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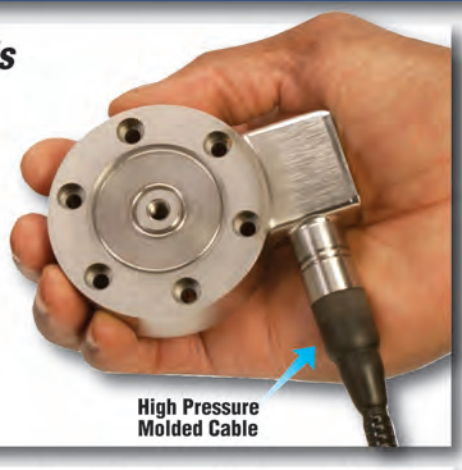

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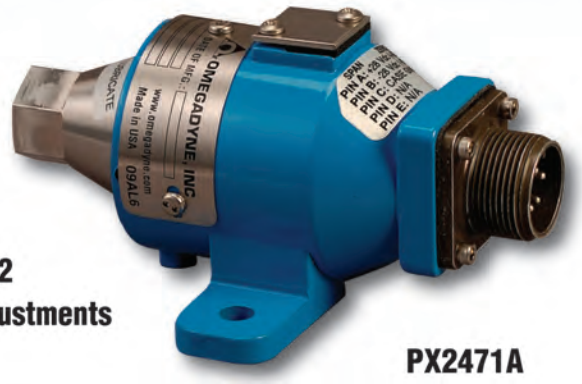

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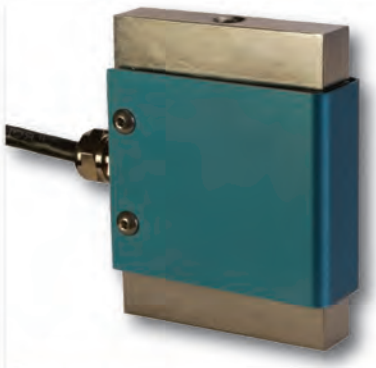

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contents

Ship Shape Pictured is Vigor Shipyard's unique entry — based on the Ulstein X-BOW design — into the comptetition to build the U.S. Coast Guard Offshore Patrol Cutter (OPC).

ON THE COVER

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With this being the "Marine Design" edition, who better to tap for insights than Robert D. Somerville, chairman, ABS, and an industry veteran with more than 40 years of perspective.

(Photo Credit: ABS)

ALSO IN THIS EDITION

SUBSCRIPTION INFORMATION
One full year (12 issues) $73.00; two years (24 issues) $105.00 in U.S. (Canada & Mexico also)
Rest of world one year international $120.00; two years $174.00 including postage and handling. For subscription information:
Email: mrcirc@marinelink.com • www.marinelink.com
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MARITIME REPORTER AND ENGINEERING•NEWS

NEW YORK
118 E. 25th St., New York, NY 10010
Tel: (212) 477-6700; Fax: (212) 254-6271
e-mail: mren@marinelink.com • Internet: www.marinelink.com

FLORIDA • 215 NW 3rd St., Boynton Beach, FL 33435
Tel: (561) 732-4368; Fax: (561) 732-6984

SUBSCRIPTION INFORMATION
One full year (12 issues)
• in U.S.: $69.00; two years (24 issues) $98.00 • in Canada: $73.00; two years (24 issues) $105.00
• Rest of the World: $98.00; two years $152.00 including postage and handling. For subscription information:
Email: mrcirc@marinelink.com • www.marinelink.com
Tel: (212) 477-6700 • Fax: (212) 254-6271

POSTMASTER: Send address changes to: **Maritime Reporter** 118 East 25th Street, New York, N.Y. 10160-1062.
Maritime Reporter is published monthly by Maritime Activity Reports Inc. Periodicals Postage paid at New York, NY and additional mailing offices.

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MARITIME REPORTER AND ENGINEERING•NEWS

www.marinelink.com

ISSN-0025-3448
USPS-016-750

No. 10 Vol. 74

118 East 25th Street, New York, NY 10010
tel: (212) 477-6700; fax: (212) 254-6271

Founder: *John J. O'Malley 1905 - 1980*
Charles P. O'Malley 1928 - 2000

Maritime Reporter/Engineering News (ISSN # 0025-3448) is published monthly by Maritime Activity Reports, Inc.118 East 25th Street, New York, NY 10010. Mailed at Periodicals Postage Rates at New York, NY 10199 and additional mailing offices.

Postmaster send notification (Form 3579) regarding undeliverable magazines to Maritime Reporter/Engineering News, 118 East 25th Street, New York, NY 10010.

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Asking *"How has the maritime industry most changed for the better or the worse over the course of your career"* is a standard fare question in interviews with leading executives from around the globe. From where I sit, as a member of the maritime media for 20 years, if I ask myself that question (which I just did) the answer is: "Executives tend to be less forthcoming, more careful, more apt to 'toe the company line' instead of telling me how they really feel."

This is not the case, I'm pleased to say, with a pair of interviews that take center stage in this edition, the first with Robert Somerville, Chairman, American Bureau of Shipping, and the second with Dr. René Umlauft, the relatively new head of MAN Diesel & Turbo.

In early October Mr. Somerville receives recognition from the Coast Guard Foundation at a black-tie NYC gala, so it seemed an appropriate opportunity to receive from Mr. Somerville, who after a more than 40-year career with ABS is set to retire in 2013, his insights and perspective on some of the more pressing matters facing the industry as a whole, from ever-tightening environmental regulations to the continued economic crisis. While we write often of the cyclical nature of this industry, it is particularly enlightening to hear from a many of Mr. Somerville's stature and tenure, as he has seen his fair share of ups and down's.

"One of the advantages of age is that it provides perspective. Difficult as the current market may be, it is not yet anywhere near the disastrous conditions that all sectors of the maritime industry faced in the late 1970s through the 1980s when we were sending ships to scrap yards right from delivery." Somerville said.

As this is our traditional "Marine Design Annual" it seemed doubly appropriate to feature Mr. Somerville, as it was ABS which developed and launched ABS SafeHull, a revolutionary suite of structural analysis programs in the early 1990s.

The interview with Mr. Somerville starts on page 30, and I'm willing to bet that with a thorough read you will walk away with new information and fresh perspective.

We are pleased to present market and technical insights from Dr. René Umlauft of MAN Diesel & Turbo, who I sat with last month in Hamburg at the SMM 2012 exhibition. Chatting with the head of a global power leader is instructive for many reasons, the least of not which is the fact that Dr. Umlauft has been in his current post for now exactly one year, coming to the marine business from the stationary power side, which affords an interesting comparison and contrast. He take charge in challenging times, quite unlike five years ago when the large engine maker's chief concern was a global crankshaft shortage and getting the engines out the door quickly enough.

The power companies I find to be great interviews as they touch on every single topic that drives your business today (no pun intended) including: reduced emissions and fuel consumption, repair and maintenance and automation. MAN Diesel & Turbo is in the midst of an alteration in which it goes about its global business, expanding facilities and empowering regional teams to get closer with the customers. Read Dr. Umlauft's thoughts starting on page 8.

Maritime Global News

Gregory R. Trauthwein, Editor & Associate Publisher
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Dr. René Umlauft, MAN Diesel & Turbo

Think GLOBAL *Act* LOCAL

> "From the technical point of view, I am sure we are able to solve (the environmental) issues. The question is: are our customers able to invest in the new technology based on the new legislation, particularly in light of the ongoing sluggish world economy?"

Taking the reins of a large industrial conglomerate is a challenge in the best of times. Taking the reins of MAN Diesel & Turbo during the most challenging world economy of a generation takes nerve, resolve and a solid plan. Meet Dr. René Umlauft, the CEO of one of the world's dominant power companies, as he helps steer it towards the future.

By Greg Trauthwein, editor

As any maritime power supplier could surely attest, resting on one's laurels is not an option in today's market: a generally stagnate global industrial situation, mixed with environmental regulations and fuel prices that are simultaneously spiraling higher. In tandem, vessel owners of every genre make demands that inherently at odds with one another: competitive pricing and seamless performance; reduced emission and reduced fuel consumption; with the seamless delivery of advanced technologies and service, all geared to help vessel owners better manage fleets and their bottom lines better.

All in a day's work for Dr. René Umlauft, CEO of MAN Diesel & Turbo.

Dr. Umlauft took the helm a little more than a year ago, and took some time on the occasion of SMM in Hamburg, Germany, to share with Maritime Reporter his insights on building and maintaining a diversified power provider that is a global company with an increasingly sharper eye on local activities.

A Diverse Pedigree

MAN Diesel & Turbo is an indelible player in global maritime circles, but Dr. Umlauft is a relative newcomer, having spent the last 21 years of his career primarily on the power side of the business with another power company.

"I joined MAN last year, and I have a lot of experience in gas turbines, steam turbines and power plants," said Dr. Umlauft. "I have been in this position for almost one year now, and one of the main initiatives which we decided from the outset was the introduction of our new global organization."

Essentially, MAN Diesel & Turbo, which already has an impressive global footprint, set out to get more in touch with customers and their needs on the local and regional level, and to that end have split the world into nine regions, each with its own CEO and CFO reporting back to headquarters to one of the company's five board members. Dr. Umlauft is specifically responsible for three regions: India, Russia (incl. CIS), and

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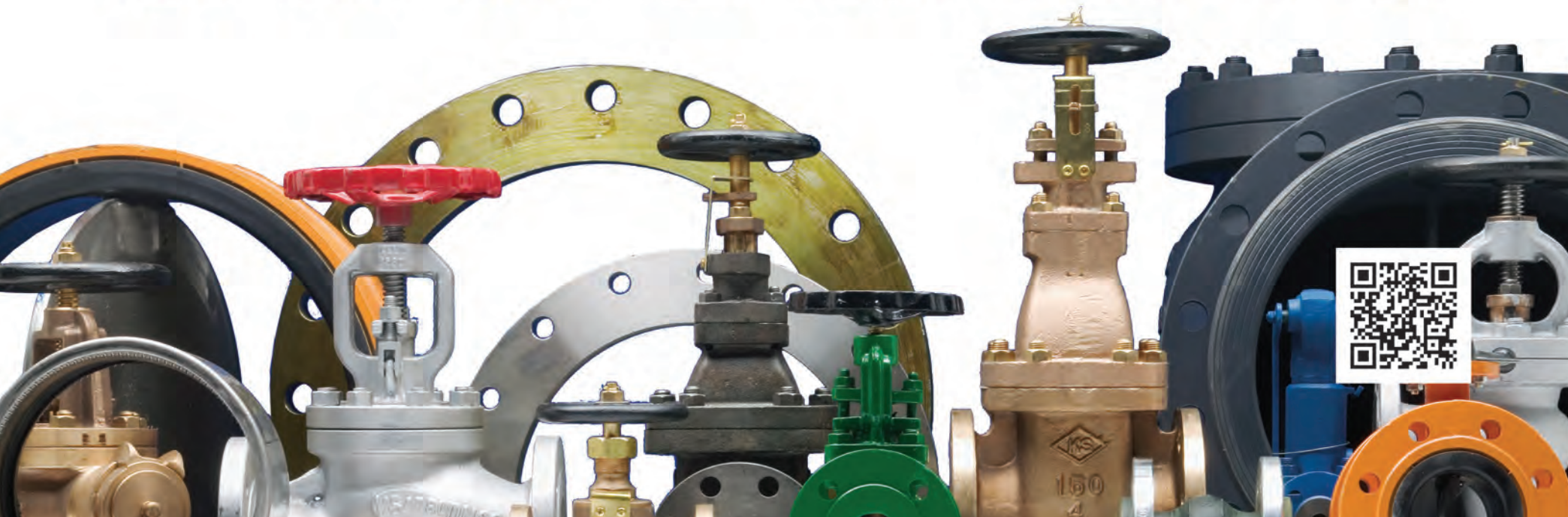

At a Glance

Headquarters
MAN Diesel & Turbo SE, Augsburg, Germany

Key performance indicators (2011)

Order intake	3.7B euro
Revenue	3.6B euro
Operating profit	460 euro
Headcount (as of Dec. 31)*	14,039
ROS (%)	12.7

*Including subcontracted employees
Online: www.mandieselturbo.com

Chairman of the Supervisory Board
Dr.-Ing. Georg Pachta-Reyhofen
Spokesman of the Executive Board of MAN SE, Munich

Members of the Executive Board of MAN Diesel & Turbo SE
- Dr. René Umlauft - CEO
- Dr. Hans-O. Jeske
- Arnd Löttgen
- Dr. Peter Park
- Dr. Stephan Timmermann

Products and Services

Engines & Marine Systems
- World market leader for the propulsion of seafaring vessels with a market share of around 50 per cent
- World market leader for two-stroke diesel engines for seafaring vessels with a market share of over 80 per cent
- World market leader for medium-speed, four-stroke propulsion engines
- Second on the global market as a supplier of exhaust turbochargers for two-stroke and medium-speed four-stroke diesel engines

Power Plants
- Second on the global market as a supplier of medium-speed diesel engines for stationary base load power plants
- From pure genset deliveries to semi-turnkey and turnkey power plants
- Combined heat and power plants, Diesel Combined Cycle (DCC)
- Excellent fuel flexibility: HFO, diesel, biofuels and gas

Turbomachinery
- Axial/radial compressors, gear-type, isothermal and screw compressors
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sub-Sahara Africa.

