013 and 2014, the most common vessel will become a 13,000-14,000 TEU vessel. And an 8,000 TEU vessel simply cannot compete with a 13,000 TEU vessel on slot costs and on fuel

"These new orders and speculation of more to come could be having a negative impact on rates right now."
Simon Heany, Drewry

"We predict there will be eight global carriers by 2020."
Sunny Ho, Executive Director, Hong Kong Shippers' Council

"If you have no cargo, you may as well not sail,"
Stanley Smulders, MOL

consumption."

His message to carriers was blunt. "If you are a carrier stuck with 8,000 TEU vessels on Asia-Europe, you have two options: You buy your own mega vessels or you get out of Asia-Europe."

However, the introduction of mega vessels has serious supply chain consequences that the carriers have avoided confronting in their determination to cut costs and improve profitability.

Mark Holloway, customer service and APAC supply chain director at food and beverage maker Diageo, said service reliability among the carriers has deteriorated.

"Some 68% of the carriers we use have delivered below the service agreements they have contractually agreed with us. We need that reliability to improve," he said. Diageo is different to many other shippers on the Asia-Europe trade in that its cargo is shipped from Europe into Asia. This means the company has to put up with extra slow steaming as the ships return to Asia half full or loaded with empties.

"The service reliability against the agreements we have with the carriers is very poor. This means I have to lay down extra inventory because I don't know when they are going to turn up, or even when they are going to pick the stuff up in Europe," Holloway complained.

Container lines have been dealing with disgruntled customers for the last couple of decades and have become inured to their complaints. With such high asset costs and a wild profit and loss rise over the last few years, the carriers are far more focused on profitability than customer service.

Stanley Smulders, senior vice-president Asia-Europe and West Africa trade management for Japanese carrier MOL, said having bigger ships was cutting down the number of sailings, and that was having a serious impact on the industry.

"If you have no cargo, you may as well not sail," he said. "In the old days it never happened because the market was growing all the time. Now it happens more often because we offer more strings, so if you stop the sailings, there are maybe four left.

"There is a reduction of choice and it will continue."

For shippers, the lack of predictability makes it more difficult to manage inventory and keep shelves full or production lines moving, but the carriers feel there is no alternative to blanking sailings.

"Before, a container would pay for every move it made. The fuel costs and canal costs were considered fixed and the ship would sale anyway," Smulders said.

"Then the fuel price rose and the cost of fuel took up a bigger share of the operating costs. The rising cost of fuel also came with lower cargo volume and the carriers found it was better to lay up a ship than to sail."

Hong Kong Shippers' Council executive director Sunny Ho said he felt sympathy for liner executives, but the influx of newbuildings meant there were too many ships and it was the shippers who were paying for all the excess capacity.

"Many factories have been forced to close or have been forced to move out of China to new regions. But in the liner trade there has not even been one major merger," Ho said.

This was despite only Maersk Line, OOCL, CMA CGM and Hapag-Lloyd being among the main carriers to finish 2012 in the black.

Murphy agreed that there was a need for consolidation in the industry.

"We predict there will be eight global carriers by 2020," he said. "There is no industry in the world that can maintain 20 global players at a competitive level."

The increasing size of ships was also impacting container ports, and global growth and ship size went hand-in-hand, said Mohammed Al Muallem, senior vice-president and managing director of DP World, UAE region. "The emergence of the gateways, the mega ports, has been driven by the arrival of these bigger ships and this is putting pressure on ports and terminal operators. We need to invest in the right places."

"The trend of big ships is growing. This year we have 18,000 TEUs coming out and who knows what is next. This is all driven by economy of scale and the bottom line. New ships are more efficient and more fuel-efficient, but these big ships are a fact of life and ports need to adjust to this new reality."

But it is not only ports that need to adjust to this changing world. The new reality is becoming a painful one for both container lines and their customers. The carriers are not prepared to compromise profitability for improved service, and shippers do not like to pay more for falling service levels.

So expect little change in the carrier vs customer world of container shipping and volatility will continue as the lines adopt the mutually exclusive positions of clinging to market share and trying in vain to hike rates while capacity pours into the market.

Carriers have announced hefty new general rates increases for the summer and even a peak season surcharge will be levied on the key trades, but getting them to stick will be no easy task. Despite several rounds of rate increase announcements over the past year, the last time a GRI stuck was in March 2012.

Military Sealift Command

Contamination Controlled

Rear Admiral Mark "Buz" Buzby, commander of the Military Sealift Command, sat with Maritime Reporter contributing editor Edward Lundquist talked with a week before his retirement aboard USNS Spearhead (JHSV 1) at Little Creek, Virginia, on May 10, 2013. The talk centered on a unique event in maritime history. MSC had seven ships in the area east of Japan, responding to the March 11, 2011 earthquake and tsunami that killed 19,000 people. One of them was the fast combat support ship USNS Bridge (T-AOE 10), which was part of the USS Ronald Reagan carrier strike group operating in support of the relief efforts. A consequence of that event was the reactor failure at the Fukushima Daiichi Nuclear Power Plant, which led to the radiological contamination of USNS Bridge, as well as other ships.

By Edward Lundquist

Can you tell us of the events that led to the contamination threat?

During the course of one evening, when they were steaming all in company, about 150 to 200 miles offshore, they encountered a radioactive plume at sea in the midst of a driving snowstorm, a pretty snotty night at sea. And then the radiological monitors on the carrier began indicating the presence of radiation. This drove the entire force to button up—essentially doing the things we'd been practicing for throughout the Cold War, in terms of in a nuclear detonation at sea and the fallout that would then occur.

All the systems and countermeasure that been put in place on our ships for years—such as the topside washdown system and the Citadel positive pressure air filtration system for the living areas of the ship—were put to use. Through great Providence, the Bridge, a former [commissioned] Navy ship, had a Citadel system installed. We train our mariners on how to do radiological controls, and how to do the correct precautions for handling a radiological incident. We have a radiological officer on the ship who went through formal training just like in a Navy ship, and we have all the gas masks and protective clothing and all that sort of thing. That was all there. It's all practiced. And that night it was employed. That crew put their suits on and donned their gas masks and closed up that ship and activated the countermeasure wash-down system, just like they were trained to do. And that probably saved a lot of people from unnecessary radiation. The levels were very, very low—extremely low. Those sensors that we have on our ships detect the most minute quantities of radiation and the quantities that were encountered out there were extremely low. They were essentially alpha and beta particles, heavy particles and the best way to prevent exposure was just to have covering on your skin.

When the detectors indicate something at a very low level, that's generally a precursor that it could get worse, that the concentration is about to increase.

So you always err on the side of caution until you figure out what's going on, and that's precisely what happened. The process worked exactly right. All the things we've trained to for all those years worked, and the crew performed magnificently. But, you know, it's something that no one had ever been through before. No Navy ships at sea, other than Bikini Atoll tests back in the 40s and 50s, had ever gone through nuclear radiation at sea. It was all sort of theoretical. So this was kind of a first. And it was especially a first for our naval auxiliary that was out there with our people. So I was very proud of the way they responded. The master of that ship e-

(U.S. Navy Photo by Mass Communication Specialist Seaman Apprentice Jesse A. Hyatt)

Rear Adm. T. K. Shannon (left) and Rear Adm. Mark Buzby congratulate each other during a change of command ceremony aboard the USNS Spearhead (JSHV 1). Shannon relieved Buzby as commander, Military Sealift Command.

Military Sealift Command

MSC

Military Sealift Command is the leading provider of ocean transportation for the Navy and the rest of the Department of Defense – operating approximately 110 ships daily around the globe.

Its mission is to operate the ships which sustain our warfighting forces and deliver specialized maritime services in support of national security objectives in peace and war. MSC reports to U.S. Fleet Forces Command for Navy transport matters; to U.S. Transportation Command for defense transportation matters; and to the Assistant Secretary of the Navy for Research, Development and Acquisition for procurement policy and oversight matters. **MSC has a workforce of more than 9,000 people worldwide**, about 80%of whom serve at sea. More than half of MSC's workforce is made up of civil service mariners who are federal employees. The remainder includes commercial mariners, civil service personnel ashore and active-duty and reserve military members. The command currently operates approximately 119 non-combatant, civilian-crewed ships worldwide. In addition, the command has access to 50 other ships that are kept in reduced operating status, ready to be activated if needed. The ships fall under six different categories:

• Combat Logistics Force
The 32 ships of MSC's Combat Logistics Force provide fuel, food, ordnance, spare parts, mail and other supplies to enable the Navy fleet to remain at sea, on station and combat ready for extended periods of time.

• Special Mission Program
MSC's Special Mission Program has 25 ships that provide operating platforms and services, to include oceanographic and hydrographic surveys, underwater surveillance, missile tracking, acoustic surveys, and submarine and special warfare support for U.S. military and other U.S. government missions.

• Prepositioning Program
MSC's 25 prepositioning ships support the Army, Navy, Air Force, Marine Corps and Defense Logistics Agency, with military equipment, vehicles, ammunition and other material to support warfighters who can arrive at a location with their propositioned material waiting for them. Prepositioning ships include a combination of U.S. government-owned ships, chartered U.S.- flagged ships and ships activated from the MarAd's Ready Reserve Force. Crews are U.S. civilian mariners.

• Service Support
Military Sealift Command's 15 Service Support ships provide the Navy with towing, rescue and salvage, submarine support and cable laying and repair services, as well as a command and control platform and floating medical facilities. All Service Support ships are government owned and crewed by civil service mariners, although several have hybrid crews of civil service mariners and uniformed Navy personnel working under the leadership of a U.S. Navy captain.

• Sealift Program
The MSC Sealift Program provides ocean transportation for the Department of Defense and other federal agencies during peacetime and war. More than 90 percent of U.S. war fighters' equipment and supplies travels by sea. The program manages a mix of government-owned and long-term-chartered dry cargo ships and tankers, as well as additional short-term or voyage-chartered ships. By DOD policy, MSC must first look to the U.S - flagged market to meet its sealift requirements. Government-owned ships are used only when suitable U.S.-flagged commercial ships are unavailable.

• Ready Reserve Force
The 48 ships of the RRF are maintained and crewed by MarAd and which can be activated in four, five, 10 or 20 days. The RRF includes fast sealift ships, roll-on/roll-off ships, lighter aboard ships, heavy lift ships, crane ships and government-owned tankers. When activated, RRF ships come under the operational control of MSC.

mailed us back reporting that this had occurred and that everybody was calm and everybody appeared to be well. But, you know, what now?

So when it was finished with its initial tasking out there, we brought the ship down to Sasebo to figure out how to decontaminate it.

Into Sasebo, or off Sasebo?

At anchor near Sasebo. We did not bring it into port.

How did it progress from there?

The first thing that occurred was the Battle Group Commander arranged for the NavSea RadCon (Naval Sea Systems Command Radiological Contamination) technicians to go to all the ships in the battle group. And as a matter of fact, the carrier itself has people that are trained because of the nuclear power plant on there, and they were able to do a basic check of all the ships inside and out to see what levels of contamination there were. Typically it was topside on the ships. The Citadel system did what it was designed to do and had kept any radiation from reaching the living areas of the ship. However, anywhere where there was a concentration of air – a vent duct, a blower, an intake for a gas turbine engine for the ship's boilers – that was an area where that concentration of air was causing a higher than normal level of radiation, even though it was extremely low—not life-threatening in any means, but it was above normal. And again, because of the caution that we employ when dealing with radiological sorts of things, it became something that we needed to and wanted to focus on and remove so it would not be an effect on the crew. The way it was explained to me is the level of exposure from the hottest spot was about the same amount you would get from flying in an airplane from the US West Coast to Japan. The ionizing radiation you get from the sun was about the same and, in fact, when I flew over there I was told I got about the same dose as anyone would have gotten had they had contact with any of these hot spots. I was a damage control assistant on my first ship, USS Connole (FF 1056). So I was very heavily trained in this area and knew it pretty well and actually remembered a lot of it. We were concerned with more than nuclear fallout at sea from a blast, because we were a nuclear-capable ship. And in case of an accident you had to know all the procedures to go through and how to handle it.

In a scenario like this, what are the immediate challenges?

My concern immediately was the unknown. It can be scary if you don't know the facts, and you don't know what it means to you, and how it's going to impact you. So that was kind of the first thing that ran through my head. There are 170 civilian mariners who are probably scared to death, who probably don't really know whether they're going to die, whether they've been irradiated so significantly that it's going to cause them health issues. So we wanted to get the ship cleaned up as quickly as possible, and we wanted to ensure that none of the crew had received any dangerous levels of radiation. We wanted to reassure the crew as to what the way forward was going to be and that they were going to be fine, and that the ship that they were sailing in was safe for them to be there. I felt the best way to do that was to get it cleaned up very quickly. With the Navy ships out there, they were going to have just their crew, their sailors, go out and scrub the ship down, because it was primarily particular matter that could be removed just simply by scrubbing, soap and water, and washing off with water, and containment of that water, those rags, and all the residue from doing that. That was really the main decontamination methods. So it was fairly a mechanical process, but one that my mariners had not been trained in. And I didn't believe it was correct for them to do that. So we made the decision to hire a Japanese company that specialized in asbestos removal and control, because the protocols are very, very similar for handling radiological contaminated material and asbestos, in terms of the personal protective equipment, in terms of the respiration protection, in terms of the collection and containment of the after effects. So we hired a company right on the spot down there in Sasebo that came aboard. They came out to the ship every day and cleaned the ship up. We were working with NavSea and, their director of radiological controls division, Captain Luis Benavidez, who worked with us very closely in those early days to figure out exactly what the right process was, to tell the ship what to do and what not to do to get the right people on hire. I thought it was very important to have someone on site right there that was a technical authority. So I got him to send a young lieutenant out there who was a RadCon certified officer, out to the ship to be there full time, and a couple of monitoring technicians that could go around and continue the monitoring process.

And how was the crew handling this new challenge?

I really thought it was important to reassure the crew. Just sending e-mails out there wasn't going to hack it, in my view. This was one situation where the commander needed get out there and stand in front of his people and reassure them—tell them what had happened, tell them what we were doing, tell them that they were going to be okay. So I grabbed Captain Benavidez, and the MSC Force Surgeon, Captain Jim Rice, and my Force Master Chief [Master Chief Miguel-Juan V. Reyes], and we all flew out there and got aboard the ship and, walked around, saw what was in progress, and then stood in front of that whole crew and told them exactly what was going on, reassured them that they were going to be okay, told them that we were going to monitoring every single one of them very closely, that every one of them was going to be tested to ensure that they had not received any above normal radiation.

How long after the contamination was first reported was this?

It was probably about a week. By the time I got out there, finally, things had settled down enough that you could actually travel out there. I wanted to reassure the crew so they would stay aboard for the deployment. This was a ship that was getting ready to deploy to the gulf, it was on its way very shortly thereafter and we could not afford to not have it not be operational. So our mission was to get it cleaned up, get it fully able to meet its mission, and that includes having a crew on board that believed they were safe and believed that they were in a safe environment. So we issued everybody a TLD to monitor as they walked around the ship to make sure they weren't receiving any dosage. [Thermo luminescent dosimeters are passive devices, issued to the crew and worn like a badge, that measures radiation exposure.] They were offered that. They weren't required to wear it, they were offered. And most of the crew took us up on it.