"The main point is to put the focus to the regions worldwide, and to have somebody who is the face to the region, to the customers, to the suppliers, to the government, to the press," said Dr. Umlauft. "One person speaking with one voice to the region on behalf of MAN, and just as importantly, to MAN Diesel & Turbo internally."

At a time when many companies are eschewing increased service to bolster the bottom line, MAN Diesel & Turbo is investing money and effort to get closer to its customers in a meaningful manner.

Dr. Umlauft reasons that clear focused customer service effectively lets it know even more about the markets served, a depth of knowledge about the customer and the region that ultimately helps the company to develop strategies short and long term.

"We are really increasing the customer focus, not only for service, where I think we are doing really well; and on the two stroke we are doing really well, but we have some fields where we can improve," said Dr. Umlauft.

While the blueprint is finished, the plan is not yet 100% implemented as the company continues to round out its top management teams in the nine regions, a process Dr. Umlauft estimates will be completed in early 2013.

The Power Play

While Dr. Umlauft is not long-tenured in the marine business, he explains that there are many similarities between shore side and at-sea businesses.

"I think that the main point is to steer the company through economically difficult times!," said Dr. Umlauft. It is with this clarity of vision that he and his colleagues in management, sales, production and service have embarked to refine and in some instances redefine this historic company and its family of technical solutions. Part of the plan to extend the field presence of MAN Diesel & Turbo is the opening of several new service hubs in 2013, e.g. in Halifax, Vancouver, Dakar and Quito. "This expansion is needed to have the right service support, to be where the customer needs you to be," he said. While he admits the tough world economy has had obvious impact on his company's business, Dr. Umlauft is quick to point out that there are plentiful opportunities today, and enhancing the company's regional focus will help to root them out.

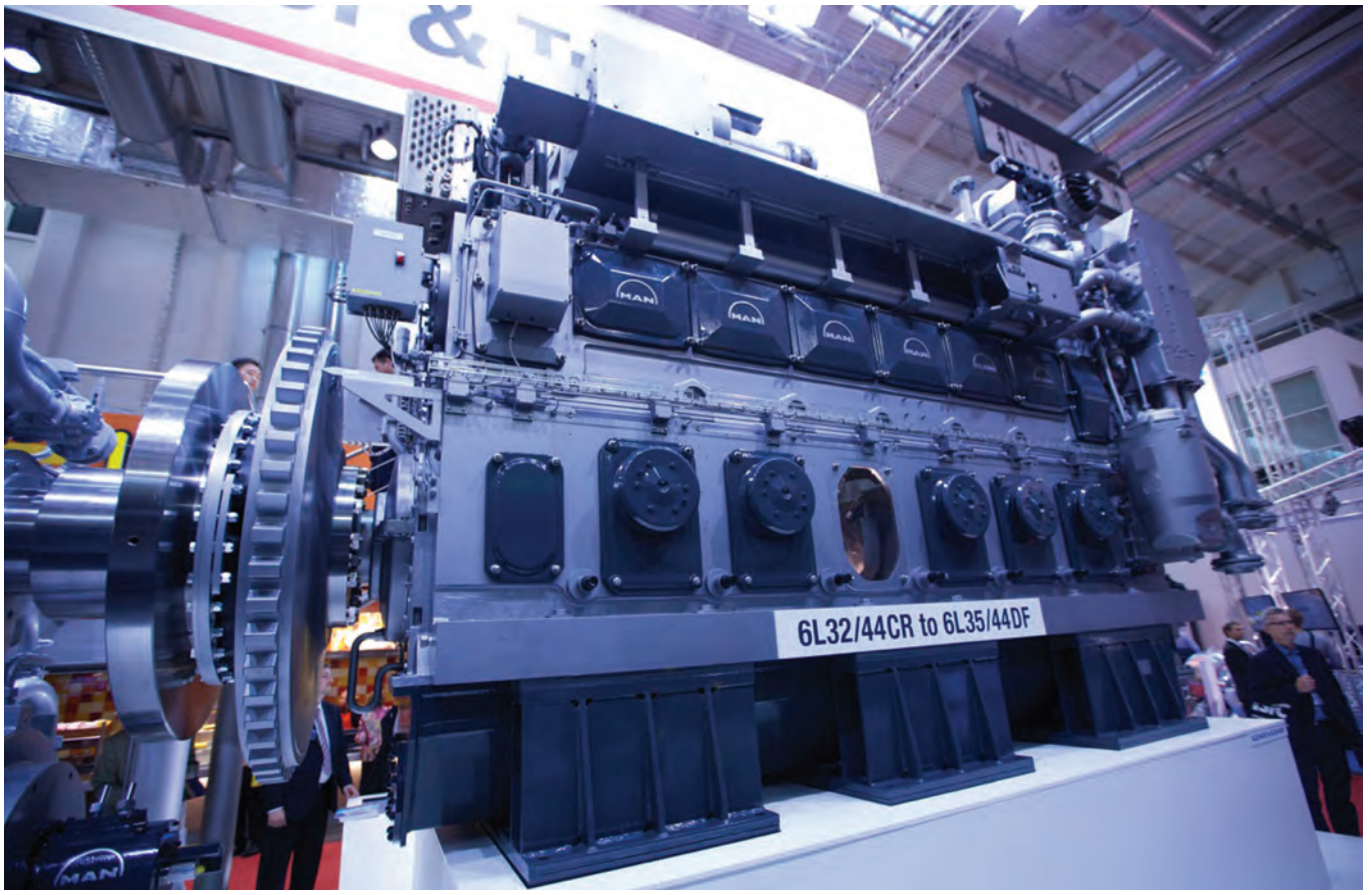
"I think the prospective for the maritime business overall is difficult at this time, and I think that we have to go market segment by market segment," said Dr. Umlauft. "We have mentioned one particularly big order and opportunity (the recently announced $33b Canadian Navy contract) and I think that worldwide the Navy business looks interesting. I have had a discussions with the Indian Navy and Indian Coast Guard regarding their plans going forward. Also, the offshore business and special vessels for offshore applications. For example, I look to Brazil, where they must go really deep to get their oil. Also, Russia looks interesting for special vessels, including icebreakers."

While he continually touts the company's plan to get closer on the local level, he is quick to point out that ultimately the future success of the company hinges on the product, or more specifically the MAN Diesel & Turbo's ability to maintain a pipeline of technically superior solutions that are designed to meet the real world needs of its diverse two-stroke and four-stroke client bay.

"One part is knowing the customers and the individual markets better," Dr. Umlauft said. "Another is delivering new products with higher efficiency, offering dual fuel options. The price of crude oil is the price of crude oil and I have nothing to say about that; what we have to do is come up with the products and the strategies to help our clients reduce the impact of rising fuel costs."

Just as the company invests in expansion of service, it also invests mightily in Research & Development to ensure that

New Medium Strategic L35/44DF meets emissions legislation and expands the company's dual-fuel power range.



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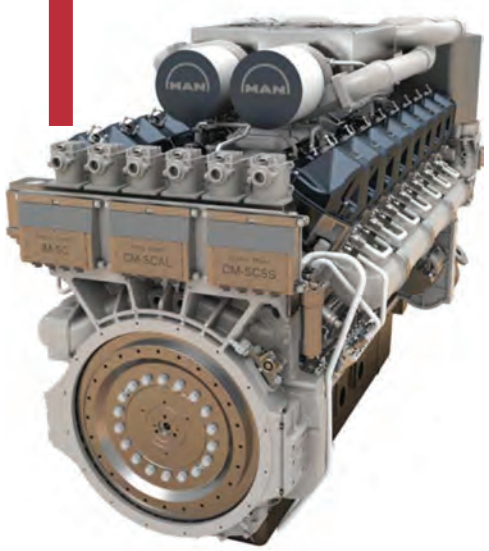

The new MAN high speed engine.

its product line-up is fresh and ahead of the curve.

"Where should I start? We have the dual fuel engine L35/44 on the test bed which is running, intended for use in maritime and power plant applications. We have working on a two-stroke, we have a gas engine, meeting Tier III which is coming; we have a new high speed engine," said Dr. Umlauft. "On the engine side, we have a lot of development, from the high speed through the two stroke low speed, moving toward environmentally friendly initiatives but also working towards greater engine efficiencies."

In fact, from the fulfillment of technologies to comply with evolving environmental rules, Dr. Umlauft is confident his company is up for the task. "From the technical point of view, I am sure we are able to solve (the environmental) issues. The question is: are our customers able to invest in the new technology based on the new legislation, particularly in light of the ongoing sluggish world economy?"

MAN Diesel & Turbo introduced its L35/44DF engine, the latest addition to its four-stroke portfolio, at SMM 2012 in Hamburg. Spurred on by developments in environmental legislation and the strict emission limits resulting from that, the engine offers dual diesel fuel-gas running and can also be introduced as a retrofit to engines already in service.

The first prototype entered its test phase at the beginning of 2012's second quarter at MAN Diesel & Turbo's Augsburg facility. A V-type engine version is being developed simultaneously that will enlarge the power-output range of the company's dual-fuel engine portfolio as part of MAN Diesel & Turbo's market strategy.

The company is introducing the L35/44DF engine at a time where separate emissions legislation for harbors is set to come into play, in addition to the upcoming IMO Tier III emission regulations for marine applications. Accordingly, MAN Diesel & Turbo views the introduction of another engine that offers the option of operation on gaseous fuels as timely, also in the context of ship owners' increasing environmental awareness. With the L35/44DF engine, MAN Diesel & Turbo is continuing the expansion of its product program with a dual-fuel engine based on common rail technology.

MAN Diesel & Turbo's development objective with the new engine was to produce a high efficiency/ high specific power output unit that complied with IMO Tier II emission limits in diesel mode and IMO Tier III limits in gas operation. A high degree of fuel flexibility (HFO, MDO, MGO and natural gas) was another primary objective. With an output of 530kW/cylinder, the inline 35/44DF is available in 6 – 10 cylinder configurations, equivalent to total power outputs from 3.2 MW to 5.3 MW. This represents the highest power output available in the segment and complements that offered by the larger L51/60DF type.

The company also announced an addition to its engine program: the D7 high-speed engine which delivers a 1.5 – 5 MW output at 1,000 – 2,000 rpm and is designed to serve a broad range of applications. The company contends that the D7 closes the gap between its smallest medium-speed and largest high-speed engines and sets new standards in fuel efficiency, power/weight ratio and TBO-intervals.

It has targeted tugboats, workboats, offshore service and supply vessels, navy patrol boats, super yachts and fast ferries as its core applications. The new engine will additionally serve non-marine markets such as the offshore, onshore power generation and rail segments. It will also be available as a gas-powered version for certain applications. The D7 will play a central role in a new propulsion train devised by MAN Diesel & Turbo. Customers will be offered the engine as part of a package that includes gearboxes, propellers, switchboards, auxiliary gensets, and energy storage solutions. Orders for the new engine can be placed starting in 2014.

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30 September 2012

VV Mini Matrix - Monthly Change

Built	Tankers Vlcc	Suez	Afra	LR1	MR	Bulkers Cape	Pmax	Supra / Hmax	Handy	Containers Post Pmax	Pmax	Handy	Fmax
2012	-2.5%	-5.3%	-10.2%	-3.8%	-1.7%	-1.0%	+0.4%	-0.4%	-0.5%	-3.5%	-3.5%	+1.4%	-1.3%
	310k	160k	110k	75k	50k	180k	80k	60k	30k	7,000	4,250	1,400	750
2007	-1.6%	-4.6%	-9.0%	-2.5%	-5.4%	-2.8%	-5.3%	-3.4%	-2.5%	-3.8%	-3.6%	+0.7%	+1.6%
	310k	160k	110k	75k	50k	180k	75k	55k	30k	7,000	4,250	1,400	750
2002	+1.0%	-1.1%	-3.7%	+0.7%	-7.5%	-3.7%	-8.0%	-7.1%	-3.3%	-4.5%	-4.2%	+0.0%	+8.7%
	305k	155k	105k	70k	45k	175k	75k	50k	30k	6,500	4,000	1,400	750
1997	+4.3%	+5.3%	+2.2%	+4.4%	-6.7%	-3.0%	-7.7%	-10.4%	-4.4%	-4.9%	-4.8%	-1.9%	+7.5%
	300k	145k	105k	65k	45k	170k	75k	48k	30k	5,500	4,000	1,400	750
1992	-2.3%	-3.7%	-4.8%	-4.9%	-6.6%	-7.2%	-5.3%	-13.8%	-3.1%	-7.1%	-7.8%	-9.4%	-5.6%
	285k	145k	100k	65k	40k	150k	70k	45k	30k	4,500	3,750	1,400	750
1987	-4.4%	-4.0%	-5.0%	-4.9%	-4.7%	-6.5%	-7.3%	-16.7%	-4.3%	N/A	-7.6%	-9.1%	-11.1%
	250k	130k	95k	65k	40k	140k	65k	42k	30k	–	3,750	1,400	750

Monthly Change Secondhand Vessel Values *by Year & Size*

VesselsValue.com provides data driven ship valuations for tankers, bulkers and containerships. These graphs show how vessel value depends on age for the major types. Vessels are assumed to have typical size and specification for age and high built quality at a top tier shipyard.