We posted all the 'hot spot' areas that were being worked down on the mess decks so people could see where they were. They could see, where to avoid them, but also they could see the progress as we cleaned areas up and we took the hot spots off the board and showed the actual numerical readings from the radi-

acs [devices used to conduct make alpha, beta, gamma, and neutron surveys]. It was very open, very transparent.

I told everybody that there was going to be a piece of paper, a document, that they were on the ship. They were going to get a copy for their medical record and there was going to be a copy kept in the DoD medical database, so that if in the future there was ever any question, ever any claims, anything ever popped up, there would be conclusive evidence that they were there, and what was done at the time. That, I think, went a long way to allaying people's fears understanding what it was they were dealing with. This wasn't just going to go away. Most of the contamination was in the air concentration areas. So, especially for the engineers who were going to tear into machinery and make repairs in the future, you know, like removing turbo chargers from diesel generators, doing repairs on gas turbines, they were going to encounter elevated levels of radiation. So we developed written procedures for how to handle maintenance on those things; how to contain it; what personal protective equipment to have on site; how to bag or contain the elements that were removed. We changed out a couple turbo chargers and a couple diesel engines and they all had to be bagged up and, boxed up, and disposed of, off the ship, you know, marked and everything else. We developed all those procedures so the engineers would be comfortable, knowing they could safely do the maintenance they needed to do and not be contaminated. And, long term, the ship and several other ships that were that had the potential to have been contaminated, were put into a radiological monitoring program as they go through maintenance availabilities which goes on to this day. We found the potential for contamination in the ventilation ducts, and that a lot of those old rusty ducts on the inside and fan coil units were great collectors of residual contamination. There was no really good way to clean them. So we tore out a bunch of fan coil units and blower motors out of Bridge when we were decontaminating her, and just changed them out altogether, just to remove any of that potential.

And the crew, today?

The proof of the pudding is that nobody got off the ship, nobody wanted to get off the ship—as a result of this, they went off and deployed in the gulf, were over there for eight months, with the normal rotation of people. People were coming and going off of the ship, there was no stigma attached to it, there was no, "Oh, don't go to the Bridge, you know, it'll kill ya," kind of thing. And to this day it's, it's a page in history. I think from that point of view, I think we did the right thing. More than ever it showed the mariners that we really cared about them and that we had their backs. And by going to the place myself, I was exposing myself to whatever they were there, and hopefully they would see that I wouldn't probably do that unless I thought it was safe myself.

Vessel Values

If in doubt, ask the Doctor

Is it Time to Buy?

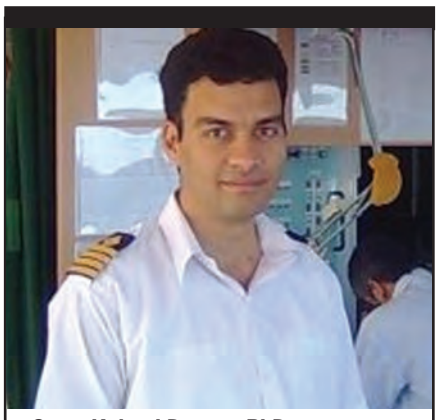
Trends in asset prices are generally important for vessel owners, banks who lend against them as well as commercial interests who make opportunistic acquisitions in times of depressed asset values. These trends however are for generic vessel types which are generalized from realized data consisting of actual sale and purchase (S&P) activity. We choose three representative vessel size categories from the dry and wet markets respectively and one size category from the Liquefied Petroleum Gas (LPG) markets. There are empirical challenges which we have to overcome at Vesselsvalue.com in terms of relative illiquidity in certain segments as well as heterogeneity in the asset classes, i.e. two vessels in the same size category may contain varying specifications which are factored into our pricing model.

Vessels prices are conditioned on five fundamental determinants. We base our valuation models at VesselsValue.com on these fundamentals which come handy while explaining the relatively "flat" structure of the asset prices over the past year. The earning capacity of the vessels is a key component affecting the S&P activity and we find that there is a strong correlation between the two. Since the earnings of the vessel are close to the operating costs in most of the dry and wet categories with a proportional squeeze in margins. The earnings are conditioned on the supply for freight and the global demand for the transportation of bulk commodities. The oversupply of tonnage coupled with new deliveries has posed two main problems on the supply side in recent times.

The number of ships competing for hire has increased at a larger rate (due to new deliveries) than that of the demand for freight (measured in ton-miles). Scrapping or demolition activity, which is supposed to restore equilibrium by removing some of the excess supply of vessels. However as seen in the graph (average age of fleet), the fleet is relatively young with averages of slightly over seven years and therefore a slowdown in the demolition activity. An example of oversupply and potential impact in the freight and the S&P markets can be made in the crude carriers where a around 8m dwt of capacity has been delivered with a further 30m dwt due to be delivered by the end of 2014 representing a 4% increase in the fleet (subject to current demolition rates). In contrast, the demand for the freight is expected to be lower at around 2% with consequent downward pressure on the freight rates and therefore the asset prices.

This might be seen as an opportunity to purchase vessels at their lowest relative prices by opportunistic buyers since there are two favorable aspects for the wet sector. The first is that the fleet to order book ratio is set to decline in the future and the demand for freight predicted to increase following an economic turnaround in the near future.

Additional factors that contribute to the changes in the vessels valuation are the type, specifications and age of the vessel. Though there is a large interest in purchasing vessels of a higher specification especially fuel efficient engines, we feel that these three factors have not made a significant impact on the changes in the vessels prices over the past year.



Capt. Kaizad Doctor, PhD,
Director of Analytics, VesselValue.com

Kaizad is responsible for empirical research, statistical and computational modeling, database management and new product development and optimization of existing systems. He has written several academic papers in the field of shipping economics, asset pricing and valuation, statistical arbitrage and applied econometrics. Kaizad had an extensive seagoing career with Exxon Mobil and Mitsui on LPG, VLCC's and dry bulk carriers culminating with two years in command of Panamax vessels. He has an MSc in Shipping Trade and Finance (with Distinction), an MRes in Finance (with Distinction) as well as a PhD in finance from the Cass Business School. He enjoys teaching courses in quantitative methods, probability theory and econometrics at the masters and undergraduate level.

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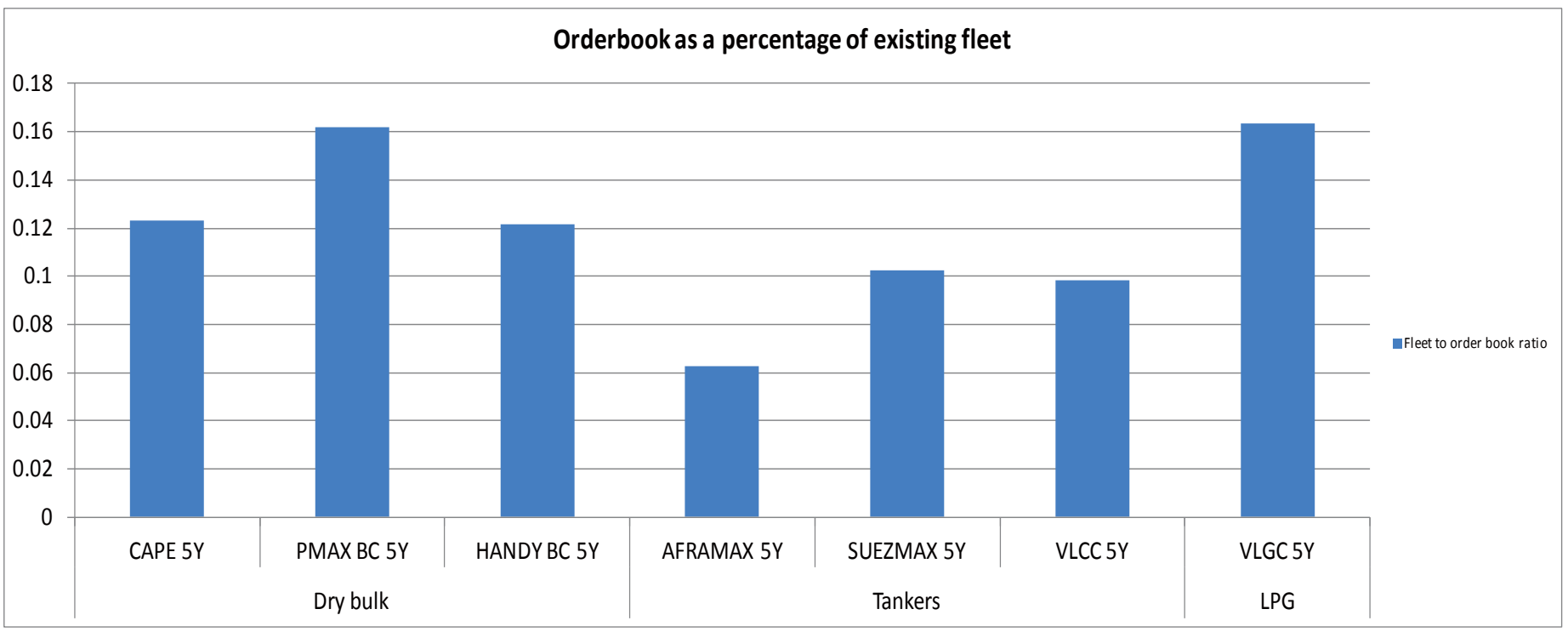
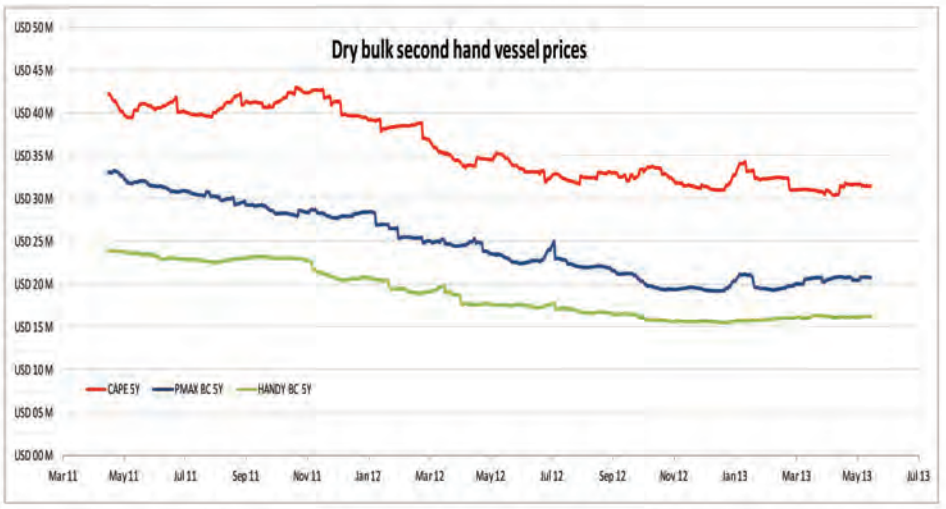
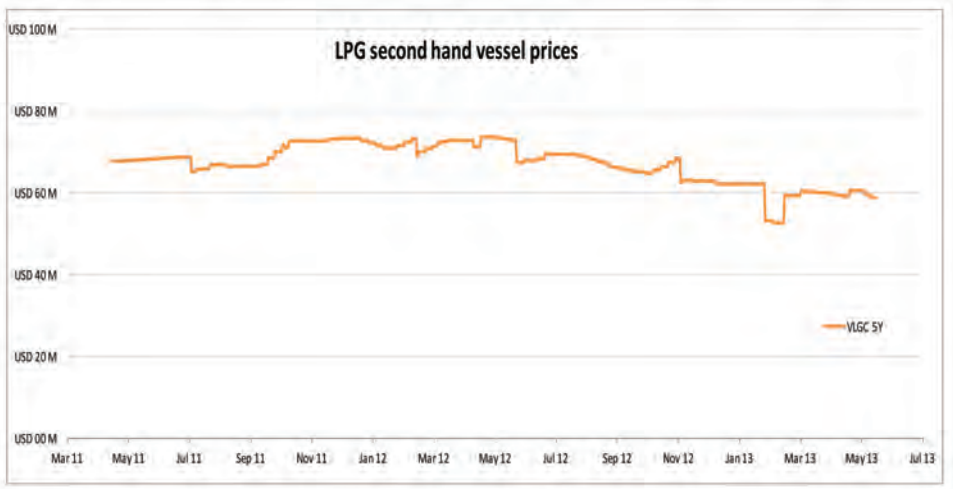
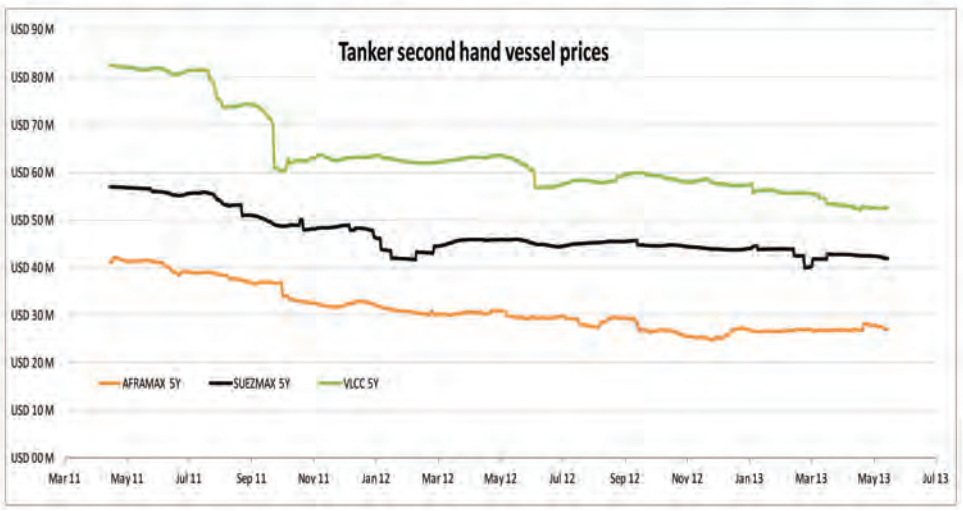
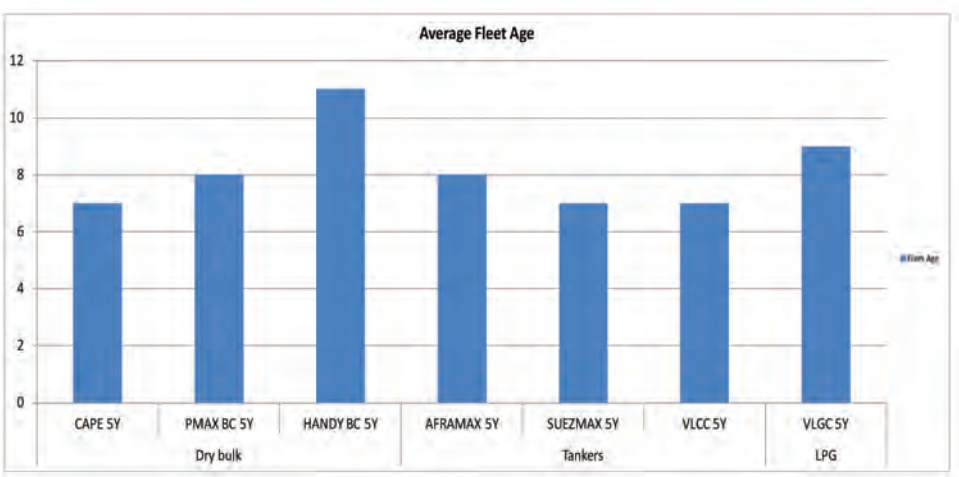










Finnish Shipbuilding and Arctic Operations

by Henrik Segercrantz

The STX Turku Shipyard in Finland recently lost the order for a third Oasis class cruise ship and an option for a fourth to "sister" shipyard STX France, when neither the owner, the financially troubled STX Group, nor the Finnish government wanted to inject a missing $64.3m to the capital of the shipyard. The yard is currently building two 97,000gt cruise ships for TUI Cruises.