VesselsValue.com

Supply & Demand 101

Crew Drives Cost Rise

As a dearth of qualified crew in the pipeline vexes vessel owners globally, it should be surprising to few that rishing crew costs is the leading driver of higher total annual operatig costs in the shipping industry.

Moore Stephens announced via its **OpCost 2012**, the firm's unique ship operating costs benchmarking tool, that total annual operating costs in the shipping industry increased by an average 2.1% in 2011, compared to a 2.2% average rise in costs recorded for the previous year.

Crew costs were the main reason for the overall increase in 2011, while the cost of insurance fell for the second year in succession.

OpCost 2012 covers the three main tonnage sectors – bulkers, tankers and containerships. Some other interesting numbers:

3.3 % overall increase in 2011 crew costs compared to the 2010 figure.

6.7 %, the largest crew cost increase recorded in for operators of larger dry cargo ships (above 25,000 dwt) and of smaller LPG carriers (between 3,000 and 8,000 cbm).

1.1 % that costs for repairs and maintenance FELL in 2011, compared to the 4.5% rise in 2010.

4.4 % rise for repairs & maintenance in the bigger containership sector (between 2,000 and 6,000 teu)

2.7 % increase on stores spending.

1.5 % that insurance expenditure FELL in 2011, following a 4.7% fall in 2010.

www.moorestephens.co.uk/Shippingopcost.aspx

Art Anderson Associates at forefront of The New Gold Rush

Pacifica Receives Gold Dredge

Art Anderson Associates recently completed design of a new dredge vessel for Pacifica, a Seattle-based vehicle assembler. **The 50-ft. vessel was recently delivered to a customer for gold dredging operations near Nome, Alaska.**

Art Anderson Associates was engaged by Pacifica in December, 2011 to develop a design concept into a complete design for construction.

Its naval architects and marine engineers began by preparing a computer-generated model of the vessel based on the concept drawings, which was the basis for initial hydrostatic and weight calculations. In Phase II of the project, Art Anderson Associates developed construction drawings for the hull and superstructure, and finalized the weight and stability calculations. In the project's final phase, the team provided fuel, water and controls design assistance, along with support for deployment.

The vessel was designed specifically to meet the unique requirements of sub-surface dredging operations in the remote coastal waters of the Bering Sea, and is powered by twin 300 hp Yamaha outboards. It features a custom-designed bow for cutting through the rough seas and all pump, sluice and crane systems to conduct its gold dredging mission.

"This was a fun project in that we were able to learn quite a bit about the gold dredging business, the unique equipment involved with it, all while applying the engineering skills we enjoy," said Ben Anderson, Naval Architect and Project Manager for Art Anderson Associates.

Interest in offshore gold dredging has grown significantly, driven by high gold prices, recent offshore lease sales by the State of Alaska, and the popularity of TV programs such as the Discovery Channel's *Bering Sea Gold.*

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CIMAC Shanghai 2013

Where the Engine Industry Meets • A golden opportunity in Spring 2013

By Victoria Maier, PhD

Ship owners and operators with a mind to hear all the latest on global emissions compliance, new fuels and developments in engine and turbocharger products have a golden opportunity to do just that in Spring 2013. From 13 to 16 May 2013 in Shanghai, China, experts across several industries from CIMAC's 28 member countries worldwide, including engine manufacturers, engine users, component suppliers, fuel and lubricant companies, research organizations, classification societies and renown universities will meet at the 27th CIMAC World Congress on Combustion Technology to talk about the internal combustion engine industry today and tomorrow.

This prestigious event comes at exactly the mid-point between the enactment of IMO Tiers II and III and the nomination and implementation of the first Emission Control Areas. “Historically, the Congress has been the forum for exchanging information that has been relevant and useful for literally every kind of stakeholder in the engine industry,” notes CIMAC Secretary General Markus Heseding. "And to this very day, the CIMAC remains a focal, if not the focal, event for engine builders, engine users and regulatory bodies looking for a definitive overview of both the technical and commercial aspects of the business.”

Looking at 2013 in particular, the Congress will be gearing up just as the major user of large engines – the shipping industry – will be feeling the squeeze from low returns as a result of cargo space overcapacity and rising fuel prices. “We’re getting closer and closer to 1 January 2016, and it’s already quite clear that the recent developments in the industry are going to pose a challenging backdrop for contemplating legislation that will certainly increase total costs of engine ownership,” says Axel Kettmann, Senior Vice President for Sales, Marketing and Service at ABB Turbocharging in Baden, Switzerland. “So a major section of engine end users will be looking for answers not just with regard to the question of emissions but to the much more difficult issue of emissions compliance at reduced fuel consumption.” ABB Turbocharging is a major corporate sponsor for the upcoming CIMAC Congress.

Added significance with the 2013 location

Significantly, the 2013 Congress is being hosted by CIMAC’s National Member Association in China, namely the Chinese Society of Internal Combustion Engines (CSICE). China is the fastest-growing producer of engines worldwide and the research papers submitted for presentation at the Congress promise to offer completely brand-new insights into Chinese engine development and its underlying drivers.

About the CIMAC

A brief look at CIMAC’s history and aims explains why the Congress has become the very first address for information about the engine industry. The International Council on Combustion Engines was founded in 1951 by the engine

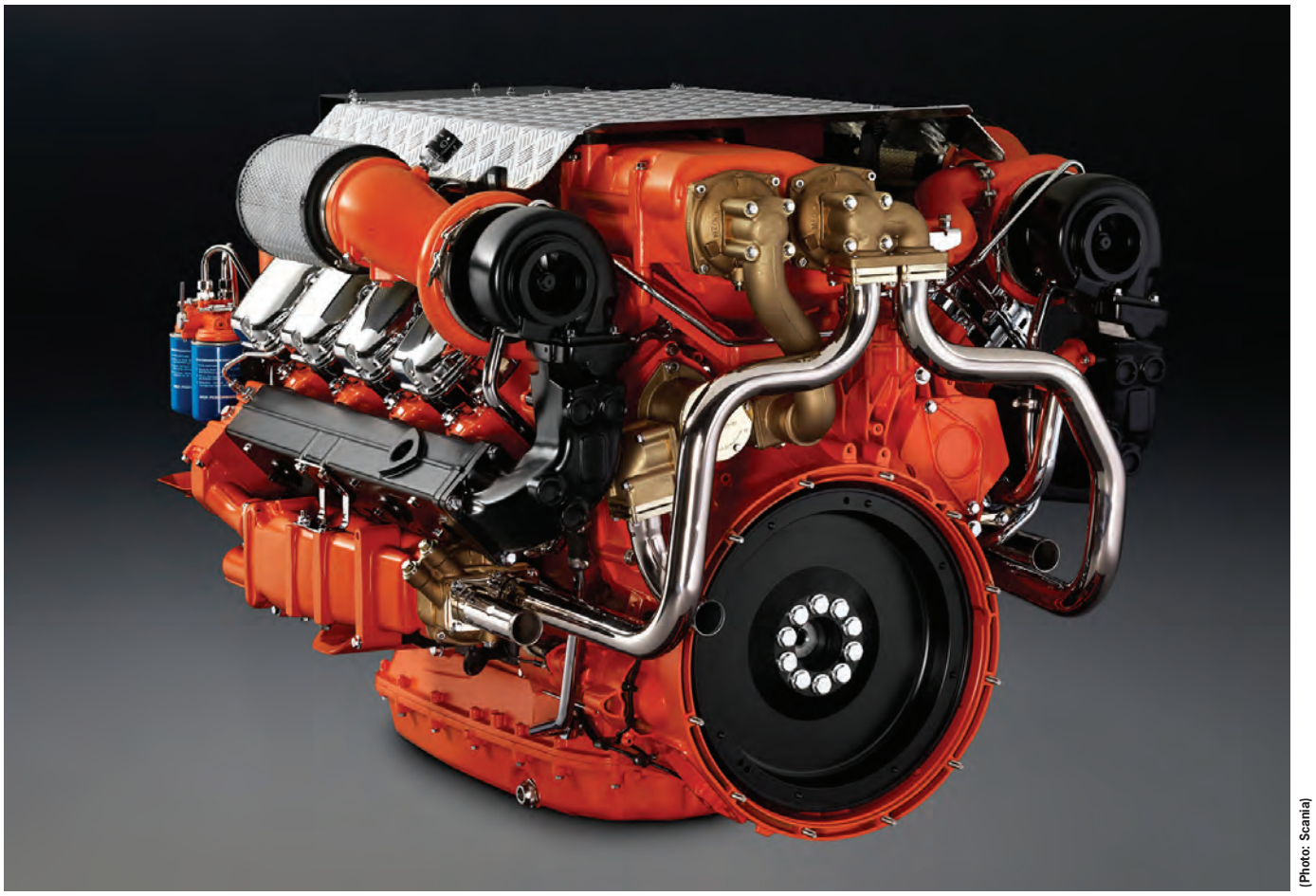
Find Out More

Details about how to participate as a visitor, exhibitor or sponsor can be found at **http://www.cimac.com/congress_2013/congress_2013.htm.** Interested individuals can also download invitations and other informative documents about the CIMAC, the Congress and more.

Exhibition

As ever, this year’s CIMAC World Congress will be accompanied by exhibitions by manufacturers and service providers from the engine industry and associated sectors. In fact, one of the reasons for choosing the Shanghai Exhibition Center as the venue for the 2013 Congress was its excellent exhibition facilities and long record of running successful, high-profile trade shows. In total, exhibition space of some 10,000 sq. m. has been reserved to accommodate the many different companies that will present their portfolios and services at the 27th CIMAC World Congress.

The CIMAC World Congress is a gathering of some of the best technical minds on the matter of power for all transport modes. Pictured is the new **SCANIA DI16** with a max torque of 3,340 Nm at 2,000 rpm.



(Photo: Scania)

industry for the engine industry in order to promote the sharing and exchange of information and expertise. “This goal of ensuring that we as experts in the engine industry do share what we know is more important than ever for reducing emissions and for reaching our next milestone with IMO Tier III.” Heseding adds.

CIMAC achieves those goals through events and committees involving the whole of the large engine industry. “The Congress is obviously our largest and most prolific event in terms of delegate numbers and information presented and discussed, but it takes place only once every three years. In the interim between Congresses, we keep those discussions alive through other events, such as the CIMAC CIRCLE and CASCADES,” says Heseding. Held at major trade shows, the CIMAC CIRCLE discussions revolve around cutting-edge technological developments and latest industry issues and trends. CASCADES is the CIMAC’s most recent addition to its event calendar, and it aims to give younger engineers the chance to meet their peers and to rub shoulders with their more experienced colleagues.

Committees include the important CIMAC Working Groups that work to present industry-wide views on key subjects. “These Groups are where the nuts and bolts of CIMAC’s contribution to progress in the engine industry really become visible,” Heseding adds. Thanks to the stability that a core of permanent Working Groups offers, ad-hoc Working Groups can be formed flexibly as new issues arise. The groups currently comprise:

- Classification Societies (WG 2 CS-D)
- Crankshaft Rules (WG 4 CD)
- Electronics and Software Systems (WG 15 ESS)
- Exhaust Emissions Control (WG 5 EEC)
- Fuels (WG 7 F)
- Gas Engines (WG 17 GE)
- Marine Lubricants (WG 8 ML)
- Unified Rules for Vibration Analysis and Measurement (WG 14 UR)
- Users (WG 10)

“With such a wide spectrum of subjects, it’s not surprising that CIMAC’s Working Groups have produced numerous technical recommendations since their inception in 1968 or that a significant number of those recommendations are enshrined in global regulations,” Heseding says.