In January the shipyard delivered the world's first LNG-fuelled big size passenger-car ferry, the Viking Grace for Baltic ferry operator Viking Line.

The advanced vessel, fitted with Wärtsilä's dual-fuel engines, has two LNG tanks with a capacity of 200 cu.m. each for carrying liquefied natural gas placed on the open aft deck and is built to the Finnish-Swedish Ice Class 1A Super. Another vessel, a multipurpose dry cargo vessel Meri, for Gaiamare Ltd. was also delivered last year, is operating with stern first in ice, according to the double-acting DAS principle.

STX Rauma Shipyard last year delivered a Polar Supply and Research Vessel for South African Department of Environmental Affairs. The S.A. Agulhas II is a multipurpose vessel that operates as a supply, research and passenger vessel as well as an icebreaker. Another research vessel delivered last year was the deep-sea fisheries research vessel for Namibia's Ministry of Fisheries and Marine Resources, RV Mirabilis. The ship features facilities for meteorological research and has a DP system.

In February the keel of another interesting vessel was laid, an offshore patrol vessel for the Finnish Border Guard. Fitted with dual-fuel engines, the vessel uses liquefied natural gas and alternatively marine diesel oil as fuel. With delivery set for the fall this year, this vessel is 95.9 x 17.4m with a design draft of 5m. The deadweight is 660 tons and 1,800 tons at maximum draft. The vessel has an electric machinery for its two azimuthing drives and for the two tunnel thrusters forward. There is a third propeller at the centreline aft, with the shaft directly coupled to a reduction gear of one engine. The patrol vessel will feature substantial oil combattant capacity.

Arctech Helsinki Shipyard

The first two new Arctic offshore supply vessels, Vitus Bering and Aleksey Chirikov for Russia's Sovcomflot (SCF Group) were recently delivered by Arctech Helsinki Shipyard. The vessels are designed for extreme environmental conditions of the Sakhalin area in Far-east Russia and will work at the Arkutun-Dagi oil and gas field serving a platform of Exxon Neftegas Limited, meaning it has a very high 1.7m iceabreaking capability. The diesel-electric vessels have a total power of 18MW, with the propulsion power at 13MW, feeding two electrical azimuthing Azipod thrusters. Vyborg Shipyard built most of the steel blocks of the vessels.

The Arctech Helsinki Shipyard was established in December 2010 when United Shipbuilding Corporation (USC) of Russia acquired half of the Helsinki shipyard from STX Finland. United Shipbuilding Corporation is the state-owned Russian shipbuilding corporation focusing on developing the Russian civilian and military shipbuilding industry.

In December 2012 the yard received, also together with Vyborg Shipyard, an order to build a 16MW icebreaker for the Russian Ministry of Transport. The vessel is to be delivered in 2015. The icebreaker is intended for year-round operation in the Baltic Sea and is during the summer season to work in Arctic Russia.

Above:
S.A. Agulhas II, a Polar Supply and Research Vessel for South Africa

Left:
The first of two Arctic offshore supply vessels for Russia's SCF Group was recently delivered by Arctech Helsinki Shipyard

The icebreaking capability is 1.5m. The four main diesel-generator sets have a total power of 27MW. The total propulsion power is 18MW. “This order is very important for Arctech Helsinki Shipyard. It gives us a good base work load for the next two years,” said Esko Mustamäki, Managing Director of Arctech Helsinki Shipyard.

Breaking Ice Sideways

Another special vessel under construction is a multipurpose emergency rescue vessel and icebreaker, due to be delivered early next year. The contract was awarded together with Shipyard Yantar JSC, a shipyard part of USC in Kaliningrad by the Baltic Sea, which is building the hull of the vessel. The outfitting and commissioning of the vessel will be done by Arctech in Helsinki.

The vessel represents a completely new type of ship, both regarding icebreaking as well as oil spill combating technology. The design of the vessel is based on the ARC100 concept which Aker Arctic Technology has developed for Arctech Helsinki Shipyard. It features a patented oblique design with asymmetric hull and three azimuthing propulsors, which allow the vessel to operate efficiently ahead, astern and obliquely, or sideways. The vessel can break 1m thick level ice with a constant speed of three knots both going ahead and astern and will be able to generate a 50m wide broken channel when proceeding in 0.6m thick level ice in oblique mode. The diesel-electric vessel will be used for icebreaking and oil recovery tasks. Three main diesel-generator sets have the total power of 9.0MW. The total propulsion power is 7.2MW, providing power for three Steerprop azimuthing thrusters.

Aker Arctic Technology

Aker Arctic Technology, AARC, the Finnish engineering company specializing in developing ice-going ships and offshore structures for any cold regions, is operating as an independent consultancy. It is owned by STX Finland with ABB and Aker Solution as minority shareholders. Aker Arctic operates an ice model basin in Helsinki. Over the years, hundreds of icebreakers and Arctic offshore structures have been tested and developed by Aker Arctic. In addition to the oblique icebreaker also the double-acting icebreaking principle, where the vessel breaks ice going astern using azimuthing propulsion, and thus saving much power, has been among the developments of the company. A number of vessels have been built using the DAS double-acting ship concept, such as Arctic container vessels, for Norilsk Nickel, and Arctic shuttle tankers, for Sovcomflot, icebreakers and cargo vessels.

Recent icebreaking ships designed include the shallow draft icebreaking tug type ARC104, five vessels of which have been built for year-round operation in the Northern Caspian Sea, by Vard Braila Shipyard in Romania, for Caspian Offshore Construction. Aker Arctic is currently engaged in projects for the Sakhalin Region and has also participated in the tender design of a newbuild-

The Arctic

We are worried about two things regarding development at IMO. **One is the EEDI pushing down ship power** while safe ice-breaking requires sufficient power ... The other is a conflict in how to implement existing ice classification regulations such as the Finnish-Swedish ice rules into the new Polar Code regulations.

Mikko Niini, Managing Director of Aker Arctic Technology

Unique multipurpose emergency and rescue icebreaker breaks ice sideways.

ing for Shell, for operation in Norther Alaska. Earlier, it consulted in the design of the first vessel chartered to Shell for operation in this area, the Aivik for Edison Chouest Offshore. In Arctic Russia, OAO Yamal LNG consulted AARC for studying the LNG transportation chain including the development of LNG carrier concepts. Tenders are now out to five shipyards, four in South Korea and one in Japan, for up to 16 LNG carriers with the size of 170,000cu.m. The propulsion consist of three azimuthing pod units in a DAS configuration. The Yamal LNG development includes also several icebreakers. Russia's LK25-type icebreaker, with a power of 25MW under construction at the Baltic Shipyard in Russia uses a hybrid propulsion design developed by AARC. In addition, AARC participates in the conceptual and basic design of the new Polar Research Icebreaker for China and in the design of the new Polar Icebreaker for the Canadian Coast Guard, CCGS John G. Diefenbaker. The design process of this icebreaker is lead by STX Canada Marine. In Europe AARC received the task to "slim down" the Research Icebreaker Aurora Borealis vessel design under the European Union ERICON project, without compromising on the scientific capabilities. The new slim research vessel, with drilling capabilities, can operating year-round in all Polar regions. The price tag has been reduced from $1.03b to under $643.3m.

New Polar Code

Recent work also included providing relevant input to the proposal for a mandatory Polar Code, the new common IMO regulations covering shipping in ice, due to enter into force in 2016. "We are worried about two things regarding development at IMO," Mikko Niini, Managing Director of Aker Arctic Technology, told Maritime Reporter. "One is the EEDI, Energy Efficiency Design Index, pushing down ship power while safe icebreaking requires sufficient power. We are dependent on icebreaking here in Finland; and, especially for polar operations, the EEDI in its accepted format does not fit. The other thing we are worried about is that currently there is a conflict in how to implement existing ice classification regulations such as the Finnish-Swedish ice rules into the new Polar Code regulations." He notes that UNCLOS provides the possibility for each state to decide on its own ice regulations for ships. "The worst scenario would be that there would be three mandatory ice classification regulations to be built to in the future: the local, which are the Russian ice class regulations, the Polar Code and the Finnish-Swedish or the Baltic Ice Class regulations. Now the latter gives the shipowners also a certain level of ice performance, but the new proposed rules do not. In the future the intended performance level will be the responsibility of the shipowner. This change might become difficult for the shipowner to understand, as it would force the shipowner to make a realistic risk assessment and to optimize new vessel concepts to meet his actual needs, instead of following strict fixed rules as before," Niini said.

Christening of DP Gezina

First of its kind in Offshore Wind industry

DP Gezina was named and christened in mid-May at Holland Shipyards' in Hardinxveld – Giessendam. The Service Support Vessel DP Gezina was performed by Gezina Roelofs, and witnessed by 200. Mrs. Gezina Roelofs is the mother of the owner of Chevalier Floatels, Marcel Roelofs.

DP Gezina was touted by the builder as truly the first of its kind in the offshore (wind) industry. During the conversion the vessel was lengthened 9m and sponsons were added to improve the sea keeping, making the vessel more comfortable for those onboard. Internally the vessel was completely changed and is now capable of accommodating 60 to 90. Technically, the vessel was equipped with an additional machinery room to house the Ampelmann system and two additional generators. The generators provide power for the additional loads required to meet the requirements of DP2 notation and the equipment required for the vessel to fulfill its intended role. This equipment include retractable bow thruster for the DP2 requirements and an Ampelmann crew transfer system.

With the added machinery room, additional bowthruster and increased generator capacity the vessel been able be equipped with a DP 2 system and consequent class notation.

The Ampelmann system allows for a significant improvement in operational time and scope compared to more conventional transfer methods, and has the capacity to work in wave heights up to 3m significant.

On the aft deck a heave compensated workcrane has been fitted, with capacity of one ton at 20m outreach for servicing offshore installations. Also the vessel has been equipped with the facility to accept a multibeam sonar.

www.cfbv.com

Above: DP Gezina during trials.
Below: Owner Marcel Roelofs with his family.

Ulstein Delivers PX121-series PSV

Ulstein Verft delivered Blue Thunder, the fourth of six medium-sized platform supply vessels of the PX121 design from ULSTEIN to Blue Ship Invest, on May 13, 2013. Owned by Blue Ship Invest, a wholly-owned company in Ulstein Group, the PSV is commercially and technically under the management of Atlantic Offshore. It will enter a four-month contract with Statoil, with four monthly options. In the North Sea, PSVs of the PX121 designs are considered medium-sized. Blue Thunder measures 83.4 x 18 m, and is designed for a maximum speed of approximately 16 knots. It has a load capacity of 4,200 tons (dwt), and the 850 sq. m. cargo deck can carry a deck load of 2,200 tons. In addition to tanks for oil, water and drilling fluids, the vessel has four stainless steel tanks for flammable liquids. 'Blue Thunder' has modern accommodation for 23, and is equipped with a dynamic positioning system IMO class II and meets the requirements of DNV's Clean Design notation.

German Shipbuilding Prospects are

Fair & Partly Cloudy

While economies across Europe have essentially bumbled, stumbled and fumbled in the wake of the global economic meltdown, Germany has remained comparitively strong. Despite the general migration of shipbuilding to the Far East, we decided to check in on the current status of this proud nation with a strong maritime heritage.

By Peter Pospiech

German shipbuilders concentrated in 2012 on building cruise ships, megayachts, freight ferries and additional high-value, specialty ships. In total, nine German shipyards across 12 shipbuilding sites supplied 21 sea going ships with a total tonnage of 473,700.

While the group expects a slow but steady recovery from what have been a historic economic malaise, it is generally agreed that in the next few years, difficulty in the merchant shipbuilding sector will continue.

Apparently, though, the maritime economy starting to recover after years of crisis. In 2012, while the situation in the German shipbuilding industry cannot be classified uniformly as good, at the very least it was a better situation than in 2011.

After many years of decline, the German shipbuilding industry has seen its employment numbers increase, as in September 2012 there were 16,852 directly employed people working on all German shipbuilding sites, a growth about 3.1%, or a net increase of 501 employees. This is a particularly positive development, particularly when one looks at the period between 2008 and 2011 when about 4,200 employees had lost their jobs.

Overall it has been an active and in some regards uneven year for the German shipbuilding industry, as some yard expanded and tried successfully to develop the offshore market, as well as develop the tools and talent for the construction of special ships. On the other hand, some shipyards had to decrease the number of employees and in some extreme cases, applied for insolvency.

But per usual, the hallmark of German shipbuilding is diversity, and the types of merchant vessels built is wide spread, and includes four RoRos and three cruise ships, as well as one multi-purpose cargo ship, one LNG tanker, a dredger and a rescue cruiser, plus five authority ships of different types. Included in the balance are six megayachts and seven river cruise ships.

Only six cargo ships were christened in Germany last year, which includes four freight ferries delivered by Flensburger Schiffbaugesellschaft (FSG), one multi-purpose vessel from Ferus Smit and also one LNG-tanker supplied by Meyer Shipyard; significant in that it is the only new build tanker from a German shipyard. Perhaps even more significant is the fact that for the first time, since the dawn of the container shipbuilding age, not a single newbuild container carrier of any size comes from Germany.

High Export Percentage

When you look solely at the number of

There are few maritime sites as spectacular as seeing a newly built cruise ship, in this case Celebrity Reflection, make the journey from the Meyer Shipyard, Papenburg up the river Ems to the North Sea.

ships built, the percentage built for export is 76%; when looking solely at tonnage built, 83% was built for export. The most important buyer was the United States for luxury cruise vessels. Leaving out megayachts, which mainly operate under the flags of the Cayman and the Marshall Islands, all other new buildings have been destined for European buyers.

Meyer Shipyard, together with their sister company Neptun Shipyard in Rostock-Warnemünde, again proved its exceptional position within German shipbuilding circles, regarding the construction of both types of ships and in terms of absolute tonnage delivered. The Papenburg-based shipbuilders supplied in 2012 the Disney Fantasy, AIDAmar and Celebrity Reflection, which was the biggest German newbuild of the year. In addition, there was a keel laying for an LNG tanker at the Warnow facility, significant as it was the first in 40 years in Germany. Also there were seven river cruise ships, which also underline a production record of the Neptun Shipyard. With a total of 340,220 BRZ, Meyer Group totals 72% at the German shipbuilding total. The company also received what is arguably the most spectacular order of the year – a 163,000 BRZ vessel for the Norwegian Cruise Line, with an option of a sistership. This new build will be the biggest cruise ship ever produced in Germany once it is delivered in 2015.

Flensburger Schiffbau-Gesellschaft, FSG, was another production builder in 2012 with a total delivered tonnage of 90,700 BRZ. FSG produced four RoRo freight ferries for clients in Great Britain and Turkey, and also participated, together with Lürssen, TKMS and P+S Shipyards, in building the combat support ship BONN for the German Navy. After years of producing primarily RoRo vessels the shipyard expanded its product portfolio by taking orders for heavy cargo and seismic ships.

Special Shipyards

Abeking & Rasmussen continued with its series of SWATH-Pilot ships with the new build delivery of Wandelaar for Belgium. The patrol boat Cesis, which is also a SWATH type boat, has been delivered to Latvia and the hydrographic research ship Jakob Prei to Estonia, and the 60m charter yacht Excellence V has been delivered to a hirer in Fort Lauderdale.

Fassmer Shipyard again sported a diverse offering in 2012, among its new-

Luxury megayacht Topaz from Lürssen shipyard.

German Shipbuilding

Hamburger Lloyd

Third 4,600 TEU "Wide-Beam" Boxship

In 2008, Hamburger Lloyd was the first tramp shipping company worldwide to commission four "4,600 TEU wide-beam container ships" from the Chinese Shanghai Shipyard and Jiangnan Shipyard. The first two newbuildings, RHL Conscientia (CCNI Aysen) and RHL Concordia (CCNI Andes) were put into service in 2012 as state-of-the-art container vessels. In 2013, two sister vessels are to follow, so that the RHL fleet will then comprise of 16 units.

On May 2, 2013, Reederei Hamburger Lloyd took command of the third of four 4,600 TEU Containership Newbuildings (hull No. H1025A) from CSSC Shanghai, Jiangnan Changxing Heavy Industry Co., Ltd. Another vessel of the same type (No. H1026A) is expected to follow in August 2013. The vessel was named RHL Constantia by Ms. Christine Wegner, lawyer and partner in the shipping law firm Cyrus Makowski. RHL Constantia entered a time charter for account of Mitsui O.S.K. Lines Ltd., Tokyo, on May 15, 2013, and will trade between the Far East and the U.S. West Coast under the command of Captain Jurij Savliukevic.

M/V RHL Constantia is 259.8 x 37.3m and carries 57,000 tons at a design draft of 12.5m. It can take 4,620 TEU of cargo, of which 1,856 TEU in the holds and 2,764 on deck, up to seven tiers high. Altogether, there are 600 reefer sockets available on deck, and the ship is powered via a 36,240 kW MAN main engine, type 8K80ME, which allows the ship a cruising speed of 23.3 knots. Reederei Hamburger Lloyd GmbH & CO KG was founded in 2007 by experienced merchants and shipowners from Hamburg, and today its head office is situated in the heart of this North German seaport.

Reederei Hamburger Lloyd (RHL) has specialized in the container shipping sector and cooperates closely with the shipping activities of Hansa Hamburg Shipping International GmbH & Co. KG, to whom it is linked through its shareholder structure. The fleet managed by Reederei Hamburger Lloyd consists of 14 top-modern container ships, all certified according to ISM (International Safety Management). All vessels operate worldwide and have been built under the supervision of Germanischer Lloyd (GL).

builds is the prototype of a new rescue cruiser, Harro Koebke, for the German maritime SAR-Rescue, as well as a workboat, a tug and a buoy tender for the Federal Waterways and Shipping Administration. The shipyard also supplied the complete package for the in Cartagena-built patrol boat Arc 20 De Julio, a ship for the Colombian Navy.

In Bremen-Vegesack, Lürssen Shipyard continued with the production of megayachts that quite frankly are in a class of their own. The country's leading yacht builder delivered the 147m Topaz as its second largest new build, while sister company Kröger Shipyard delivered two, Ace and Quatrelle. For capacity extension reasons Lürssen purchased another floating dock, a floating dock in Wilhelmshaven based navy arsenal which has been used for repair of megayachts.

Nobiskrug Shipyard in Rendsburg also delivered luxury yachts: the 74m Mogambo and the project 783. Nobiskrug's order book contains megayachts of 60, 74 and more than 100m; and the yacht Siren came back into the covered building halls for class and renovation works.

Leer-based Ferus Smit Shipyard held steady with the decidedly less glamorous but still important simple designed freighters, supplying in 2012 a multi-purpose ship Fuldaborge, while laying the keel fro the 23,000 dwt newbuild Reestborg, which is due for delivery later this year.

Productive Lower Saxony (Niedersachsen)

Sea going merchant navy new buildings are spread within the German states as follows: Niedersachsen accounts for 10 new builds from four shipyards; Schleswig-Holstein accounts for eight newbuilds from three yards; and Mecklenburg-Vorpommern, Bremen and Hamburg each have one.

Two decades after the formidable modernization process within the East-German shipbuilding industry, the percentage related to the total German production is declining. The order books contains only two Swedish coast guard boats, to be supplied by P+S shipyards, which went into insolvency in November 2012. The delivery of the two remaining patrol boats are scheduled for February and April 2013. Two car ferries out of Stralsund haven been rejected because of technical problems. Shipbuilding operations resumed in early January at P+S Werften's Volkswerft Stralsund shipyard following an 11 week break due to insolvency. The good news came on the heels of a report by insolvency administrator Berthold Brinkmann updating developments at P+S Werften in Stralsund and Wolgast to a meeting of creditors and the creditor committee. Work at the Peene shipyard in Wolgast was able to continue uninterrupted during the previous proceedings.

On November 28, 2012, the state of Mecklenburg-Vorpommern approved the debtor-in-possession financing for $56.5m that the insolvency administrator had requested.

This was possible within the framework of the liquidation plan, given the scope of the rescue aid granted. Regarding the two RoPax ferries moored at the shipyard's dock in Stralsund, which originally had been ordered by Danish shipping company Scandlines, the administrator is now holding a number of talks because the number of parties interested in those two ships is growing.

At the Peene shipyard in Wolgast, which was sold to the Lürssen Group in December 2012 with an effective date of May 1, 2013, shipbuilding activities are proceeding as planned.

Because of their insolvency also the Hamburg based Sietas Shipyard could deliver only the suction dredger Eke Möbius – one double-end-ferry for a Danish client is not completed yet. Lürssen Shipyard supplied a big megayacht and increased the overall production of the German shipyards. A number of tradition-rich shipyards like e.g. Lindenau in Kiel, Peters in Wewelsfleth or Mützelfeldt in Cuxhaven but also the group works of Thyssen-Krupp have not delivered any new buildings in the last year.

Rescue cruiser Harro Koebke from Fassmer shipyard.

NEW ORDERS OF TANKERS BY SIZE

Start	10 - 69,999	70 -119,999	120 -199,999	200,000+	Total
2000	4.4	6.2	5.8	19.3	35.7
2001	5.8	10.2	3.3	7.6	26.9
2002	5.8	6.8	2.8	3.9	19.3
2003	10	15.2	8.7	15.5	49.3
2004	7.8	10.9	4.5	13	36.2
2005	7	5.8	1.1	11	24.9
2006	16.2	21.6	13.3	30.3	81.5
2007	15.4	13.5	8.3	15	52.2
2008	6.3	5.3	5.8	32.8	50.1
2009	1	1	3	5.8	11.1
2010	2.1	6.8	11.3	19.9	40.1
2011	2.7	1.9	2.8	2.2	9.6
2012	6.1	1.1	2.5	5.3	15.1

(Source: The Platou Report 2013, RS Platou Group • www.platou.com)

NEW ORDERS OF BULK CARRIERS BY SIZE

Start	10-59,999	60-79,999	80,000+	Total
2003	7.7	7.7	12.6	27.9
2004	9.5	4.5	14.8	28.8
2005	6	1.8	9	16.8
2006	14.6	2.3	22.2	39
2007	38.6	7.1	115.9	161.6
2008	31.7	5.1	54.6	91.4
2009	11.8	3.4	18.4	33.6
2010	21.1	6.3	56	83.5
2011	16.2	8	3.8	28
2012	7.4	4.5	6.8	18.6

ORDERBOOK

Start	Tankers	Chemical carriers	Bulk carriers	Combined carriers	Others	Total
2003	45.3	10.8	30.3	0.2	22.9	109.5
2004	65.1	10.2	48.4	N/A	41.2	164.8
2005	72	11.6	60.6	N/A	56.2	200.4
2006	76.5	3.3	61.4	N/A	68.1	209.3
2007	128.7	11	78.9	N/A	80	298.6
2008	147.7	19	216.1	N/A	105.7	488.5
2009	164	11.3	286.3	N/A	92.2	551
2010	120.6	13.9	268.7	3.4	70.5	477.1
2011	75	1.4	191.5	-	53.7	321.5
2012	49.4	1.6	105.4	-	54.6	211.1

TONNAGE SOLD FOR SCRAPPING

Start	Tankers	Chemical carriers	Bulk carriers	Combined carriers	Others	Total
2002	20	0.4	6	1.2	3.9	31.5
2003	19.5	0.1	3.5	0.7	2.8	26.6
2004	10.6	0.1	0.8	0.5	1	13
2005	5.3	0.3	1.2	0	1	7.8
2006	6	0.2	2.2	0.3	1.1	9.8
2007	11.1	0.4	0.7	0	1.4	13.6
2008	16.6	0.5	4.7	0.8	4.3	26.9
2009	18.4	0.5	9.9	0.9	6.7	36.4
2010	22	1.3	6.3	0.1	7.7	37.3
2011	13.8	0.6	23.2	-	6.9	44.5
2012	11.7	0.8	34.8	-	11.6	59

(Source: The Platou Report 2013, RS Platou Group • www.platou.com)

PHOTO F

FINISH

MARITIME REPORTER AND ENGINEERING NEWS

3rd Annual Photo Contest

MR's Third Annual Photo Contest attracted more than 1,000 images from 22 nations

*Welcome to the **Third Annual Don Sutherland Photo Contest** in the pages of* Maritime Reporter & Engineering News. *The contest was conceived following the untimely death of long-time contributor **Don Sutherland**.*

This year again we have scoured the globe for indelible images, presented here on the ensuing 10 pages. Photographers near and far were not given any restrictions (and based on some of the more "candid" images, this was fully embraced and enacted), filling the coffers with stunning shots in one of five categories:

- Ships and Boats
- People
- Offshore
- Weather Systems
- Maritime Scenes

*I am pleased to again thank **Jonathan Atkin** and **Susan Evans Grove** as our judges, lending their time and artistic eye in pruning the winners from large group. (You can read more about Jonathan and Susan on page 70.*

As the selection process is done anonymously, with the photographer's identity revealed only after the images have been selected and set on page, traditionally each year there is one photographer with at least two images. This year, both Alex Sergienko (who supplied the cover photo) and Armando Cruz Jr. get the nod for having the best 'eye on maritime', as they have multiple images in this edition.

Winner: Weather Systems

By Resolve Marine Group

Photographed November 2011 in Sri Lanka

Witnessing a waterspout during a wreck removal.

Runner Up: Ships & Boats

By Ed Ketz

Photographed April 2012 in Norfolk, VA

The Navy Brass

MARITIME REPORTER
AND
ENGINEERING NEWS

3rd Annual Photo Contest

Runner Up: People

By Thomas R.
Photographed March 2013 in Varansi, India

Labor of the Oarsman.

Winner: Ships & Boats

By Ken Kostel
Photographed December 2012 in Charleston, S.C.

Two of the nation's global class oceanographic research vessels, R/V Knorr and R/V Atlantis, completed a drydock period together at the end of 2012, where they were both inspected and re-painted. Both ships were built by the U.S. Navy, are funded by the National Science Foundation, and operated by the Woods Hole Oceanographic Institution on behalf of the University-National Oceanographic Laboratory System. Atlantis is best known as the support ship for Alvin, the country's only deep-diving research submersible. Knorr was the ship on which Dr. Robert Ballard was sailing when he and his team discovered the wreck of Titanic in 1985.

Winner: Offshore

By Armando Cruz Jr.
Photographed January 2013 in the Gulf of Mexico.

Sunset in the Ku Maloob Zap Oilfield

Runner Up: Ships & Boats

By Bret Sands
Photographed October 2011, Port Angeles, WA

Polar Advneture

Runner Up: Offshore

By Luis Amenos Basura
Photographed Apri 2013

Reflection of a crane

Runner Up: Maritime Scenes

By Thomas R.
Photographed August 2012

Open for the Season

MARITIME REPORTER AND ENGINEERING NEWS

3rd Annual Photo Contest

By Anonymous

By Alex Sergienko

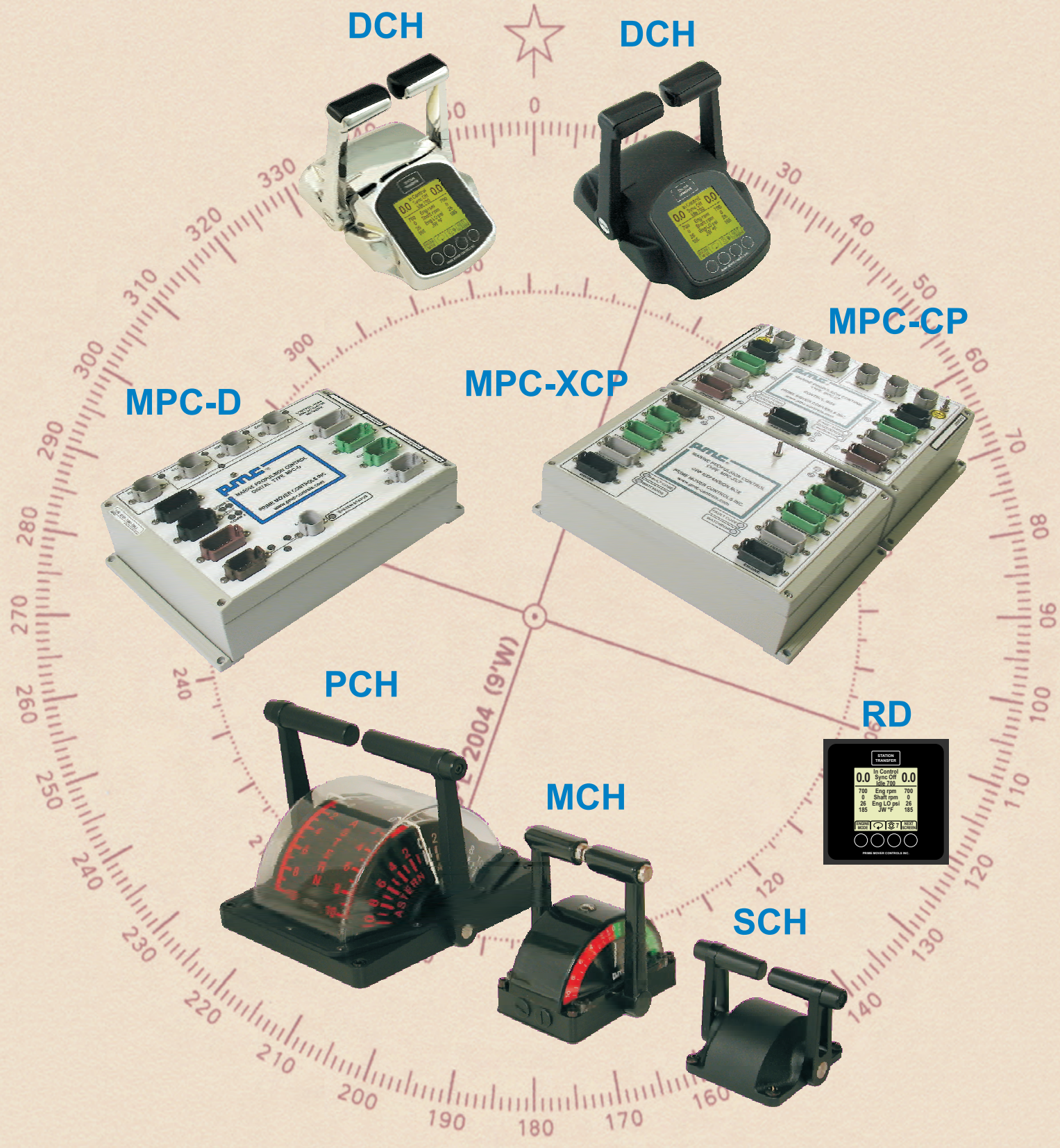
Winner: People

By Gordon Reeder

Photographed April 2010 in Sitka, AK

Hard work during the Sitka Sac Roe Herring Fishery.