Shanghai

For next year’s Congress, CIMAC has received over 400 proposals for technical papers. The evaluation process of all these submissions has already begun in order to ensure a quick response for potential authors.

The themes of the Congress Sessions will be:

- Product development – diesel engines
- Product development – gas and dual-fuel engines
- Fundamental engineering – piston engines
- Environment, fuel and combustion – diesel engines
- Environment, fuel and combustion – gas and dual-fuel engines
- Aftertreatment
- Tribology
- Component and maintenance technology
- Integrated systems and EC
- Turbochargers
- Users’ aspects – marine applications
- Users’ aspects – land-based applications (power generation, CHP, oil and gas, rail, etc.)

Participating in the Congress

People interested in participating in the Congress have several options for choosing how they would like to be involved. Aside from presenting a paper or visiting the Congress as a delegate, participants also have various opportunities for extending their involvement in the Congress at other levels, such as sponsorship.

Sponsoring the Congress

Sponsorship is an integral part of the CIMAC Congress and widely recognized by globally active companies as a prime opportunity to address engine builders and engine users on a global scale.

CIMAC offers a wide range of sponsorship opportunities and invites companies to support CIMAC by benefiting from sponsorship of the 2013 World Congress. Details are available at

www.cimac.com/congress_2013/spshp.asp

Signed Confessions

Convictions have been obtained for false entries in garbage record books and ballast water management records. What's Next?

Some years ago, I wrote an article lamenting the fraudulent entries made in many oil record books and the increasing use of those entries as signed confessions in the prosecution of ship owners and operators and senior shipboard personnel (particularly chief engineers) for making false statements to the US Coast Guard. Oil record books are required records on commercial vessels and must be presented to Coast Guard boarding officers on demand. The presentation of an oil record book with known false entries for the purpose of misleading the federal official into believing that the vessel is in compliance with applicable requirements can subject the ship owner, operator, and senior shipboard personnel to significant penalties. Contrary to my expectations, the number of violations continues at a high rate, despite the prevalence of high-visibility convictions and imposition of severe penalties.

Gradually, the prosecutions for making false statements have expanded beyond the oil record book scenario. Convictions have been obtained for false entries in garbage record books and ballast water management records. It is only a matter of time before we see convictions for false entries in air emission, hull husbandry (biofouling), and sewage management records.

For some unknown reason, neither the ship owners/operators nor senior shipboard personnel seem to get it. The United States government is serious about the accuracy of required shipping records and will not tolerate the presentment of knowing false entries. Prosecution for presentment of false records is a well-understood crime. It consists of five elements: (1) making a statement orally or in writing; (2) when the statement is false or misleading; (3) the false or misleading information is material; (4) the statement or concealment was made knowingly; and (5) the statement was made or presented to a federal official engaged in performance of his or her duty.

Recently, though, the US government (particularly the Department of Justice and the US Coast Guard) may have overstepped the line. They are now sometimes charging ship owners, operators, and senior shipboard personnel with failure to maintain proper records. The major difference between this new crime and the older crime of making or presenting a false statement to a federal official is that the written statement no longer need be made or presented to a federal official. Thus, a false entry in a ship's oil record book made two years previously involving a voyage in a far part of the world may subject the owner, operator, and senior shipboard personnel to criminal prosecution in the United States for each time the ship enters US waters without regard for whether a Coast Guard boarding officer ever examines the oil record book. No evidence that the fraudulent oil record book entry adversely impacted (or could possibly have adversely impacted) the United States is required. In addition, one fraudulent oil record book entry could result in multiple violations of US law – one violation for each port call while the errant oil record book is on board the ship, even where there has been no USCG boarding.

The use of shipboard records as signed confessions even when unread by federal authorities now potentially extends beyond the oil record book. Close examination of the Code of Federal Regulations (CFR) reveals that similar language requiring the maintenance of records is used in regulations relating to ballast water management and garbage management. The Environmental Protection Agency (EPA), in its regulations relating to control of air emissions from marine engines, uses the word "keep" rather than the word "maintain". The impact may be the same.

This raises the issue of semantics and original intent. The oil record book provision in Annex I to the International Convention for the Prevention of Pollution from Ships (MARPOL Convention) provides that an entry shall be made in the oil record book on each of certain operations, including the discharge overboard of bilge water. It further provides that the oil record book shall be "kept in such a place" on board as to be readily available for inspection.

In the United States, the MARPOL Convention is implemented and enforced via the Act to Prevention Pollution from Ships (APPS). The US Coast Guard (and for air emissions, the EPA) has promulgated regulations regarding various provisions in the MARPOL Convention, including the oil record book provision.

The initial USCG regulations promulgated under APPS appeared in 1983. They provided, in pertinent part, that each covered ship "shall maintain" an oil record book. No one at the time envisioned that the Coast Guard regulation had any different meaning than the related MARPOL provision. In fact, the preamble to the rulemaking stated that its purpose was "to implement the provisions of MARPOL". The regulations in this regard have not been amended since their original promulgation. In other words, the MARPOL requirement to "keep on board" and the USCG requirement to "maintain" the oil record book were synonymous.

Neither the Coast Guard nor the Department of Justice interpreted the USCG regulation as more expansive than the MARPOL provision until 2006. That

year, the United States Attorney for the Eastern District of Texas charged the chief engineer and the owner of the tanker Pacific Ruby with criminal violations of US law by failing to properly maintain the ship's oil record book. One count of the violation was charged for each time the tanker had entered a US port with the oil record book containing the allegedly fraudulent entries (for a total of eight), even though the Coast Guard had not boarded the tanker nor examined the oil record book until the last time, when the fraudulent entries were first discovered. The federal district court dismissed the charges relating to failure to maintain, but sustained the remaining charges. The government appealed. The US Court of Appeals for the Fifth Circuit reversed the dismissal, holding that, if the oil record book did not have to be "maintained" while in in port, then a polluter could avoid application of the record book requirements simply by falsifying the entries prior to entry into port. This holding defies experience and long-standing precedence. The Coast Guard and the Department of Justice have been successfully prosecuting ship owners, operators, and senior shipboard personnel for years under the false official statement statute. In fact, that was the initial charge in the Pacific Ruby case. It was only later, but before trial, that the "failure to maintain" counts were added.

The appellate court, in allowing the failure to maintain charges to be reinstated, never addressed the implications of its action. While the potential penalties for violation of the false official statement provision and for violation of the failure to maintain provision are roughly similar, there are two important differences. First, as shown in the Pacific Ruby case, there would be only one violation of the false official statement offence – the presentation of the oil record book to the Coast Guard boarding officer. There would be potentially multiple violations of the failure to maintain offense – one for each time the foreign vessel came into port (in the case of the Pacific Ruby, there were eight port calls). This difference drastically increases the stakes for the ship owner, ship operator, and senior shipboard personnel and makes them more amenable to entering into a plea bargain. Secondly, APPS includes a provision allowing for payment of rewards for information leading to conviction. The false official statement offense does not include such a provision.

The failure to maintain offense is now frequently charged, but the propriety of such action by the Coast Guard and the Department of Justice has not been re-examined by a court since the Pacific Ruby case. I contend that multiple use of the "failure to maintain" charge amounts to unjust piling on. If this were football, a penalty would be called against the government. Until that happens, ship owners and operators and senior shipboard personnel must redouble efforts to ensure that entries made in required shipboard records are as accurate as possible so as to avoid handing the government any more signed confessions. That should be done regardless of the federal government's awkward stance on this issue, but especially so now.

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MARAD Steps Up

The U.S. Maritime Administration & Maritime Security Initiatives

The paradigm for global transportation security underwent a dramatic shift in the aftermath of the September 11 terrorist attacks. In the years that followed, industry and government worked together to add layers of security to mitigate risk while maintaining the flow of commerce.

The Department of Transportation's (DOT) Maritime Administration (MARAD) has since developed security initiatives which ensure safety and efficiency in America's Marine Transportation System (MTS) by focusing on three crucial improvement categories: transparency, accountability and resiliency. This three-point strategy hastens the flow of information between MTS stakeholders and mandates security training and awareness for key transportation officials. These improvements provide stakeholders the means to not only monitor MTS's worldwide resources and distribution systems, but to also respond and recover from complications which occur in a global transportation network.

MARAD was tasked with applying this security enhancement method to five different MTS areas: supply chain security, maritime domain awareness, maritime security training, the MarView Portal, and anti-piracy efforts.

In January 2012, the Department of Homeland Security (DHS) announced its two-fold National Strategy for Global Supply Chain Security: 1) Promoting the efficient and secure movement of goods, and 2) Fostering a resilient supply chain. MARAD's aforementioned approach is well suited to assist in implementing that strategy. MARAD serves as a vital intermediary between the commercial and governmental ends of the supply chain. Its Office of Security has collaborated with local, state and Federal agencies to establish a level of transparency whereby private stakeholders obtain and share the same information as MARAD personnel. On the accountability front, MARAD supports several interagency efforts aimed to report on security responsibilities within the global supply chain, such as field reviews and national selections for the FEMA-led Port Security Grant Program. MARAD also compiles and routinely issues advisory updates to US-flag vessels and other maritime interests. Moreover, MARAD has used its status as government-industry intermediary to encourage and even develop resiliency protocols which make MTS entities both safe and economically sensitive. MARAD has spearheaded several awareness programs to this end, including its cyber security campaign as well as its Maritime Domain Awareness (MDA) initiatives with interagency partners including the USCG, Navy, and the National Maritime Intelligence Integration Office.

MDA constitutes a sufficient understanding of any factor associated with the maritime domain that could impact security, safety, economy, or the environment. DOT designated MARAD as the Executive Agent (EA) to lead the initiative on behalf of the department. The EA for this program devotes much of its attention to maintaining transparency across all MTS centers, including the 300 ports and 3,700 cargo and passenger terminals managed in the U.S. The EA's greatest challenge, however, is developing situational awareness throughout MTS's various administrative spheres, including vessel operations, cargo channels, and personnel involved in infrastructure.

The MarView Portal has been vital to his success. MarView is an expansive, thoroughly maintained database provided by MARAD for the purposes of convenient information and data retrieval. Users can facilitate and monitor the responsibilities which MTS entities have to both transportation strategy and economic viability. Specifically, the MarView Portal hosts more than 2500 source links of transportation data, which can be used to create models and simulations for capacity planning, economic impact analysis, on-demand forecasting, as well as plans for mitigating and reacting to emergency situations. The Portal can also independently generate its own analyses and calculations for user review, such as geospatial modeling of MTS transportation and Crisis Tracking and Emergency Notification (CTEN). In making available a wide array of crucial MTS information – ranging from vessel characteristics to statistics on licensed mariners – MARAD aims to systematically improve safety, security, and even environmental efficiency within the MTS.

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MARAD also works toward improvement of the MTS by continuing its proud tradition of excellence in training both the current and incoming maritime workforce. An integral entity within MARAD in support of maritime security is the United States Merchant Marine Academy (USMMA). The faculty not only trains future leaders in the industry, but also plays a pivotal role in developing the model security courses required by the Maritime Transportation Security Act of 2002 (MTSA). Section 109 of the MTSA requires the Secretary of Transportation to "develop standards and curriculum to allow for the training and certification of maritime security professionals." DOT delegated this responsibility to MARAD and the Maritime Administrator charged the USMMA with its execution.

The Academy's work on the MTSA Section 109 project led to USMMA responsibility for the development of International Maritime Organization (IMO) model courses for Ship Security Officer, Company Security Officer, and Port Facility Security Officer under the provisions of the ISPS Code. This project, undertaken jointly with the Government of India's Directorate General of Shipping under the coordination of the U.S. Coast Guard, was completed in September 2003. The model courses are now the international benchmarks for maritime security training, having been published by the IMO for use by training providers, carriers, and others worldwide. Since then, the Academy has updated existing model courses and added ones to include a broad sector of maritime personnel, first responders, military, and law enforcement. Last year, the Academy developed an additional five model courses in maritime security for IMO.

As a credit to MARAD's success in improving training programs, MARAD has implemented a voluntary MTSA 109 ap-

proval program with rigorous certification process for maritime security training providers. The Administration sets forth a challenging set of criteria which providers must fully meet in order to be certified to deliver training, ensuring that industry leaders groom future leaders. From the time MARAD's training certification program was first commissioned, more than 25,000 individuals have been trained, and over 50 training providers approved. An approved list of these providers is available on the MARAD website, **marad.dot.gov/documents/MTSA_certified_courses.pdf**

Last year, a coordinated effort between MARAD, the USMMA, the FBI, and the USCG introduced an entirely new model coursework on Crime Prevention, Detection, Evidence Preservation and Reporting in response to the Cruise Vessel Security and Safety Act of 2010. This much-needed guidance upon which education and training providers can base instruction for the prevention, detection and evidence preservation and reporting of criminal activities in the international maritime environment was published in June 2011.

Since the problem of piracy escalated in the Horn of Africa (HOA) region in 2008, MARAD has worked extensively with the U.S. Coast Guard and the Department of State to develop strategies that protect commercial shippers from pirate attacks. These strategies have been discussed and deliberated upon by the U.S. Delegation to the IMO's Maritime Safety Committee, on which MARAD's Office of Security serves as a member. The office has also served with the U.S. Delegation on the Contact Group on Piracy off the Coast of Somalia, which supported naval, industry, judicial, and diplomatic efforts that decreased the number of successful pirate attacks in the HOA by nearly 50%.

Through these and other coalitions, MARAD has backed several piracy mitigation strategies which have made substantial impacts on the issue. For instance, the development of circulars and annexes for the IMO has helped flag states and industry obtain valuable advice on preventing successful pirate attacks. MARAD supplemented these notices by establishing both the frequent publishing of MARAD and Office of Naval Intelligence (ONI) threat advisories as well as supporting the development of "Best Management Practices (BMP) to Combat Piracy" by international shipping organizations. MARAD also provided input into, and assisted with the distribution of, the U.S. Coast Guard security directives that outline specific, risk-based measures one should take in order to deter, detect and disrupt piracy. To ensure that similar measures are taken in foreign waters which need them most, MARAD and its agency affiliates support international navy vessels which patrol and escort other vessels in the HOA.

MARAD has also collaborated with Military Sealift Command, together establishing the Anti-Piracy Assistance Team (APAT) in April 2009. This voluntary program consists of 1-2 representatives from the Naval Criminal Investigative Service (NCIS) and 1 MARAD official, who visit and assess US-flag vessels in US ports. These representatives then compile a detailed report for the Master and Company Security Officer of the vessel, regarding the areas of vessel operation particularly vulnerable to acts of piracy. More than 50 of these assessments have taken place since the program started three years ago.

As stated and demonstrated above, the tumults of international politics and global economics have created a perfect storm for today's global transportation system. Public and private entities of MTS stay afloat and secure through the crucial balance of safety and expediency which MARAD continually strives for. In implementing vital change throughout both the procedural and infrastructural dimensions of our international transportation network, MARAD has helped shape not just the current state of marine transportation security, but also its future.

Owen Doherty is the Director for the Office of Security at the DOT/Maritime Administration. He is a graduate of the USMMA and the Naval War College.

Marine Casualty

Insigns on an Investigation's Problems and Pitfalls

When a vessel-related accident occurs on the navigable waters of the United States, the investigation machinery starts up almost immediately. The operator, owner, or person in charge of a vessel involved in such a casualty is obliged to give the soonest practicable notification, often followed by a written report, to the local Coast Guard Sector or office. This begins a process in which livelihoods, liberty, and civil liability might all be at stake. Careful thought is required when the Coast Guard investigating officer calls to request an interview.

The requirements to notify the Coast Guard of the occurrence of an incident are laid out in Subpart 4 of Title 46 of the Code of Federal Regulations. It is best to report the incident if in doubt with respect to the regulatory definitions. For example, the federal regulations require reporting a casualty resulting in property damage in excess of $25,000. (46 CFR 4.05-2(a)7.) Unless little more than scratching of paint occurred, it would be wise to immediately notify the Coast Guard rather than wait for the estimate of a marine surveyor. Giving the Coast Guard an immediate notification of the basic facts of the occurrence and the extent to which the marine environment or personnel remain at risk is the best policy. There is little if any downside to simply reporting the incident, except perhaps some amount of operational delay. Even if a written CG-2692 needs to be submitted, there is no need to give a detailed self-incriminating statement. And, except to the extent that the vessel owner determines that people directly involved in the incident had used alcohol or drugs, there is no binding requirement to make any admission or to draw any conclusions as to fault for the accident.

Once the Coast Guard's investigation begins, however, the decision as to whether or not to give a full statement is not so simple. Traditional wisdom had been that refusing to cooperate with the Coast Guard would be tantamount to an admission of fault and that the best way to convince the Coast Guard that the mariner's actions were reasonable and lawful would be to accept the opportunity to tell his or her side of the story. This instinct is strongest in a situation where the Coast Guard is investigating the matter informally, because the investigating officer will often have interviewed other witnesses or interested parties without allowing the mariner or his/her counsel an opportunity to participate. The inclination in those circumstances would be to give the Coast Guard a full statement because of the need to rebut statements made by others, which presumably pointed the finger at the mariner.

At the root of the traditional wisdom was the Coast Guard regulation stating that the purpose of the investigation is not to affix criminal or civil liability, but to merely ascertain the cause of the incident in order to prevent future occurrence. (46 CFR 4.07-1(b)). The regulations also contain a form of limitation with respect to the admissibility of the mariner's statement: "In order to promote full disclosure and facilitate determinations as to the cause of marine casualties, no admission made by a person during an investigation…may be used against that person in a [license suspension and revocation] proceeding, except for impeachment". (46 CFR 5.101(d)). This provision seems to assure mariners that their statements would not come back to haunt them in subsequent proceedings against their licenses. It was also thought that cooperation with the Coast Guard is relatively harmless because the final report of the Coast Guard's investigation cannot be used in a civil lawsuit to affix liability. (46 USC §6308; but see L. Lambert, The Use of Coast Guard Casualty Investigation Reports in Civil Litigation, 34 J. Mar. L. Comm. 75 (2003))

The protections which these regulations and statutes seem to afford are flimsy, however. First of all, neither of these protections come into play if evidence of criminal behavior is uncovered. The Coast Guard is duty-bound to notify the local U.S. Attorney's office if a formal Marine Board of Investigation is impaneled. Moreover, the Coast Guard is legally required to present any evidence of criminal conduct uncovered in its investigation to the U.S. Attorney General. Therefore, even if a statement made to the Coast Guard might not be directly useable as evidence in a suspension and revocation proceeding or as evidence in a civil trial, such statements or evidence might be directly used in a criminal prosecution. Coast Guard investigating officers are fully familiar with the Miranda rule, but an investigation interview setting would not be considered to be an arrest or apprehension situation such as to make the Miranda warning necessary.

And one should not underestimate the imagination or willingness of the U.S. Attorney General or the local U.S. Attorney's Office to craft a criminal indictment out of the facts of a marine casualty. **Certainly when a death occurs, the federal law known as the "Seaman's Manslaughter" statute (18 USC §1115) can come into play** because a conviction requires proof of only simple negligence, rather than intent or recklessness.

And one should not underestimate the imagination or willingness of the U.S. Attorney General or the local U.S. Attorney's Office to craft a criminal indictment out of the facts of a marine casualty. Certainly when a death occurs, the federal law known as the "Seaman's Manslaughter" statute (18 USC §1115) can come into play because a conviction requires proof of only simple negligence, rather than intent or recklessness. Oil pollution incidents can readily lead to federal criminal indictments also. An oil pollution incident is likely to be well publicized, which will bring pressure upon the U.S. Attorney to take action. The Migratory Bird Treaty Act, passed almost 100 years ago in order to prevent hunting, has been used in one oil spill case after another against the individual mariners or their employers because the statute requires only a showing of the killing of a bird without proof of intent or even negligence. (16 USC §703). Even in the "run-of-the-mill" collision, allision, or personal injury case, the operator or person in charge of the vessel could potentially be subject to criminal punishment. Title 46 of the United States Code contains a provision which makes it a Class A misdemeanor to "operate a vessel in a grossly negligent manner that endangers the life, limb or property of a person." (46 U.S.C. § 2302(b)). The line of separation between gross negligence and simple negligence is a matter of degree and is not always easy to define. Ultimately, it could be left to a jury to decide whether or not the mariner's behavior was so negligent as to constitute the "willful, wanton disregard of a known risk". Therefore, the possibility always exists that a statement voluntarily made to the Coast Guard could be used in a criminal trial. This is not the only potential pitfall associated with cooperating in an investigation, however. The regulation which bars the use of admissions in a suspen-

sion and revocation hearing contains an exception for purposes of "impeachment". If the mariner decides to make a statement to the Coast Guard but then changes his/her story in front of the presiding Administrative Law Judge, the Coast Guard will be able to point out the inconsistency of a statement made during the investigation. Moreover, the word "admission" is subject to a narrow definition. The Coast Guard could well argue that a statement with respect to the facts of the event is not necessarily a direct admission of fault and therefore can be utilized as evidence. The mariner may not have directly admitted fault for the casualty, but that will not stop the Coast Guard from arguing that the facts of the event, as evidenced by the mariner's own statement, should lead the ALJ to conclude that the mariner was negligent.

Any statements made to an investigating officer, whether amounting to an admission or not, can be used to assess liability for civil penalties. The federal statutes allow for imposition of a civil penalty of $5,000 for every proven breach of the Inland Navigational Rules (33 USC §2072 (a)) and $25,000 for every instance of negligent navigation (46 USC §2302(a)). There is nothing in the law or the regulations to prevent the Coast Guard from using any statement given in an interview to support its assessment of those civil penalties.

Finally, there are certain licensed mariners, specifically state-licensed pilots, who might not worry about their licenses in the context of a Coast Guard investigation. If the pilot was operating under the authority of his state license rather than his federal license at the time of the incident, the Coast Guard cannot suspend or revoke his federal license. However, there is no specific regulation or statute which prohibits Coast Guard cooperation with state licensing authorities. In other words, any statement made to the Coast Guard could very well be transmitted to the state licensing authority. The administrative procedures in place under state law would then be the only possible protection from the use of those statements by the Board of Pilot Commissioners to suspend or revoke the pilot's license.

All of the above having been said, the decision whether or not to cooperate with the Coast Guard should be made on a case-by-case basis.

There may very well be instances in which a full exposition by the mariner may convince the Coast Guard that no further inquiry or investigation need be made and/or that no negligence or breach of the rules of the road took place. Being human, Coast Guard investigating officers and their superiors in the chain of command may be highly suspicious of a mariner who absolutely refuses to cooperate. But the mariner's decision must be made with the presumption in mind that any statement given to the Coast Guard will be fully admissible in suspension and revocation hearings, civil penalty hearings and criminal trials.

Jeffrey Moller, partner at Blank Rome, is an experienced maritime law practitioner who has parlayed his tort litigation experience into successful representations in shoreside toxic tort and environmental contamination cases. Mr. Moller has received the highest possible rating from Martindale-Hubbell.

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Information Edge

Information at the Edge of the World

The need for ship-to-shore information exchange has never been greater. Lawrence Poynter product director at iOra explores the sophisticated connectivity solutions that can keep the fleet afloat.

For armchair sports fans, 2012 has been a bumper summer of wall-to-wall media coverage. For naval crews, getting the latest NASCAR results, football scores or Olympic record times is more difficult – but not impossible. Many shipping firms recognize that making sports reports available to their crews is an important way to remove the sense of isolation often felt onboard. The savings to be gained from higher crew loyalty and retention rates, reduced training time, more days at sea and improved operation of onboard equipment, have made crew welfare a critical consideration.

Delivering online news and sports coverage to the crew is just one example of the constant 24x7 information exchange that characterizes modern shipping. The maritime industry is becoming hugely data intensive, and highly dependent on information systems that can help generate new and competitive operating efficiencies in an environment where margins are under constant pressure.

As a result, modern fleets form a complex IT network, with individual vessels hosting servers, multiple terminal access points and an extensive range of computer-based applications. In effect, they are floating extensions of the land-based office.

Data dependency

Sports results aside, the information flow between headquarters and the ship's Master can have critical operation impact. Compliance with increasingly onerous regulations is but one example. Shipping firms have to guarantee that all vessels have the latest health, safety and quality management data in accordance with the regulations of the governing flag state or a given port state control. Masters need to be kept up to date with international regulations regarding specified Emission Control Areas or changing legal requirements on transport and trade in general.

In turn they have to provide headquarters with accurate, consistent records that will survive close inspection that can take place at any time. As always, being able to demonstrate a compliance process is as important as actually being compliant.

Then there are various elements of a ship's operation that in themselves are immensely data intensive tasks. Interconnected, computer-controlled onboard equipment requires a core logging function to record detailed performance and operational telemetry.

This data can be monitored on board, but more forensic analysis is required onshore for effective maintenance, preventative repairs and ship longevity. And, like any other computer network, shipping fleets also have to share network administration data to ensure optimal performance.

Ongoing operation depends on continual updates, software upgrades and service packs. If the internal Local Area Network (LAN) on which the ship's operation depends is to keep functional, then virus update files are needed to prevent devastating damage.