Propulsion Controls for Fixed and Controllable Pitch Propellers



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The Judges

Jonathan Atkin

Jonathan Atkin loves and celebrates the maritime industry and those who go down to sea in ships. In third grade Jonathan was entranced by David Bowditch's autobiography and later by Richard Dana's book, *"Two Years Before the Mast."* At age 19, as an Ordinary Seaman, he shipped out across the Atlantic on bulk carriers. Today, his passions are fulfilled by the privilege of producing powerful aerial (and ship-to-ship) photography, for the cargo, workboat and cruise ship sectors of the maritime community. Jonathan respects mariners and ship owners by insuring his knowledge base speaks the same language. As a USCG licensed 100 ton Master, Jonathan designs navigational plans in any harbor, for a client's ship to be in the right "light" and positions for optimal photography. Maintaining unique relationships with harbor authorities, including the USCG, NYPD Aviation and Sandy Hook Pilots, Jonathan serves clients in difficult marine/photo environments. As a solution focused photographer, Jonathan participates in USCG Harbor Ops meetings to maintain information flow about NY/NJ harbor.

www.shipshooter.com

Susan Evans Grove

Susan Evans Grove received her BFA in Photography from the School of Visual Arts and is a practicing fine art photographer. She spends her days (and some of her weekends) as the Publications Director for the Society of Naval Architects and Marine Engineers where she has been publishing scholarly tomes she cannot understand for 13 years.

To see Susan's artwork visit:
www.susanevansgrove.com

To connect with Susan on LinkedIn
www.linkedin.com/pub/susan-evans-grove/8/587/620/

Winner: Maritime Scenes

By Aurelie Moulin

Photographed November 2011 in Equatorial Indian Ocean

Blissful morning on the fan tail.

MARITIME REPORTER AND ENGINEERING NEWS

3rd Annual Photo Contest

Hull Medic: Keep Coats Efficient

Is it possible to calculate the degree to which fouling and corrosion hinder a vessel's efficiency? Can a ship operator use that data to determine the best time to clean or recoat the hull of his/her ship? Macsea's answer to both questions: yes. The marine technology specialist has developed a solution called Hull Medic which they say measures the effects of hull fouling on a ship's performance.

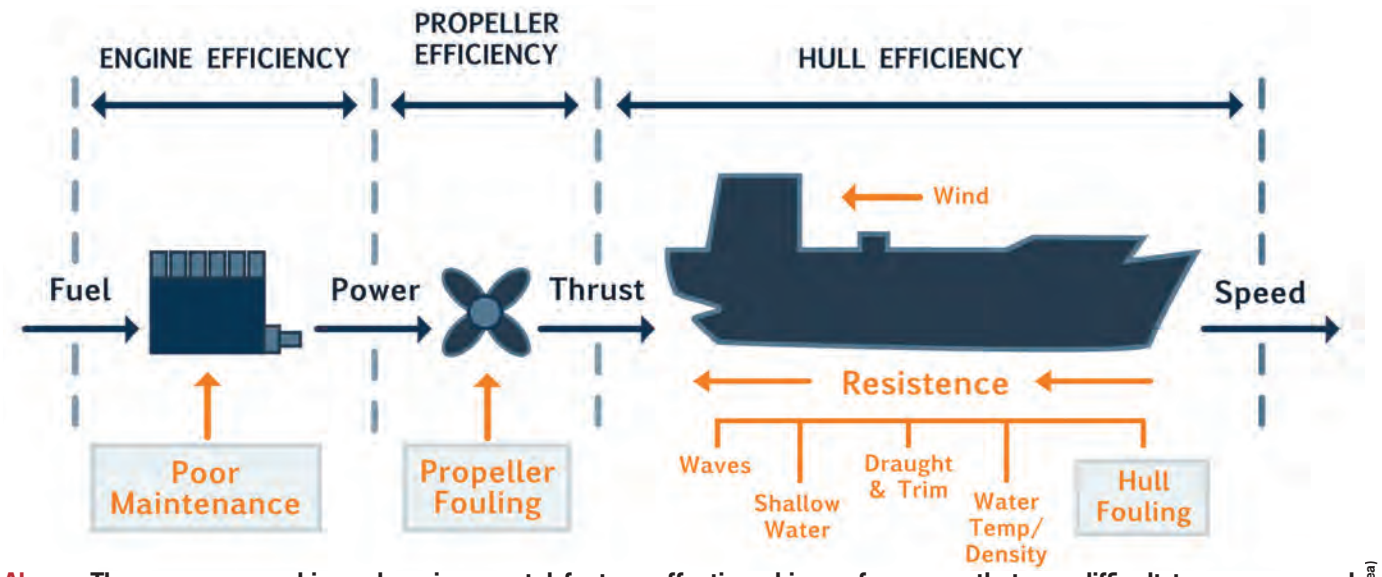
How it works

Using a ship's propeller as a power absorption measuring instrument, the fully automated Hull Medic estimates both water speed and shaft power. Applicable for ships with single, double and variable pitch propellers, the calibration involves fitting a mathematical model based on propeller characteristics and ship performance measurements typically available from existing sensors on most vessels. Ship performance data is collected immediately following hull conditioning in drydock and during periods of calm weather to calibrate a performance model used to track power over time through a continuous comparison to the "clean hull" mode.

Propeller model data is analyzed periodically to compare ship performance against a standard clean-hull baseline, thus calculating the effects of hull fouling by measuring losses in speed, power and fuel. With the onset of hull fouling, the difference between measured and model-derived power will grow. The extra power consumed by the ship is then converted into extra fuel cost based on the ship's speed profile and consumption characteristics. A similar derivation for speed loss is also performed.

Hull Medic's automatic data sampling allows the analysis of thousands of performance records per month, which the company claims increases accuracy over manual data collection methods. Advanced statistical and database techniques are also used to eliminate the scatter that is typical of most ship performance data.

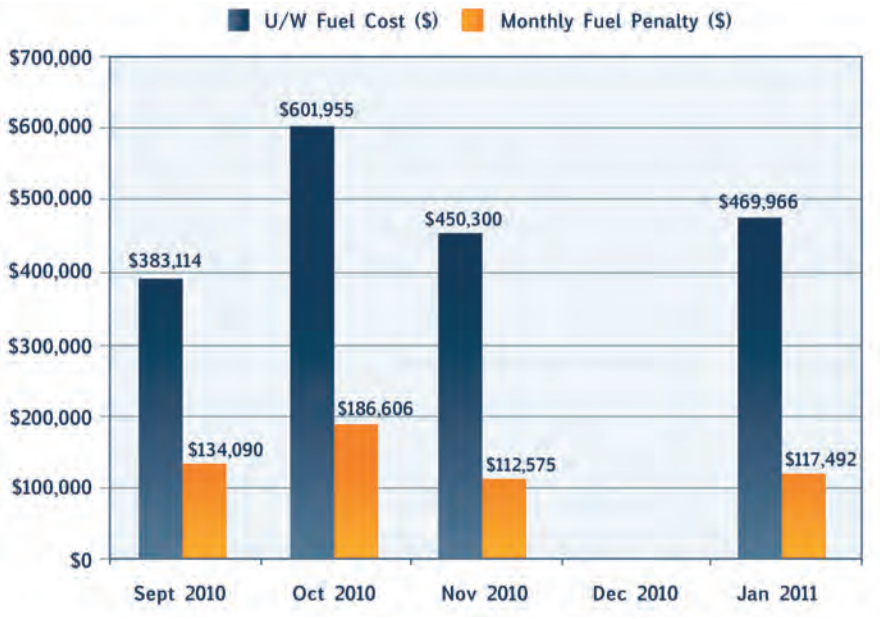
According to Macsea, the net result is an extremely accurate detection of hull fouling at the earliest possible time, allowing earlier maintenance action and more fuel savings. Macsea claims Hull Medic has the potential to save ship owners a great deal of money – and quickly.



(Courtesy Macsea)

Above: There are many ship and environmental factors affecting ship performance that are difficult to measure and quantify.

Below: Left, Kevin Logan, President, Macsea Ltd. ; Right: The historical monthly underway fuel costs and the calculated excess fuel consumed due to hull fouling, based on the penalties indicated by Hull Medic



"Earlier detection means more savings in fuel and lower hull cleaning costs with less paint damage," the company asserts.

Case Study

Macsea performed a test to track the potential benefits of the Hull Medic System. The company equipped two Navy vessels in an attempt to evaluate the relative effectiveness of alternate hull paint systems on fuel economy. Both ships were painted with different coatings during drydocking and outfitted with Hull Medic. Propeller models were then calibrated, and the ships were monitored over the year-long study.

They found that Hull Medic was able to detect early onset of hull fouling that led to an estimated to cost around $136,000 per month of unnecessary fuel consumption by one Navy ship. Macsea said, "Fuel was being wasted due to the 35% extra power required to maintain the ship's operating speed with a fouled hull." Because the ship was required to maintain fixed speeds in coordination with other vessels, more throttle had to be applied achieve normal speed and compensate for over a one knot speed loss due to hull fouling, resulting in additional power and fuel consumption In order. Hull Medic discovered that even small amounts of hull fouling translate into large fuel excesses for active ships, and the sooner the hull is cleaned, the more fuel can be saved. Much of the extra fuel use could be attributed to the fouling from the ship sitting at birth throughout most of the warm summer months, and Hull Medic detected this performance loss as soon as the ship returned to normal operations. The Navy then verified the extensive fouling through an underwater hull inspection and immediately ordered the hull to be cleaned.

Macsea says these results offer great advantages to ship operators. Hull Medic's ship performance model, coupled with its database filtering, enables the monitoring device to detect ship performance losses earlier, allowing hull maintenance and fuel savings to occur earlier. Analysis of Hull Medic reports is also said to help determine optimal hull and propeller maintenance schedules, evaluate the effectiveness of alternate paint systems and even validate energy-saving technologies related to ship performance, thus generating further potential for savings.

Diesel-Electric Units Prepared for Navy's AGOR Project

During most of 2012 Cummins Northwest was busy with the procurement of the various subsystems and assembly of the diesel-electric units for the two Ocean Class Auxiliary General Purpose Oceanographic Research (AGOR) vessels building at Dakota Creek Shipyards. The company delivered the first four-unit ship set in January of this year. Seattle-based Guido Perla & Associates, Inc. has done the design work for the two vessels.

Four Cummins QSK38-DM powered electrical generators will provide power for each of these 238 x 50-ft. vessels. The generators will provide power to each vessel's two AC propulsion motors that each turn controllable pitch propellers. Cummins Northwest Inc. has worked with Siemens Industries to develop the generator sets.

The four gensets on each vessel will also provide power to an azimuthing bowthruster and a tunnel stern thruster as well as general electrical requirements of the vessel. As on the University of Delaware's 2005-built RV Hugh R. Sharpe, also built by Dakota Creek, the four engines allow for sound reduction when running at slow speeds on only one or two engines as required.

Being built for the U.S. Navy's Office of Naval Research (ONR), the two vessels, designated AGOR 27 and AGOR 28, are expected to deliver in late 2014 and early 2015. The Woods Hole Oceanographic Institution will manage AGOR 27, while the Scripps Institution of Oceanography will manage AGOR 28 under charter party agreements with ONR.

Information released by the ONR explains that, "Both ships will have the ability to sail at a sustained speed of 12 knots and will have 20 berths allotted for crew members and 24 for scientists. Some of the high-tech features planned include: acoustic navigation and tracking systems that operate at various depths; a specially designed hull that diverts bubbles from the acoustic sensor area; a centralized freshwater cooling system to provide heating, ventilation and air conditioning; and dual-controllable propellers with variable speed motors for increased efficiency."

Secretary of the Navy Ray Mabus has announced that, when commissioned, the AGOR 27 will be officially named R/V Neil Armstrong. "Naming this class of ships and this vessel after Neil Armstrong honors the memory of an extraordinary individual, but more importantly, it reminds us all to embrace the challenges of exploration and to never stop discovering," Mabus said.

Integrated Bridge Shaping the Future

While the Integrated Bridge increasingly plays a bigger role in various shipbuilding programs, in many cases the degree of integration can be limited and does not allows a fully functional integration of different navigation systems or further ship systems on the bridge.

In tandem there has been an increasing demand for higher level integrated bridge systems, which was reasonably driven by more sophisticated and safety-sensitive vessels such as cruise ships, specialized vessels and few oil tankers.

The higher degree of integration, achieved through a network-based and task-oriented system architecture, simplifies operation and empowers the crew in their long-ranged business on the one hand and increases availability of system and function, reliability and, above all, safety, on the other hand.

From a ship owner's perspective, typical requirements are an easy-to-operate systems that doesn't need too much training time, more efficient bridge operations through integration of additional applications in existing hardware, standardized and reliable installation procedures as well as central service contacts for immediate attendance and minimum vessel downtimes.

Operators generally desire a system that is easy to understand display with intuitive and standardized operation; has central access to core navigation and administration routines; is less workload through automation of routines and automatic performance monitoring; reduces stress via better alert management and offers safety through redundancies.

In modern bridge systems the key to a higher degree of integration is a network-based and task-oriented system architecture providing advanced system functions, which are in accordance with IMO's Performance Standards for Integrated Navigation Systems (INS) and ready for additional and future enhancements commonly summed up under the E-Navigation term.

The new Performance Standards require an Integrated Navigation System to integrate the tasks of collision avoidance, route monitoring, route planning, navigation control data display, status and data display and a centralized human-machine interface for alert management on multi-functional displays.

INS also provides integration of sensor data and other information such as MSI, AIS, charts, radar, centralized alarm management, system status display and reliability indication for important equipment, just to name a few features that improve availability of function and data and thus help making navigation safer as well as bridge operations more efficient and simple. And finally, INS actually provides answers on many e-navigation requirements, particularly by the new Multi-Function Displays, which bring the long desired standardized workstation layout, ergonomics and symbology.