In an era of increasingly de-skilled crew, the provision of required training materials has also become an essential function. Improving onboard skill sets, reducing the risk of accidents and maintaining a vessel's operational efficiency all contribute to an improved overall business performance. In the case of the US Navy, which has some of the most well-trained sailors in the world, network connectivity enables its world-class engineering experts to remain onshore while being consulted by crews of multiple vessels. Even route planning, exhaustively researched and planned before a ship leaves port, benefits from effective data exchange. Up-to-date maps or charts, often in digital form, may cause unforeseen diversion, as can changing weather conditions, updated port data and incidents of piracy. Masters need this kind of information as a matter of course. But fleet operators also need Masters to feed information back to shore for dissemination with the wider fleet, and in order to improve routing, rationalize bunker fuel consumption, and leverage cargo-to-vessel planning across the company as a whole.

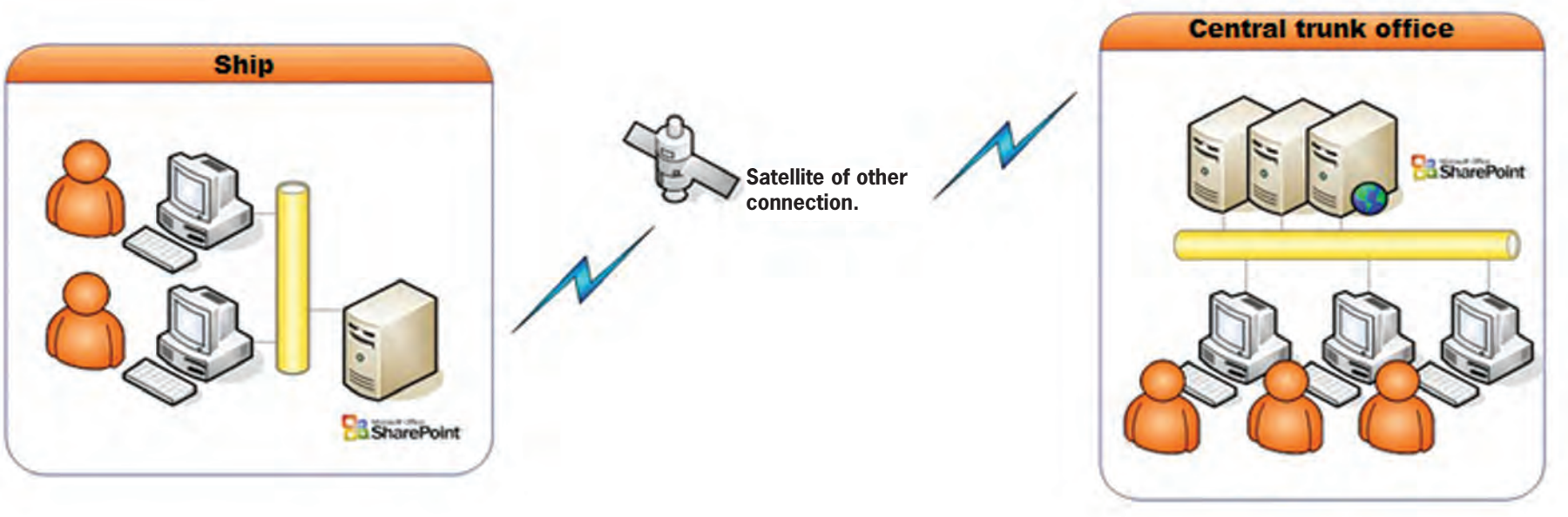
Nothing but the truth

These examples alone demonstrate that the distributed deployment of consistent, accurate information is critical to the effective and efficient operation of navies and commercial shipping operations alike. It is predicated on the principle of maintaining a single point of truth or golden copy of the relevant data. This single consistent view of data removes discrepancies and contradictions in organizational requirements and ensures that record keeping and audits are in line with those demands.

For the single point of truth to be effective, information has to be centrally stored and made accessible from a single common platform, normally a global web portal. This can prove challenging even for fixed, land-based networks, since portals are typically designed to operate over a LAN and often struggle when deployed over the extended wide area network. The global area networks deployed by shipping fleets are even more problematic, as is the high-latency connectivity that is typical of access over satellite.

As ships sail in and out of internet range, bandwidth degenerates and download speeds decrease. Satellite networks provide a unique opportunity for linking globally distributed assets, but bandwidth and intermittent availability make them a sometimes restrictive and costly information channel. At the same time, the sheer volume of application data that needs to be replicated over available networks can easily consume available bandwidth.

The net result is that users give in to



temptation, and once they have accessed information from the central source store it as a local copy. Any changes to the centrally held master are therefore missed and the single point of truth is broken.

The challenge for shipping operators then is to reconcile the need for universally available, globally consistent information with the fact that many of the users of that information operate at the very edge of a network of fluctuating consistency.

Networking Super Solutions

There are four broad options available to ship operators facing this conundrum.

The first is network acceleration. Most accelerator devices can be installed in the form of hardware appliances at each end of the network and, as the name suggests, have the effect of speeding up communication between any two points on that network. Generally speaking, these devices will store repeated network calls issued by the computer in an intelligent fashion and effectively reduce the amount of data to be sent over the network, speeding up network traffic by a factor of between six and ten.

The second option is compression. By reducing the quantity of data that needs to be sent over the network, compression techniques will reduce the amount of bandwidth required and consequently the cost of delivery. Various compression tools are available that provide the mechanism for reducing the data footprint of any updates sent over the network so that better use can be made of the available satellite capacity. Specialist providers of digital information to shipping fleets have already experienced compression rates of up to 90 percent on their updates to safety management systems, and have enabled uninterrupted access to regulatory, safety and technical information at sea as a result.

Third, content distribution allows both onboard and onshore users to avoid calling over the satellite connection to access data. Content distribution enables firms to proactively deploy key data closer to the end user and thus reduce reliance on external network connections. In this way an operator can, for example, replicate updates to the corporate health and safety data on a schedule to the vessel. When the vessel's master needs to access that information it is available in a local store that does not require reaching back to shore over a fragile or costly satellite connection.

Finally, least-cost routing enables operators to actively switch between providers of bandwidth, and is a smart way to reduce bandwidth costs. In a typical scenario, vessel communications will switch from satellite-based delivery when operating offshore, to more cost-effective VHF delivery when in range – typically 50 to 70 miles – of shore.

In reality the most common option is to adopt a hybrid of all four solutions, where essential content is automatically distributed over an accelerated network giving end users guaranteed LAN speed access to data that originated over the corporate WAN.

Commercial shipping is under intense commercial pressure, while national navies are being asked to get smarter and maximize limited national resources. All are looking for ways to reduce costs, maximize the use of available resources and deliver greater returns from existing investments. Sophisticated connectivity solutions that make the most of data assets delivers on all three counts.

About the Author

Lawrence Poynter serves as product director at iOra Ltd. Lawrence's career has spanned a variety of roles in the US and Europe for innovative technology companies.

About iOra

iOra's patented replication technology supports the delivery of critical operation data throughout the enterprise, even for remotely located personnel at the network edge with limited connectivity. Successfully deployed on tens of thousands of machines by customers including the US Navy, US Marine Corps, Shell, NATO, ARM, and the UK Ministry of Defence, iOra delivers data replication over bandwidths as low as 2kbps and to disconnected users. For more information visit **www.iora.com**.

Polarcus

Innovation in Seismic Vessel Design

Polarcus Limited received its eighth 3D seismic vessel on 21 June 2012 when Polarcus Adira was delivered at Ulstein Verft in Norway. The vessel is the second of two 12-14 streamer Arctic 3D seismic vessels built at the yard, and is the eighth vessel in the Polarcus fleet of the Ulstein SX134 design.

By Henrik Segercrantz

(Photo credit: Ulstein Group, Per Eide)

The marine geophysical company Polarcus Limited received its eighth 3D seismic vessel on 21 June 2012 when Polarcus Adira was delivered at Ulstein Verft in Norway. The vessel is the second of two 12-14 streamer Arctic 3D seismic vessels built at the yard, and is the eighth vessel in the Polarcus fleet of the Ulstein SX134 design, characterized by the sleek Ulstein X-bow hull design the shipbuilder has become known for. The sistership Polarcus Amani was delivered by the yard at the end of March. Earlier vessels were built under license by Drydocks World Dubai LLC.. They include Polarcus Nadia (2009), and Polarcus Naila (2010), 12 streamer vessels of type SX124, Polarcus Asima (2010) and Polarcus Alima (2011), 12 streamer vessels of type SX134, Polarcus Samur (2011) and the Russian flag vessel Vyacheslav Tikhonov (2011), 8 streamer vessels of type SX133. The other vessels carry Bahamas flag. All vessels are designed by Ulstein Design and Solutions AS. Following a short shakedown Polarcus Adira will commence operations on charter for TGS-NOPEC Geophysical Company ASA (TGS).

Polarcus Limited, registered on the Oslo Stock Exchange, operates a fleet of high performance 3D/4D seismic vessels. Polarcus offers contract seismic surveys and multi-client projects worldwide and employs over 500 professionals. The company's principal office is in Dubai, United Arab Emirates.

Main vessel data

The hull of Polarcus Adira and Polarcus Amani were built at Kerch Shipyard Zaliv in Ukraine. As is the custom for the ships built by Ulstein Verft shipyard in Ulsteinvik. This was the seventh hull built at the yard.

The vessels are equipped with streamer winches, towing points and gun winches. The X-bow hull line design, combined with a redundant diesel-electric propulsion system, ensures good performance with regard to speed and fuel consumption. The overall length of Polarcus Adira, yard number 293, is 92m and the breadth is 21m, which is identical to those of sister vessel Polarcus Amani. Depth to main deck is 9.0 m, design draft is 6.5m and maximum draught 7.5 m.

The deadweight at maximum draught is 4,472dwt. Gross tonnage is 7709GT and net tonnage 2313NT.

The hydrodynamic efficiency of the X-BOW, result in good sea-keeping abilities, it also provides a safe and comfortable workplace for the crew both during transit and seismic surveys, as it eliminates slamming. The soft entry in waves also reduces spray and eliminates icing. The vessel is equipped with a helideck (D-value 22.2 m, 12t, UK-CAA CAP-437 suitable for Sikorsky S-61N / S-92) for added safety and to ensure an efficient crew change, and is built according to IMO code of safety for Special Purpose Ships (SPS), enabling it to operate worldwide. The vessel has two workboats, by Westplast, and a Norsafe MOB boat onboard and six life rafts each for 35 persons with dedicated davit.

Machinery

The vessel has diesel-electric propulsion. The main propulsion system comprises two Wärtsilä 9L26 main diesel generators, each 2920ekW at 1000rpm, plus four Wärtsilä 9L20 1710ekW diesel

generators, at 1000rpm. The generators are supplied by ABB. The total power is 12,680ekW.

There are two propellers of controllable pitch type in nozzles, the shaft line of each driven by two variable speed electric motors through twin in-single out reduction gears type Scana Propulsion ACGTS 1000. All diesel engines have selective catalyst reactor (SCR) units, supplied by H+H Umwelt, to reduce NOx emissions. NO2 emissions are reduced by some 90% to 98%, soot by 20% to 30% and hydrocarbon emissions by 80% to 90%. There are two ABB electric propulsion motors in parallel configuration on each side, each motor 0-2200ekW, 0-1000rpm. The two controllable pitch propellers in nozzles, supplied by Scana Propulsion, each absorb 4400kW at 160rpm and have a diameter of 3700mm. There is an Caterpillar emergency generator with a power of 240ekW.

The vessel runs on marine gas oil (MGO) with low sulphur content. The Fuel oil (MDO) capacity is 2030 cu.m. and fresh water capacity 1032 cu.m.. The vessel can also carry ballast water/tech. fresh water 2170 cu.m., lube oil 63 cu.m., and urea for the catalysts reactors 289 cu.m. Towing pull in seismic operation is 82t. Bollard pull exceeds 125t. Polarcus Adira has a maximum speed of 17 knots, at 5.5m draft.

There is one 1200kW tunnel thruster forward equipped with a controllable pitch propeller and one 850 kW retractable azimuth thruster forward. There is one tunnel thruster aft, 830 kW, controllable pitch.

The vessel is equipped with a roll damping tank system. There are two fresh water generators, each producing 15 cu.m./24h. There are two fuel oil separators, self cleaning type and three lube oil separators. In addition there is one mobile hydraulic oil separator and a USCG approved bilge water separator. A ballast water treatment system is installed.

Switchboards, navigation and DP

Ulstein Power & Control has delivered the switchboards 690V, 400V and 230V, the emergency switchboard, and the communication and information system type Ulstein COM® to the vessel. Alse the bridge control and navigation system is of Ulstein delivery. The vessel has a Kongsberg Maritime Dynamic positioning system, DP2 type, and has two DGPS, and a radius reference system. There is preparations for Kongsberg's HiPAP 500 high precision acoustic positioning. The integrated automation system is supplied by Høglund Marine Automation.

Arctic class

Polarcus Adira is an Arctic-ready vessel designed and built for operations in Arctic waters carrying the ICE-1A* and Winterized Basic notations from Det Norske Veritas, the classification company of these vessels. Polarcus Adira can operate in first-year ice of up to 1 metre thickness without the assistance of icebreaker. The hull is ice-reinforced and the vessel has de-icing and ice-preventing systems at

The new Polarcus vessel is well outfitted for work above the water and below, with its ultra modern bridge system (above left) & seismic room (above right).

(Photo credit_Ulstein Group, Vasco Pinhol)

critical tanks, pipelines and systems, and the propellers, gears and thrusters are dimensioned for withstanding operations in ice. Escape corridors and rescue equipment are also protected against icing during Arctic operations.

The hull form is not really icebreaking, why the intention is to do the work in open water. 3D seismic acquisition will only take place in ice-free water. The Arctic qualities of the vessel enables the vessel to relocate through ice to and from the survey area, or remain in icy areas waiting for the ice to clear, increasing the operational window of the vessel.

Seismic equipment

Polarcus' worldwide service capabilities encompass conventional 3D surveys and sophisticated wide- and multi-azimuth projects, high-density 4D development surveys. Polarcus Adira is a 3D/4D 12-14 streamer seismic research vessel capable of deploying up to 14 Sercel Sentinel solid streamers. The navigation system is ION Orca and the depth positioning system is of type ION DigiBIRD combined with DigiFIN lateral control and DigiRANGE acoustic ranging, supplied by ION Geophysical Corporation. The seismic air gun source is by Bolt Technology 1500-LL/1900-LLXT with dual sources. The source controller is a fully distributed digital gun Seamap GunLink 4000 controller.

The seismic operation room is located midship over two decks in close vicinity to the seismic winches in the work area. Seismic dedicated areas include a Seismic operation room, Rack room (Server room), Back deck store, Bird shack, Air gun control room, Technical library, Tape store, Tail buoy workshop, Two battery stores and a Streamer store repair room. There are a number of winch systems fitted with radio remote control.

Under an agreement with GX Technology, this global independent data processing company provides the on-board seismic data quality control and when required seismic data processing services on-board Polarcus' vessels, and onshore advanced seismic data processing services at one of its Data Processing Centres.

Accommodation and interior spaces

Polarcus Adira is built with a hotel compliment with permanent capacity for 60 persons in 32 single and 14 double cabins. There is a mess room which seats 43, day rooms, internet café, gym and sauna, as well as a hospital, offices and a conference room. There are three crew state cabins, one client state cabin, twenty-eight one-bed cabins, fourteen two-bed cabins. There are also rooms for dry provision, a cooler and freezer room, and laundries. There is a special helicopter reception room.

Classification

The classification company is Det Norske Veritas. The vessel is designed for environmental friendly operations. The vessel carries the Clean Design notation from DNV. A GREEN PASSPORT is issued. Low noise and vibration levels are recorded in the accommodation and on deck. Class notations are Det Norske Veritas ✠ 1A1, E0, DYNPOS-AUTR, CLEAN DESIGN, COMF-V(3), ICE-1A*, WINTERIZED BASIC, NAUT-AW, HELDK, BWM-T, TMON, SPS. The vessel carries Bahamas flag.

A Class Act

Robert D. Somerville, ABS Chairman

As Robert D. Somerville, ABS Chairman, winds down his career with the American Bureau of Shipping, he shares with Maritime Reporter more than four decades of insight and perspective on the evolution and future of class.

By Greg Trauthwein, Editor

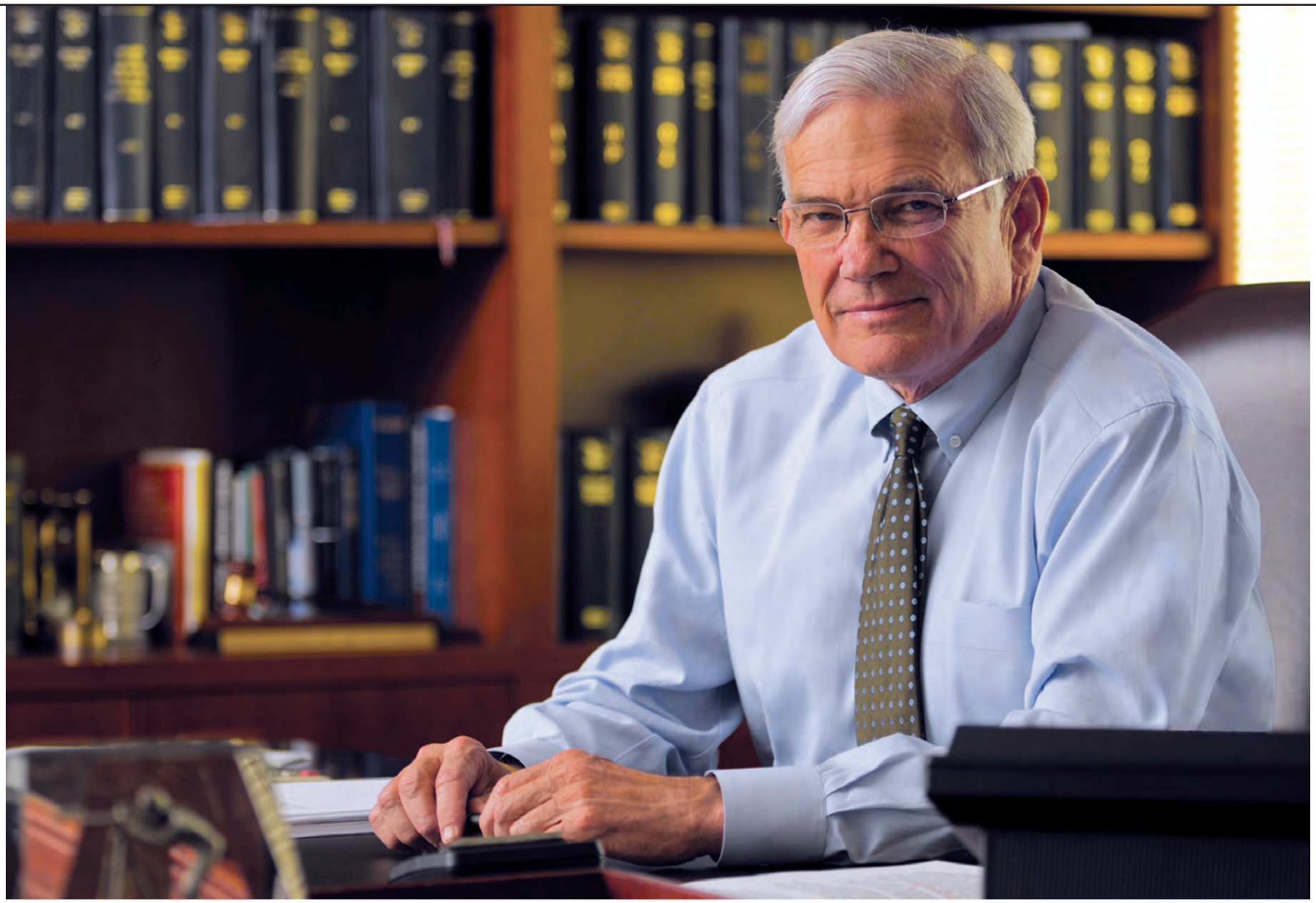
Earlier this month you were honored by the US Coast Guard Foundation at a black tie event in NY City. You have received many honors over your career: in your mind what makes the recognition from the Coast Guard Foundation special or unique?

ABS works with the maritime administrations of more than 125 countries, but the relationship that exists between ABS and the US Government is unique. It is a relationship that stretches back many, many decades, well before the establishment of the agency we now know as the US Coast Guard. It is a relationship that is based on a common mission – promoting the safety of life, property and the natural environment. Our roles are complementary, the respect for each other mutual. Various Memoranda of Understanding codify the specific responsibilities that have been assigned to ABS, but the interaction between the two organizations is much deeper. I do not consider the honor I have received from the Coast Guard Foundation to be one of personal recognition but rather as a tribute to the extraordinary relationship that has been developed between generations of ABS professionals and their counterparts within the Coast Guard.

From a personal and career standpoint, my relationship with the US Coast Guard began when I entered Maine Maritime Academy. After four years of study I obtained my degree and then earned a US Coast Guard License after passing their three-day test. While the BS degree from the Academy was important, it was the USCG License that provided me the opportunity to get the sea going job.

As you reflect on the role of class in today's maritime industry, what do you consider to be the most positive change in the last decade in regards to the way in which class interacts with the maritime industry? What is the most detrimental change and why?

In the more than 40 years I have been at ABS, the role and responsibilities of class have expanded exponentially, moving from a purely engineering and technical base to include management



systems, security audits, and most recently, onboard living conditions through the Maritime Labor Convention. But within just the last decade, I would have to single out the adoption of the Common Structural Rules (CSR) for tankers and bulk carriers as the single biggest advancement in maritime safety and one of the seminal advances in classification since its inception.

To fully understand why I attach so much importance to the adoption of the CSR, you need to think back to 1980s and the emergence of what was then referred to as the short life ship designs that were being promoted by the shipbuilders. Their difficulties were understandable. The industry was mired in a severe downturn, a situation similar to the one shipbuilders are facing once again today. The yards were attempting to control costs by reducing scantlings and increasing the percentage of higher-strength steels. Because some class societies, for purely competitive reasons, chose to accept these designs, there were several generations of ships that were delivered with a reduced ability to sustain the effects of corrosion and fatigue over their service lives. The 2001 decision by ABS, Lloyds Register and DNV to put aside past differences and jointly develop and adopt common structural rules was an incredibly bold initiative. The subsequent decision by the other IACS members to join the project and the issuance of the new Rules put an end to a chapter of classification activity that had threatened its reputation and role as the industry's accepted method of independent self-regulation.

The current project to harmonize the tanker and bulk carrier rules is the final step in what has been a very difficult, time consuming and technically challenging process.

Personally, I would have liked to have gone one step further with the CSR and to agree on one set of software for bulk carriers as well as tankers, but this was not to be. However, ABS and Lloyds Register formed a joint venture company to develop a CSR system for bulk carriers and tankers. My hope is that more class societies will join us in this effort.

On the negative side of the equation, I would have to single out the ongoing effort by the European Equipment Manufacturers Council, through the European Commission (EC), to impose mutual recognition of equipment certification on the societies recognized by the European Union. While class could benefit from re-assessing and modernizing the certification and testing program, the new requirements, as adopted, fail to recognize the realities of the modern, technically sophisticated, highly integrated systems installed on today's ships. They also fail to recognize the individual sovereignty of all flag States to establish their own requirements for the vessels in their registry. And the new requirements ignore the concerns of the underwriters, who believe that, if imposed as adopted, the new regulation will lower overall safety standards. That said, I am hopeful the ongoing discussions between class and the EC will result in a workable compromise that considers safety, not commercial considerations, as the overriding concern.

While the marine industry is no stranger to strong cyclical pulls, it has been profoundly affected by what is turning out to be the most tumultuous and difficult financial crisis of a generation. From where you sit, what long lasting effects will these difficult financial times leave on the industry?

One of the advantages of age is that it provides perspective. Difficult as the current market may be, it is not yet anywhere near the disastrous conditions that all sectors of the maritime industry faced in the late 1970s through the 1980s when we were sending ships to scrapyards right from delivery.

I was actually stationed in Taiwan in the early 80s when most of the scrapping took place. It was a very sad sight to see ship after ship be driven onto the beach and disappear in 6-8 weeks. It was especially disheartening to see ships that I had sailed on being demolished. I hope we will never see conditions like those again. There is an old saying that those who fail to learn from history are doomed to repeat it. And that is the situation we are in at present. As in the past, the strong will survive the inevitable shakeouts.

From a purely class perspective, our challenge is to remain focused on our mission of promoting safety. Reduced or

"Through the Years"

From a Maine Maritime Academy grad; to a rising executive; to the helm of one of the world's most prestigious classification societies, Somerville said the one technology that has most profoundly impacted the business has been is the ability to evaluate ship designs with a complete understanding of the dynamic loads to which they are subjected.

non-existent profit margins for shipowners encourage tight control of the expense side of their balance sheets. This type of focus can result in reduced attention to maintenance and repair. Within our area of responsibility, we must continue to impartially and independently verify the ships in our class continue to meet the standards required by our Rules. Safety is non-negotiable.

It can be generally said that shipowners (at least the ones we speak to) feel overburdened by continually emerging regulation which mandates how they outfit and run their fleets. As regulation, particularly in regard to the environment, continues to tighten and the cost of business continues to rise, what effects, if any, do you predict for the market as a whole?