Multi-Function Display

The Multi-Function Display (MFD) plays a key role within the new generation Integrated Bridge and can be configured to offer the functions Radar, Chart Radar, ECDIS, Conning or any combination enabling access to and control of different tasks from any work place connected to the network. This helps to simplify procedures through central access, and can offer additional redundancies and highest availability of data and functions. To keep operation as simple as possible, the MFD comes with the required harmonized human machine interface and data integration. Furthermore, for all displays a central switchover of colors and central dimming is possible from any workplace on the bridge. Thereby, a standardized operating philosophy should not be limited to the displays, but same buttons, surfaces and inscriptions should also apply to as much as possible of all hardware units installed at the consoles such as steering control devices, thruster controls, autopilots, positioning systems and others but also operator panels for Radar, ECDIS and Conning.

With an appropriate system architecture providing open data structures, data contents and interfaces to various sensors and onboard systems, some manufactures make possible even the functional integration of additional applications such as ship automation systems or dynamic positioning systems as required.

However, the INS can not only communicate with other onboard systems but also to utilize and integrate shore-based data services such as online chart updating including tidal and route planning databases, NAVTEX services as above, or weather chart data for weather routing and weather observation during offshore operations. Service and spare part logistics also needs continuous communication between ship and shore and we see ship maintenance software solutions covering not only engine room stores but also the bridge system.

Even if E-Navigation still seems far away in the future, this shows that many similar features have already been introduced during the past years. And good news is that the first building-brick for the shipborne part of e-navigation is ready to install and use: The INS (Integrated Navigation System), as defined in IMO's performance standards MSC.256(87).

Synapsis Intelligent Bridge

German navigation system manufacturer Raytheon Anschütz installed its Synapsis Intelligent Bridge Control system the first IMO-compliant Integrated Navigation System on a tanker newbuilding at 3. Maj Shipyard of Rijeka, Croatia. Beyond the pure functional features, Synapsis comes with a new architecture, typically based on Multifunctional Workstations that share information through a redundant bridge Ethernet network and serve the operator with central data access and control. Workstations connected to this network receive their data, tasks and configurations automatically while being continuously monitored for availability and data integrity. Having all information locally available, independent from the network infrastructure, increases availability of data and services and thus reliability in operation.

The workstations feature an innovative infrastructure software framework, which serves as the "Synapsis Integration Platform" within the bridge navigation network. All central services such as navigation control data processing, data storage and distribution, alarm monitoring and data display are concentrated and processed on the platform. Depending on the required task and display, the data is bundled, shared throughout the standardized network and presented by the end user applications. The platform also integrates tasks that have been previously performed separately by closed end user applications, such as configuration and task management, redundancy and back-up management.

CASCADe:

R&D Project to Help Enhance Maritime Safety

Almost 80% of collisions and groundings occur due to a failure of bridge systems and their usage

A new three year European Research Project, part funded by the EU has been launched to help increase safety on-board vessels. CASCADe, (model-based Co-operative and Adaptive Ship-based Context Aware Design) aims to address the lack of symbiosis which exists between current bridge design, operational procedures and the end user.

In the maritime environment there is a proliferation of increasingly complex technology, and studies have shown that the use of instruments with a range of different user interfaces or the provision of too much information can lead to errors and a reduction in performance. This has the potential to create accidents and incidents which may translate into significant remedial and compensation costs, making it vital that a holistic approach is taken when developing ship bridge design.

CASCADe aims develop an adaptive bridge system that will recognize, prevent and recover from human errors by improving the interaction between crew and machines on the bridge. The desired outcome: a new human-centered design methodology to support the analysis of agent interactions at early design development stages. Under the coordination of OFFIS (Oldenburg Research and Development Institute for Information Technology Tools and Systems), a consortium of seven project partners from five EU countries will collaborate, including BMT Group Ltd, Raytheon Anschuetz GmbH, Mastermind Shipmanagement Ltd, the University of Cardiff, Marimatech AS and Symbio Concepts & Products SPRL.

Four further associated partners including the Maritime Cluster Northern Germany, Nautilus International, NSB Niederelbe Schiffahrtsgesellschaft mbH & Co. KG and the University of Tasmania will also provide support.

http://www.cascadeproject.eu

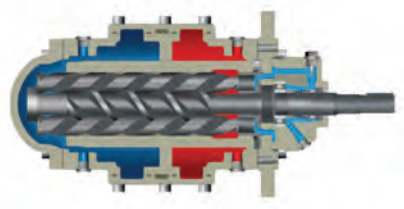
Mobile Shiploader

Superior Industries launched its latest material handling solution to help ship loading applications reduce downtime at ports and terminals. The Stingray Mobile Shiploader is a portable unit designed to reduce downtime by trimming multiple hatches from one feed point. In marine terminal applications, the Stingray Mobile Shiploader's telescopic conveyor allows the equipment to extend an additional 30%. The shiploader reaches out to multiple hatches from the same feed point. The first model is designed for Panamax vessels, but can be altered to accommodate other dimensions.

www.superior-ind.com

Colfax Pumps for World's Largest Heavy-lifting Ship

Colfax Fluid Handling won a contract as the exclusive supplier of hydraulic pumps for a ship capable of lifting the topside structures from offshore platforms. With a lifting capacity of up to 48,000t, the ship will remove topsides in one piece and transport them to land for deconstruction. The catamaran Pieter Schelte of Allseas Group will lift entire platforms from their undersea supports and transport them onto land for decommissioning. Land-based deconstruction is much safer and more economical than conventional disassembly at sea. Bosch Rexroth developed a unique drive and control solution for what will be the world's largest mobile heavy-lifting system for offshore installations. Nearly 100 Allweiler screw pumps will handle pumping of the hydraulic oil. Pumps of the "SNF" series pump up to 2300 l/min., making them ideal for large volumes required.



(Image: Allweiler GmbH)

Herbert-ABS: LMP 2.1 for Offshore Vessels

Herbert-ABS Software Solutions LLC released the latest version of their Load Management Program (LMP) for offshore vessels. For day-to-day weight management, stability evaluation and regulatory compliance, LMP 2.1 provides an accurate, simple, yet feature-rich set of displays and entry tools for the offshore user. LMP 2.1 is customized for an individual vessel including semi-subs, SPARs, TLPs and jack-ups and can account for all loads acting on a vessel. Based on the industry leading design and salvage software HECSALVTM, LMP 2.1 also offers a wide range of emergency response capabilities including integrated damage stability calculations, simulation modes and is 100 percent compatible with HECSALV. From simulating possible damage scenarios, to performing a rapid assessment in case of an actual emergency, to providing detailed weight information to a salvor using HECSALV, LMP helps support the safety, stability and survivability of an offshore vessel.

Technifor Debuts Laser Marking System

The TC500 is a fast galvo CO2 Laser capable of marking on plastics, anodized aluminum, painted metals, ceramics and most organic materials including

Tanker Major Chooses G-type Engine

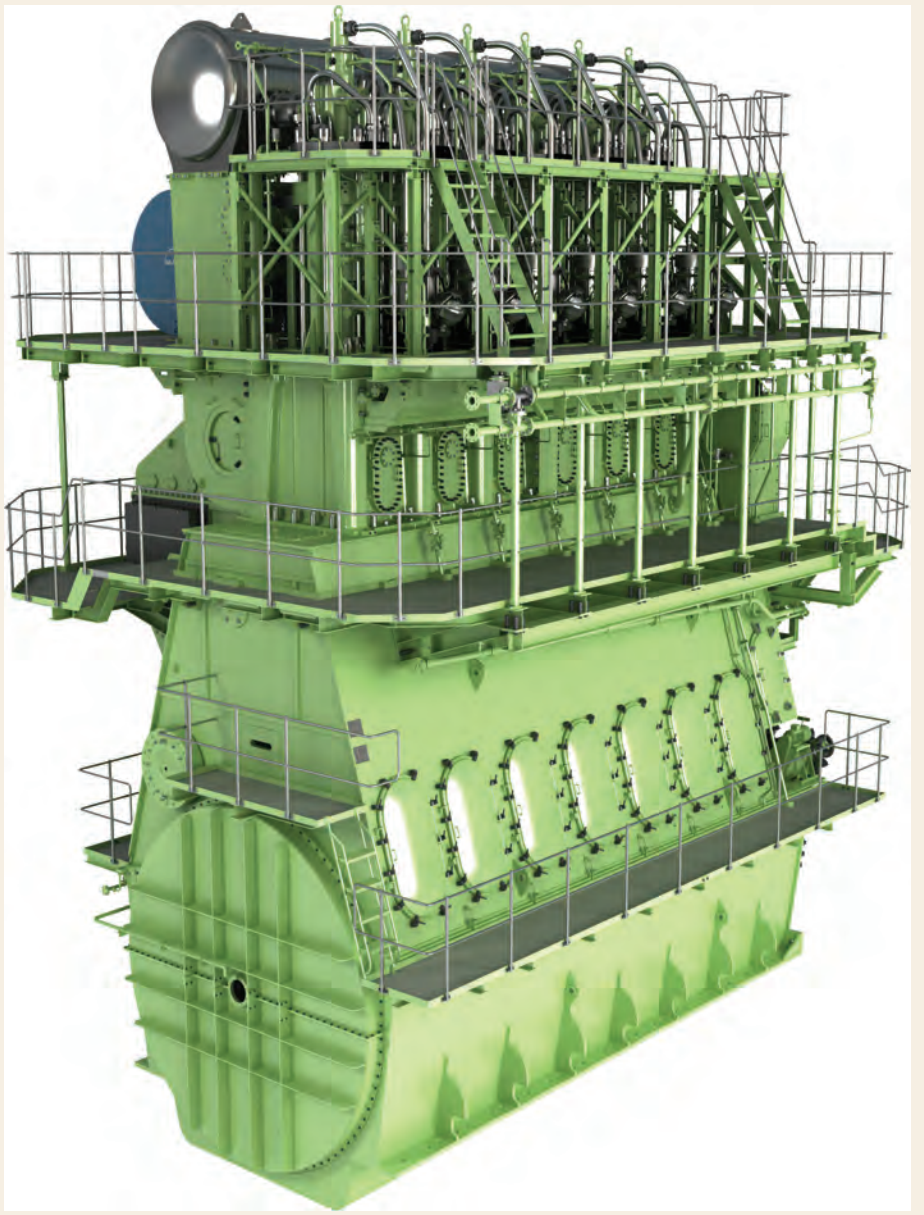
STX Offshore & Shipbuilding signed a contract to build four 113,000-dwt Long Range 2 (LR2) product tankers for Teekay Tankers Ltd., with an option for up to an additional 12 vessels. Each newbuilding will be powered by an MAN B&W G60ME-C engine and will satisfy IMO environmental standards. The four confirmed vessels will be built at Jinhae shipyard in Changwon, South Korea, with delivery scheduled from the second half of 2015.

"In recent times, the market has sought to optimize propulsion efficiency through using larger propellers and lower-speed engines," said Ole Grøne, Senior Vice President Low Speed Sales and Promotions, MAN Diesel & Turbo. He continued, "Fuel optimization has also become a priority. We find that large merchant vessels are compatible with larger-diameter propellers following an adaptation of the aft hull design, paving the way for higher efficiencies. The ultra-long-stroke G-type engine ably satisfies this trend."

With bunker prices up more than 500% since 1999, as well as even stricter environmental legislation on the horizon, shipowners are forced to seek solutions, and the adoption of the G-type as prime mover for its tankers is a move by Teekay Tankers. "With their fuel-efficient design, which is estimated to result in 20 to 30 percent fuel savings compared to current vessels in the existing LR2 fleet, we believe these newbuildings will be very attractive to our customers," said Bruce Chan, Teekay Tankers' CEO.

MAN Diesel & Turbo's G-type program entered the market in October 2010 with the entry of the G80ME-C9 model. The company subsequently expanded the ultra-long-stroke program in May 2011 with the addition of G70ME-C9, G60ME-C9, G50ME-B9, G45ME-B9 and G40ME-B9 models. The G-types have designs that follow the principles of the large-bore, Mark 9 engine series that MAN Diesel & Turbo introduced in 2006. Their longer stroke reduces engine speed, thereby paving the way for ship designs with unprecedented high-efficiency.

The G80's longer stroke results in a lower rpm for the engine driving the propeller: a reduction from 78 rpm for the S80 engine to 68 rpm for the G80. This lower optimum engine speed allows the use of a larger propeller and is, ultimately, significantly more efficient in terms of engine propulsion. Together with an optimized engine design, this reduces fuel consumption and reduces CO2 emissions.



leather, wood and rubber; a solution for permanent marking of automotive components, electronics, medical devices and a wide range of parts with logos, linear and radial text, DataMatrix including UID, serial numbers, counters, dates and shift codes.

www.technifor.us

Sea Trophy Oil Recovery System

Van Heck introduced a complete pump system that it says enables the controlled, contained, fast (fuel-) oil recovery after incorrect or 'off-spec' fueling and in the event of grounding or calamity at sea. Sea Trophy is designed to ensure fast, easy and well controlled solution for the removal of (fuel-) oil which will limit, or even eliminate any or all economic and environmental damages, not to mention the possible depredation of company image. According to the manufacturer, Sea Trophy can remove oil at a rate of 70 cu. m./hr at 100cS. This hydraulically driven pump can be used for both light and heavy oil.

www.vanheckgroup.com
info@vanheckgroup.com

RAACI System for GulfMark PSV's

Thoma-Sea Marine Constructors awarded Robichaux Automation and Control, Incorporated (RAACI) a single source vendor contract to design and supply a complete Diesel Electric Propulsion system to outfit two GulfMark Offshore 280 Class Deepwater DP-2 PSVs. This is the first opportunity for RAACI to team with Thoma-Sea and GulfMark Offshore. The RAACI provided Power Management System will coordinate and control the interaction of the RAACI propulsion system and the RAACI electrical distribution system to allow for efficient operation of the vessels as well as providing blackout prevention. This system as approved by ABS allows for full DP-2 operation with a closed switchboard bus as well as an open switchboard bus. RAACI is providing three key integral systems for each vessel:

1. Active Front End (AFE) Variable Frequency Drives (VFDs) and Motors for the Propulsion and Thruster System:
2. Full Electrical Distribution System with Power Management
3. Alarm & Monitoring System (ABS ACCU & DP-2)

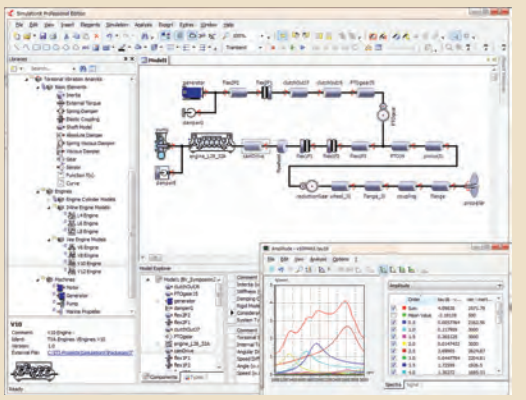
In addition it is also providing three Air cooled, 495kW FIFI motors

New DPS from GE Power Conversion

GE's DP system—enhancing situation awareness and rebalancing attention from system management to true seamanship. GE's Power Conversion business launched enhanced operability to the company's Dynamic Positioning (DP) system at OTC in Houston. In essence, the company claims that the development puts DP back into the marine world, which the company claims was achieved via a new human-machine interface (HMI). The control panel is designed to be clean and uncluttered with very few control devices. Its 26-inch touchscreen is tiltable to suit each operator's preference for standing or sitting in front of the screen, or moving around it. It accommodates operators of different heights and is equally visible in a whole range of lighting conditions on the bridge, especially reflections from the sun and artificial light. Screen displays in an operator selectable range of languages allow the operator to access all system functionality in his/her mother tongue.

GE Power Conversion has put considerable time and effort into improving the ergonomics of the HMI. The new DP control system - part of GE's ecomagination portfolio - also embodies improvements to energy efficiency and sustainability. The system includes a new "Energy-Efficiency" mode, which can be used when appropriate.

GL Certifies SimulationX



ITI GmbH said that for the first time a marine application of the interdisciplinary simulation software SimulationX has passed Germanischer Lloyd's (GL) type approval certification. The SimulationX software module "Marine Propeller" for the calculation of ice impact induced loads on the powertrain was designed and developed by ITI in collaboration with GL in accordance with the specifications laid down by GL, the Finnish-Swedish Maritime Administration and the IACS. The software certification conducted by GL proves the software's high quality standards and is evidence of ITI's commitment to safe, reliable and energy efficient ship propulsion systems. According to the new specifications for ice classes that were elaborated by the Finnish and Swedish Maritime Administration, it is required to evaluate the impact of propeller-ice-torque excitation on the drive shaft. The ship's operational safety and the material's durability must be demonstrated under various conditions including Artic temperatures and critical scenarios. By the help of physically correct simulations, SimulationX users predict vibration loads originating from ice impact on the propeller. These extreme conditions are analyzed with SimulationX on a virtual basis over a longer period of time and for various parameter configurations. The simulation results permit reliable evaluations of each component and thus contribute to ensuring safe operation also under arctic conditions. The SimulationX propeller model allows for accurate calculations of torsional vibrations with respect to propeller-ice interactions and the torque loads acting on the powertrain as a consequence of ice impact based on the Baltic and polar ice class definitions.

www.itisim.com
www.simulationx.com

(U.S. Navy Photo)

Rear Adm. T. K. Shannon (left) and Rear Adm. Mark Buzby during a change of command ceremony.

Page

Lechwar

Gibson

Loomis

MSC Holds Change of Command

Rear Adm. Thomas K. Shannon relieved **Rear Adm. Mark H. Buzby** as commander, Military Sealift Command, during a change of command ceremony aboard USNS Spearhead (JHSV 1), May 10. Gen. William M. Fraser III, commander, U.S. Transportation Command and Adm. William Gortney, commander, U.S. Fleet Forces, were the guest speakers.

Buzby, a native of Atlantic City, N.J., assumed command of MSC in Oct. 2009 and ensured ready logistics support for carrier strike groups, expeditionary strike groups and ground force commanders operating forward every day.

While under Buzby's command, MSC ships delivered services, supplies and equipment to all branches of the U.S. military and their combatant commanders around the world, including support to Operations Iraqi Freedom, Enduring Freedom, Unified Response in Haiti (2010) and Tomodachi in Japan (2011). A graduate of Maine Maritime Academy and native of Calais, Maine, Shannon assumed command of MSC following his last tour of duty as Commander, Carrier Strike Group One in San Diego, Calif.

Shifts in W&O's Senior Leadership Team Reflect New Business Focus

W&O Supply has redefined the roles of a few members of its senior leadership team. **Michael Page** now serves as the Vice President-East and West Coast Operations. In this role, he leads W&O's expansion in four key regions: Southern California, the Pacific Northwest, the Northeast, and the Mid-Atlantic/Southeast. W&O's Regional Managers in these markets report directly to Page as new and ongoing business opportunities are pursued in their respective markets.

Greg Lechwar has been promoted to the role of Chief Financial Officer. Having served as the company's Corporate Controller for the past four years, Lechwar has a strong background in financial management with several large industrial companies, including Patriot Transportation and Ring Power Corporation.

Kurt Gibson, formerly W&O's Director of Sales, is now Director of International Business Development and Marketing. Gibson's new duties have him focusing on the continued growth and development of W&O's global business, with an emphasis in the United Arab Emirates and Southeast Asia.

Fred Loomis has taken on the role of W&O's Director of Technical Projects. Formerly the Director of Navy and Government Sales, he possesses a vast wealth of knowledge on industry trends and projects. In his new role, he is engaged with all of the company's key markets and relevant projects, leading and implementing the unique cost-saving and regulation-compliant solutions that W&O brings to the market.

McAllister Elected As New AWO Chairman

The members of the American Waterways Operators elected **Buckley McAllister**, President, McAllister Towing, as Chairman and Frank Morton, Director, Turn Services, LLC as Vice Chairman. McAllister succeeds Chairman Linn Peterson, Kirby Inland Marine, LP. In his remarks to the membership, AWO President & CEO Tom Allegretti praised the leadership of Mr. Peterson during his term as Chairman. Mr. McAllister echoed those sentiments and added that "it is with a combination of admiration and respect that I have watched Linn lead AWO over the last year. During his tenure, he has had a steady and constant hand on the helm. He has been cool, calm and deliberate…always keeping his eye on the course and heading of what's best for our industry overall."

Retlif's Poggi Recognized by IEEE

Walter A. Poggi President and CEO of Retlif Testing Laboratories, Inc., received IEEE's prestigious Harold Wheeler Award for his conspicuous contributions to the industry and to Long Island during his 35 years at the helm of the independent testing organization. The award recognizes IEEE members who have "demonstrated outstanding technical and management abilities". Under Mr. Poggi's guidance and stewardship, Retlif, an EMC/EMI and Environmental testing leader since 1978, has grown dramatically. Headquartered in Ronkonkoma New York, Retlif operates laboratories in New Hampshire, North Carolina, and Pennsylvania as well as a regulatory office in Washington D.C.

Emsys Wins Award for Clean Shipping

WR Systems (WR) of Norfolk, Va. said that its Emsys Emissions Monitoring System won the 'Clean Shipping' category at the 25th Anniversary Seatrade Awards held on May 10, 2013, at the Guildhall in London. **Dave Edwards,** President of WR, accepted the award on behalf of the company, presented by **Koji Sekimizu**, Secretary General of the IMO. "Our strategy has always been to make our customers successful, whether it's shipyards, shipowners or partner companies such as scrubber manufacturers," Edwards said.

Widdows joins Annual International Maritime Hall of Fame

Ron Widdows, CEO, Rickmers Group and Rickmers-Linie, has been inducted into the Annual International Maritime Hall of Fame in recognition of his outstanding contribution to the global maritime industry. He was one of only six people awarded the honour in a ceremony in New York on May 8, 2013 at a dinner attended by 400 maritime industry colleagues. Other inductees included Maersk Mc-Kinney Møller, Chairman, A.P. Møller-Maersk (posthumous award) and Michael Bloomberg, the Mayor of New York City.

Sea Star Line Appoints Nolan EVP

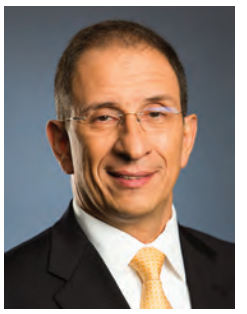
Sea Star Line LLC appointed **Tim Nolan** to Executive Vice President, reporting to Peter Keller, President, working out of the Sea Star HQ in Jacksonville, Fla. Nolan has a broad background in liner shipping to include management accountabilities in Chile, as well as, the Latin America and Caribbean trades. He is a graduate of St. Joseph's University in Philadelphia where he also received his Master's in International Marketing. He is an alumnus of the Executive Management Programs from Columbia Business School and Ohio State's Fisher College of Business.

New GM at Sener's Marine Engineering Strategic Business Unit

cut Rafael de Góngora

Rafael de Góngora Escrivá de Romaní has been appointed Head of the Marine Engineering Strategic Business Unit (MaSBU) and director of the Department of Engineering and Marine Systems of Sener, an engineering and technology group that has a workforce of more than 5,000 professionals, offices in four continents and a turnover of 1,160 million euros (2011 figures). De Góngora is a Marine Engineer, graduated from the Higher Technical School of Marine Engineering of the Polytechnic University of Madrid (Spain) and joined Sener in 1994 as a project engineer.

HII Appoints Mathieu VP, GM at Avondale



Huntington Ingalls Industries said that René Mathieu has been named vice president and general manager, Avondale Industries Inc., effective May 20. He is responsible for all non-Navy aspects of HII's energy infrastructure business in Avondale, La., including production operations, human resources, business management, engineering and design, facilities management, and fabrication. Mathieu will work in Avondale and at Avondale's business development office in Houston. He will report directly to Chris Kastner, HII's corporate vice president and general manager, corporate development.

STX Marine Appoints VP of Operations

STX Marine said that Bill Lind has joined the team to further develop their growing portfolio in the Gulf Coast. Lind joins STX Marine as Vice President of Operations (Houston, TX) to continue STX Marine's success in providing engi-

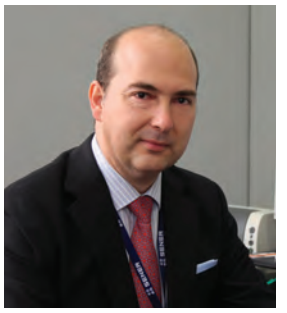

McAllister


Poggi


Dave Edwards & Koji Sekimizu


Widdows


Nolan


de Góngora

neering services to clients worldwide, but more specifically the Gulf Coast.

Maersk Line CEO Visits Panama Canal Expansion


Photo Courtesy of the Panama Canal Authority.jpg

Maersk Line CEO Søren Skou visited the Panama Expansion construction site accompanied by Panama Canal Administrator Jorge L. Quijano during his recent trip to Panama. Skou and other Maersk Line executives had the opportunity to see the construction site of the new locks in the Atlantic side, which will allow the transit of Post-Panamax vessels through the Panama Canal. During the visit, Panama Canal Administrator Jorge Luis Quijano updated the delegation on the progress of the Expansion Program.

Polar Petroleum Appoints Brizzolara

Polar Petroleum Corp. announced the appointment of Mr. Donald W. Brizzolara to the Company's Advisory Board as Chief Geological Advisor. Mr. Brizzolara represents 25 years of experience in oil and gas exploration and development geology, and consulting experience for firms such as ConocoPhillips and Shell. Of particular importance to the Company, Mr. Brizzolara's background includes work on the Prudhoe and Kuparuk fields, which, together constitute the majority of the oil production on the North Slope (51% and 20%, respectively).

Harkand to Acquire Veolia Marine Services

Harkand, an international subsea inspection, repair, maintenance and light construction group, announced a deal to acquire the main assets and business of Veolia Marine Services (VMS). The acquisition will add 150 onshore and offshore staff, three dynamically-positioned multi-purpose vessels (MSV), and six work-class remotely operated vehicles (ROVs) to Harkand's growing workforce and fleet. Harkand was launched in February 2013 through the merger of Iremis, Integrated Subsea Services (ISS) and Andrews Survey following investment by Oaktree Capital Management. Employing over 750 people at bases in Aberdeen in the UK, Dubai in the Middle East and Singapore and Perth in Asia Pacific, the group aims to grow turnover to $1 billion in the next five years.

MLL Invests in Eight Newer Vessels

Maersk Line, Limited (MLL) purchased and is reflagging eight newer and larger containerships to upgrade the ocean transportation services provided to its U.S. military, government and commercial customers.

MLL's investment of approximately half a billion dollars in eight vessels is intended to improve the quality of service to the Middle East and Mediterranean Sea from the U.S. East Coast. "These eight newer vessels, along with the global transportation network that connects them, demonstrate our commitment to our customers. We are proud to serve the U.S. military and to deliver U.S. food aid worldwide," said John Reinhart, MLL's President and CEO. "MLL is focused on continual improvement, and these ships will further increase reliability and shrink our environmental footprint."

All eight vessels will join the Maritime Security Program (MSP) and Voluntary Intermodal Sealift Agreement (VISA).

Design Alaska, Art Anderson Team on Ferry Energy Efficiency

Design Alaska, a Fairbanks-based architecture, engineering, and surveying firm; and Art Anderson Associates, its naval architecture subconsultant, were awarded a contract for the Alaska Marine Highway System (AMHS) to investigate potential energy efficiency improvements. The contract was driven by new IMO regulations. The new IMO standards require vessels traveling internationally to obtain International Energy Efficiency Certificates (IEECs) demonstrating that vessel owners and operators have developed energy efficiency plans for their travel routes and vessel operating systems. SEEMPs provide a mechanism for identifying

Damen Shiprepair Brest

50 Vessels in First Year

Since acquiring Sobrena, Damen Shiprepair Brest has serviced 50 vessels. The yard's work portfolio includes a large number of Afra/Suezmax tankers and LNG carriers. The latest project is for Höegh LNG owned and MOL LNG Transport managed 123,800 cu. m. LNG LIBRA, which is presently at the yard. Damen's French yard has made several improvements to its facilities including implementing more efficient working hours under a new collective labor agreement, investing in a state-of-the-art plasma cutting machine and opening a canteen for more than 300 staff and subcontractors. "Building a canteen in the yard was necessary to facilitate the agreement on new working hours where the previous two-hour lunch break has been reduced to 45 minutes," adds Goris. For the larger projects the yard has built dedicated facilities to accommodate over 200 subcontractors, as well as a separate office for specialist or service engineers, complete with 20 plug-and-play workstations.

USNS Dahl

to Enter Bayonne Dry Dock

Bayonne Dry Dock & Repair Corp. in Bayonne, NJ, has a long and historically strong relationship serving the Military Sealift Command (MSC), a relationship continued with the arrival earlier this month of the 950 x 106-ft. USNS Dahl, which was scheduled to arrive around June 11, 2013 for a 90 day stay.

Work on the USNS Dahl while in drydock will include a laundry list of work, including bowthruster maintenance, CPP seal renewal, lifeboat overhaul, a variety of steel modifications and major blast and coatings work on the entire vessel.

USNS DAHL (T-AKR 312) is one of Military Sealift Command's 19 large, medium-speed RoRo ship and is part of the 26 ships in MSC's Prepositioning Program.

The 950 x 106 ft. ship has a 34 ft. draft and displaces 6 2 , 6 4 4 long tons and has a speed of 24 knots. It carries a crew of 30 civilian contract mariners, five military personnel

www.bayonnedrydock.com

(Photo: MSC)

best practices for energy efficiency improvement, and include items like improved voyage planning, implementation of measurement tools and systems and the use of various systems and technologies that reduce emissions and fuel consumption. Because of their involvement in international voyages, the vessels included in the scope of the project are the M/V Taku, M/V Matanuska, and M/V Kennicott.

Tidewater to Acquire Troms Offshore Supply AS

Tidewater Inc. entered into an agreement with HitecVision to purchase Troms Offshore Supply AS for approximately $395 million. The acquisition of the Tromsø, Norway based company will expand Tidewater's global footprint into the Norwegian sector of the North Sea. The Troms Offshore-owned fleet is expected to include five large, modern and technically-advanced deepwater Platform Supply Vessels (PSVs) at closing. In addition, Troms Offshore has one additional deepwater PSV under construction at the VARD Aukra yard in Møre og Romsdal, Norway and an option to build a seventh vessel.

DNV Re-launches Standard for Offshore Service Modules

DNV has re-written the standard for Offshore Service Modules certification, commonly referred to as DNV 2.7-2, which was first published in 1995. On June 11, 2013, DNV will roll this out to an industry seminar taking place at the Aberdeen Exhibition and Conference Centre (AECC). This event will look at the issues surrounding the management and use of temporary equipment on offshore installations and how the new Standard for Certification may provide some clear guidance.

MTU Builds R&D Facility

Tognum subsidiary MTU Friedrichshafen held a ground-breaking ceremony to mark the start of construction work on a new R&D test facility at Plant 1. The company plans to invest more than $77.6m in the project by 2015. In future, technicians will be able to run function tests on newly developed engines on the new, cutting-edge test stands with work including areas such as the development of new combustion processes, engine control systems, engine-specific exhaust gas after treatment plants and gas engines. The first phase of the project foresees construction of the main building and three test stands designed for engines producing up to 2,500 kW each. In addition, there will be a storage facility for various gases used to test newly developed gas engines which are rapidly gaining popularity as alternatives to diesels. The second phase will see the construction of four more test stands for engines generating up to 4,500 kW, along with a swiveling test stand. The seven test stands planned will facilitate tests on gas and diesel engines in the MTU 1600, 2000 and 4000 series.

Pole Star Partners with Delta Wave Communications

Pole Star Space Applications has partnered with Delta Wave Communications to pursue onshore opportunities. Delta Wave will offer Pole Star's remote monitoring, security and tracking solutions to the North American energy exploration, chemical, and oil and gas markets. Since the late 1990's Pole Star has developed satellite-based fleet monitoring services for use in the harsh and isolated marine environment. Because satellite-based communication provides near global coverage, Pole Star's systems allow shipowners and managers to track their ships, even when they sail beyond the reach of other communications networks.

Crowley Enters LNG Market

Crowley Maritime Corporation's petroleum services group is entering the Liquefied Natural Gas (LNG) market by acquiring Carib Energy LLC. Florida-based Carib Energy, founded in 2011, was the first company to receive a small scale, 25-year, LNG export license from the U.S. Department of Energy (DOE) for LNG transportation from the U.S. into Free Trade Agreement (FTA) countries. While Crowley's overall strategic focus on the LNG market will span several of its diversified business lines and leverage its storied history and success in the marine, project management, energy and transportation fields, Carib Energy provides an induction into the emerging energy market from which the company can grow its concentration on LNG transportation. A Crowley LNG services group has been formed within Crowley's petroleum services business unit. It is being headed up by Vice President of Business Development Matt Jackson, who reports to Rob Grune, senior vice president and general manager, petroleum services. This team will marshal Crowley's extensive resources to serve the LNG market through LNG vessel design and construction; transportation; product sales and distribution, and full-scale, project management solutions.

Hyde Marine Names W&O Supply As The Exclusive Distributor Of Hyde Guardian

Hyde Marine, Inc., a wholly owned subsidiary of Calgon Carbon Corporation, named W&O Supply as its exclusive sales distributor in the U.S. and Canada for Hyde Guardian Ballast Water Treatment Systems (BWTS). The chemical free Hyde Guardian BWTS uses efficient filtration and ultraviolet disinfection to treat ships' ballast water to prevent the spread of invasive species from port to port.

In April 2013, the Hyde Guardian BWTS earned the Alternate Management System (AMS) approval from the United States Coast Guard (USCG). It also received International Maritime Organization (IMO) Type Approval in April 2009 and has Type Approvals from several Class Societies.

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Annual Meeting: alana@sname.org
Expo: howard@marinelink.com

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ALUMINUM BOATS

Metal Craft, 347 Wellington Street, Kingston, Ontario, 77552, Canada , tel:(800) 410-8464, fax:(613) 542-6515, laurence.b@metalcraftmarine.com

AUTOMATIC IDENTIFICATION SYSTEM

Saab TransponderTech AB, SE-589 41 Linkoping , tel:46 13 180000, fax:46 13 180011, Info.transpondertech@saabgroup.com

AUTOPILOT SYSTEMS

AG Marine, 5711 34th Ave NW 2nd floor Gig Harbor, Wa. 98335

BOAT BUILDING AND DESIGN

Metal Craft, 347 Wellington Street, Kingston, Ontario, 77552, Canada , tel:(800) 410-8464, fax:(613) 542-6515, laurence.b@metalcraftmarine.com contact: Laurence Bishop, www.metalcraftmarine.com

CAMERAS

Kongsberg Maritime LTD, Campus 1 Innovation Pk.Balgownie Rd.Bridge of Don Aberdeen AB22 8GT , UK , tel:011 44 1224 226500, Bill.Stuart@kongsberg.com contact: Bill Stuart, www.kongsberg.com/cameras

CAPSTANS

Superior-Lidgerwood-Mundy, Corp., 302 Grand Ave., Superior, WI 75024, USA , tel:(715) 394-2383, stenerelli@lidgerwood.com contact: Sean Tenerelli, www.lidgerwood.com

COATINGS/ CORROSION CONTROL/ PAINT

Hempel A/S, Lundtoftevej 150 DK-2800 Kgs, Lyngby , tel:45 4593 3800, fax:45 4588 5518, marine@hempel.com

Jotun Paints, 9203 Highway 23, Belle Chasse, LA , USA , tel:(800) 229-3538, milton.campo@jotun.com contact: Milton Campo, www.jotun.com

COMPACTORS

Compactors Inc., PO Box 3173, Hilton Head Island, SC , tel:843 686-5503, Mike@compactorsinc.com

CONTROL SYSTEM-MONITORING/STEERING

Prime Mover Controls, 3600 Gilmore Way, Burnaby BC

CORDAGE

Helkama Bica Oy, Lakimiehenkatu 4, KAARINA FI-20780, Finland , tel:+358-2-410 8700, sales@helkamabica.fi

CORROSION CONTROL

CS Unitec, 22 Harbor Avenue, Norwalk, CT 11758, USA , tel:(203) 853-9522, fax:(203) 853-9921, tcarroll@csunitec.com contact: Tom Carroll, www.csunitec.com

Rustibus, 2901 West Sam Houston Pkwy, North Suite E-325, Houston, TX , USA , tel:(832) 203-7170, fax:(832) 203-7171, houston@rustibus.com , www.rustibus.com

COUPLINGS

Centa Corporation, 2570 Beverly Drive #128, Aurora, IL , tel:(630) 236-3500, fax:(630) 236-3565, bobl@centacorp.com contact: Bob Lennon, www.centa.info

CRANE - HOIST - DERRICK - WHIRLEYS

DMW Marine Group, 1123 St Matthews Rd Chester Springs PA 19425

DECK MACHINERY- CARGO HANDLING EQUIPMENT

NABRICO, 1250 Gateway Dr, Gallatin, TN , tel:615-442-1300, brian.corbin@trin.net contact: Brian Corbin, www.nabrico-marine.com

NABRICO, 1250 Gateway Drive, Gallatin, TN 70002-4989, USA , tel:(615) 442-1300, brian.corbin@trin.net contact: Brian Corbin, www.nabrico-marine.com

Superior-Lidgerwood-Mundy, Corp., 302 Grand Ave., Superior, WI B0W 2L0, USA , tel:(715) 394-2383, stenerelli@lidgerwood.com contact: Sean Tenerelli, www.lidgerwood.com

DIESEL ENGINE- SPARE PARTS & REPAIR

Motor Services Hugo Stamp, 3190 SW 4th Avenue Ft. Lauderdale, Fla.33315

DRILLS

Hougen Inc., 3001 Hougen Drive Swartz Creek, MI 48473

DRIVESHAFTS

Centa Corporation, 2570 Beverly Drive #128, Aurora, IL , USA , tel:(630) 236-3500, fax:(630) 236-3565, info@centacorp.com contact: Bob Lennon, www.centa.info

ELECTRIC & CONTROL SYSTEMS

Jamestown Metal Marine Services, Inc., 4710 Northwest 2nd. Ave. Boca Raton, FL 33431

ENGINES

Wartsila, Ranta 2, Helsinki , tel:011 358 10 709 0000, fax:011 358 10 709 5700 contact: John Stenbergin, www.wartsila.com

FANS

Schaefer Ventilation, 1 Industrial Blvd. Suite 101, Sauk Rapids, MN

FILTERS/FILTER SYSTEMS

Yankee Wire Cloth Products, 221 W. Main Street, West Lafayette, OH , tel:866-265-0502, fax:(740) 545-6016, yk@yankeewire.com contact: Bill Timmons, www.yankeewire.com

GALLEY EQUIPMENT

Jamestown Metal Marine Services, Inc., 4710 Northwest 2nd. Ave. Boca Raton, FL 33431

LOIPART AB, P.O.Box 694/Metallgatan 2-4, ALINGSAS , tel:+46 322 668 360, fax:+46 322 637 747, loipart@loipart.se

HVAC

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Operations Manager
Job Location: USA, Scarsdale

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•Work with Port Captain and Supervisors to optimize/maximize lifting capability of ships.
•Maintain our high service level to customers by remaining diligent to details while working with our Agency Network, brokers, agents and stevedores.
•Plan, monitor and co-ordinate bunker deliveries to the vessels in a cost effective manner.
•Ensure Port Logs and SOFs are properly prepared and maintained.
•Appoint agents and approve port disbursements and third party invoices.
•Create and distribute hire invoices and monitor payments.
•Check laytime calculations.

Key Qualifications/Requirements:

•Maritime University Graduate.
•Recognized Master or Chief Officer License preferred.
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Job Location: USA, Chesapeake, San Diego

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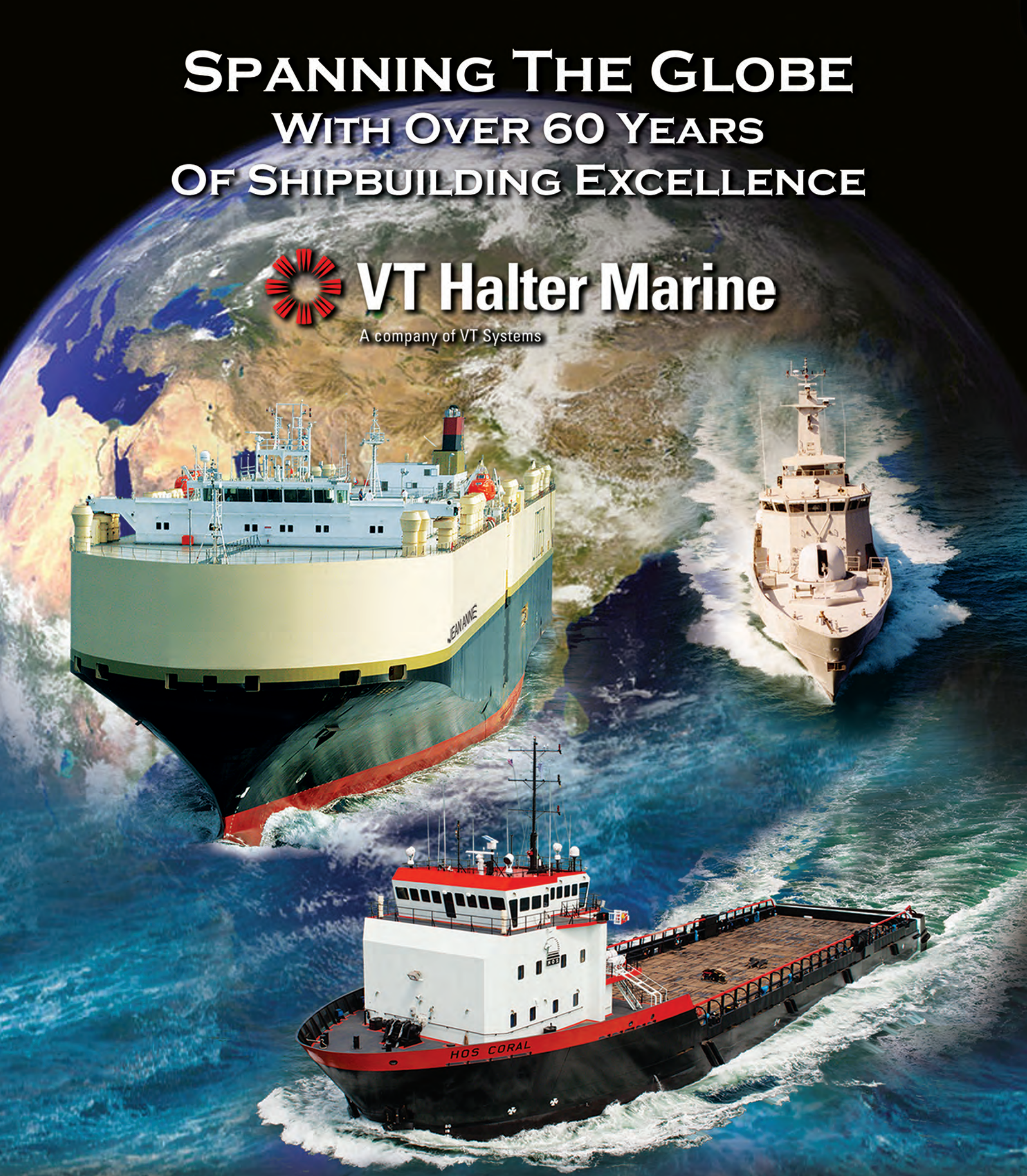

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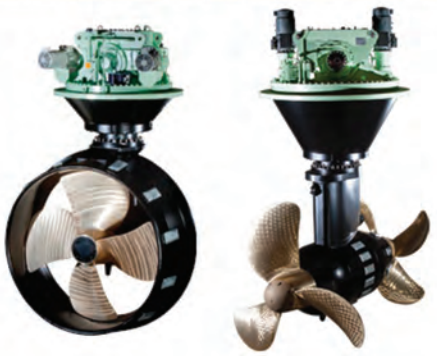

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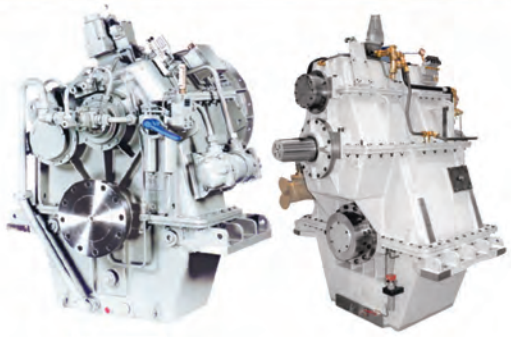

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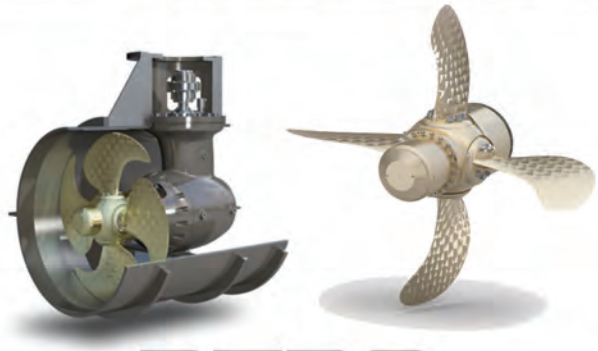

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