There is no practical defense against increased regulation because it is spawned by technical advances, greater knowledge and changing societal expectations and standards. The marine industry's challenge, and I include class in that, is to understand these drivers and to work with key legislative and regulatory bodies to help them identify real areas of concern and to develop practical standards that can be reasonably adopted and implemented.

That is easier said than done, particularly in the aftermath of a high profile, if isolated, maritime incident, but we must all recognize that the need to educate the well-intentioned, but technically limited, arms of government is never ending. To this end, there must be total acceptance of the IMO as the focal point of all maritime regulation. Regional and national legislative initiatives are simply impractical when applied to an international industry such as shipping.

Looking at the landscape of challenges facing the operators of vessels, what do you see as the most challenging issue to address and meet in the coming 5 to 10 years?

Shipowners face a wide range of challenges every day. But as a class society, our focus is solely on promoting the safety of life, property and the natural environment. We can sympathize with owners' commercial struggles, but we cannot let these wider issues sidetrack us from our specific role and responsibilities. Within those parameters, I think there is a lot we as the class society can do to assist our clients to operate more efficiently without compromising safety, principally by providing them with the tools they need to better track the condition of their vessels' structure, machinery and equipment. But providing tools like the ABS Hull Inspection and Maintenance Program software is only half the equation. There needs to be a new, much more open approach to the owner-class society relationship with respect to the sharing of the information that is collected. The real efficiencies for the owner come from the ability of the class society to undertake much more focused, less intrusive surveys and inspections that stem from a more complete understanding of the condition and risk profiles of the items subject to survey. We already are seeing some movement on the part of a small number of top flight owners that are beginning to recognize the benefits that can flow from a more open, two-way partnership with their class society of record. I am hopeful that this realization will become more widespread with the passage of time and the gaining of experience.

During the course of your career, what one technology do you think has most profoundly impacted the maritime business and why?

Without a doubt it is the ability to evalu-

There is no practical defense against **increased regulation**

because it is spawned by technical advances, greater knowledge and changing societal expectations and standards. The marine industry's challenge, and I include class in that, is to understand these drivers and to work with key legislative and regulatory bodies to help them identify real areas of concern and to develop practical standards that can be reasonably adopted and implemented.

ate ship designs with a complete understanding of the dynamic loads to which they are subjected in a seaway. It was ABS that pioneered the development and application of the dynamic loading approach in the late 1960s that is now the basis of the common structural rules for tankers and bulk carriers and an essential tool used by every ship designer. Previously, classification rules were purely prescriptive. They were based on the empirical knowledge gained from existing designs and extrapolated to larger, more technically sophisticated ships. It was advances in computing power that made the application of engineering first principles to the evaluation of designs feasible. With time, we have been able to develop a scientific understanding of the principal failure modes of buckling, yielding and fatigue. And we have been able to expand that knowledge to better understand other issues such as parametric rolling and the application of computational fluid dynamics to propulsion. These advances allowed us to more completely understand the causes of the structural failure of bulk carriers back in the 1990s and to introduce new requirements that have saved hundreds of lives. The latest generation of 18,000 teu containerships, currently under construction, would not have been possible without these technical advances. The constantly improving loss statistics and safety record of the world's fleet is, at least in part, attributable to our more complete understanding of the structure of ships over their entire service life based on the dynamic load principles.

From a legislative perspective, what one piece of regulation has had the biggest positive impact on the marine industry and why? What ONE piece of regulation has had the biggest negative impact and why?

It is impossible to single out any one regulatory initiative as my career has spanned such a broad spectrum from the introduction of MARPOL following the Torrey Canyon casualty to the recently adopted Maritime Labor Code, which will greatly improve the lot of the seafarers. We have seen the introduction of double hull tankers, the adoption of the ISM Code, and the current emphasis on a broader range of environmental issues such as ballast water management and control of harmful emissions. All of these advances must be considered holistically. They have been reflective of the industry's knowledge and technical capabilities at the time of their introduction. When necessary, initiatives have been amended or expanded to reflect changes in our knowledge and experience. Ultimately, their effectiveness must be measured by their results. The amount of maritime sourced pollution is a fraction of what it once was. The loss records for every ship type have been improving year on year. And the maritime industry today carries more cargo more safely and with less negative impact on the environment than at any other time in its history. This is a cumulative result arising from the combined efforts of all those who share responsibility within the overall maritime safety regime – flag States, port States, the IMO, class, ship designers and builders, and most importantly of all, shipowners that have responded positively to the evolving expectations of our modern society as embodied by the flow of new regulations.

If you had the power to unilaterally enact one change in the marine industry today, what would that change be and why?

Not surprisingly, my focus is on class rather than the broader maritime industry. In my view, the single most important change that is needed to provide certainty for class in the future is the international adoption of a con-

ABS developed and launched **ABS SafeHull**, a revolutionary suite of structural analysis programs, in the early 1990s.

One advantage of age is that it provides perspective. Difficult as the current market may be, it is not yet anywhere near the disastrous conditions that all sectors of the maritime industry faced in the late '70s through the '80s when we were sending ships to scrapyards right from delivery.

Extending innovation and research development beyond its corporate headquarters in Houston, ABS has established dedicated technology centers in Singapore, Canada, Brazil, China and Korea.

vention that extends the same protection of limited liability to class that currently is enjoyed by every other sector of the industry. The current situation is untenable and grossly unfair. It means that class is constantly exposed to the risk of ruinous law suits stemming from simple negligence in providing a service for which the fee is miniscule compared to the claims made against it. One has only to look at the Prestige case to see what I am talking about. An incident with this vessel resulted in a 9 ½ year legal battle, which the courts at long last have ruled in our favor. I could never explain the pressure and expense that a US $2 billion dollar lawsuit puts on our organization and on me personally. The issue is further complicated when class is acting as a Recognized Organization on behalf of flag States. The vast majority of flag States extend sovereign immunity to the class society when it is acting as the administration's agent. But a small and growing number do not. Once again, this exposes class to potentially unlimited liability when conducting a simple regulatory inspection or ISM-related audit on a vessel in one of these registers. Fortunately, to date, most court rulings have been favorable to class but there is only limited precedence that have been established in any one jurisdiction let alone international agreement on this subject. If class is to continue to act as the independent arbiter of maritime safety standards, it must be granted the same security of protection from unwarranted and unfair unlimited liability that is afforded its partners within the safety regime.

Looking back at your time with ABS, what do you count as your greatest success, or mission accomplished that you find most gratifying? What has been your biggest disappointment and why?

I have always viewed my role within class as a custodian. When I was a field surveyor, I was a custodian of safety. As Chairman of ABS I have been the custodian of a venerable organization that exists because it serves the public interest. In my period as Chairman of IACS, I viewed my role as the custodian of the classification sector with the responsibility to protect and enhance the role and reputation of all of the member societies. In each instance I have attempted to fulfill those responsibilities to the best of my abilities. Any disappointment has been short-lived as, with patience and experience, every problem can be solved and any setback can be overcome. As my time at ABS nears its end, I can take comfort from the fact that the organization is internationally respected, a technical leader, financially sound and recognized as one of the premier classification societies serving the marine and offshore industries. But I take the greatest sense of accomplishment from the knowledge that its future has been entrusted to a new generation of talented, committed individuals at every level, from the executive management team to the engineering and survey staff to those who deliver the essential administrative services that provide the foundation for all our activities. I cannot pretend to know what the future holds other than that change will be a constant. ABS has a history stretching over 150 years. That is a testimony to our ability to adapt to change, to weather adversity, and to provide a service that industry values and relies on. It is my hope that the next 150 years will be equally illustrious, and I am confident that ABS is ready and willing to define maritime classification in the future.

THEN (Left): Shipyard construction and survey in the early 1970 ...

... AND NOW (Below): Shipyard construction and survey today.

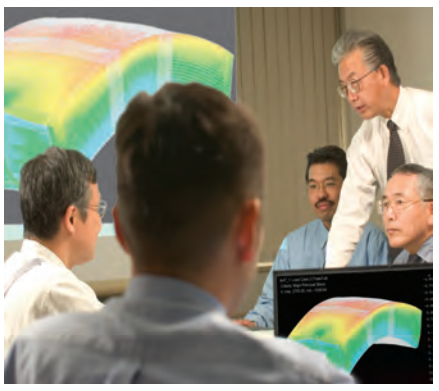
CGF to Honor ABS, Somerville

On Thursday, October 11, 2012, the Coast Guard Foundation will hold its 32nd Annual Salute to the United States Coast Guard in New York City. Hosted by the TODAY show's Al Roker, the event will pay tribute to the brave heroes who risk their lives to save others. The Coast Guard Foundation will honor the American Bureau of Shipping and its chairman, Robert D. Somerville, for unwavering support of its mission for more than 25 years, including most recently its support for the sailing program at the Coast Guard Academy, scholarship programs for enlisted members, and special projects that benefit Coast Guard members and their families across the country. The Weather Channel will also be recognized for the impact it has had highlighting the important and dangerous mission of the Coast Guard, which it features in two TV docu-series, Coast Guard Alaska and Coast Guard Florida, produced by Al Roker Entertainment.

The Coast Guard Foundation is a non-profit organization committed to the education, welfare and morale of all United States Coast Guard members and their families. For over 40 years, the organization has inspired leadership, learning and a proud legacy of service to our nation by supporting the men of women who The event will raise funds to support the Coast Guard Foundation's important projects and programs that seek to improve the lives and performance of Coast Guard members, their families and Coast Guard Academy cadets.

Table reservations and tickets can be purchased for the Coast Guard Foundation's 32nd Annual Salute to the United States Coast Guard by visiting coastguardfoundation.org

Machinery inspection and certification are among the critical roles of classification in maritime safety.



IACS Common Structural Rules for tankers and bulk carriers

BCF & WSF

Security and Operations Control

By Kathleen Gleaves

Across the globe, populated islands and the desire of their inhabitants to travel elsewhere has led to a need for reliable waterborne transportation. Nowhere is an organized water transportation system more highly utilized than in the shared waters of Washington State and British Columbia. The international border zigzags around the Gulf Islands of Canada and the San Juan Islands of the US. Ferry traffic from the US and Canada traveling to these islands cross each other's watery borders daily. All this means that the Washington State Ferry System (WSF) and the British Columbia Ferry System (BCF) must have a cooperative spirit and coordinated systems for things to run smoothly and safely.

BCF has the largest fleet of vehicle ferry vessels with 35 total ranging from their smallest 16-car ferry to the 470-car Super Ferries. WSF has 22 vessels which carry a record 11 million vehicles and 23 million passengers per year. Combined, they are the largest in the world, bar none, and all to serve an area covering only 600 air miles north to south.

Washington State Ferries (WSF) serves 20 communities in Puget Sound and the San Juan Islands from its southernmost route in Tacoma, Washington, north to Sidney, British Columbia on Vancouver Island in Canada. The BC Ferry (BCF) system covers 47 ports of call between Swartz Bay on Vancouver Island to the south and Prince Rupert to the north just short of the border with Alaska. Many of the communities served are accessible only by water or air.

The Canadian ships operate within an established navigational path, referred to as a "Guard Zone". The path is wide in the straits and tight in the Inside Passage. Any deviation from the path sounds an alert in the BCF Operations Control Center. If the Captain hasn't initiated contact with Dispatchers, the ship is called to ensure nothing is amiss. The Captain retains the ability to make navigational changes as needed, but the alarm system keeps Operations staff updated. Each alarm is catalogued and reviewed. A jump in incidents, near misses with other vessels, or continued re-routing can point to a trend that may require more attention or even changes to the route.

Likewise, tracking of incidents such as abandoned bags allows them to see trends that may point to purposeful testing of the security protocols, or something as innocuous as insufficient warning to passengers regarding unattended bags.

While both systems carry a significant number of tourists and vacationers, WSF has a high rate of daily commuter traffic carrying people to downtown Seattle and Tacoma for work. In their communities, the ferries are a key lifeline not just in daily life, but during a crisis as well. In a declared emergency, vessels in both WSF and BCF systems may be used to carry break-bulk cargo, deliver emergency supplies to a stricken region, or serve as mass evacuation vessels if needed. Security officials from WSF are active participants in local emergency planning and exercises.

"With roughly 250 bridges and elevated roadway structures within the City of Seattle, restoring north-south mobility will be critical to the recovery efforts in the region," says Lawrence Eichhorn, Emergency and Security Manager for the City of Seattle Department of Transportation. "As we work to restore damaged roadways, we will rely on other transportation modes such as the Washington State Ferry system to mitigate … mobility impacts by moving responders, service providers, disaster relief resources, and employees … throughout the Puget Sound region."

Security for the WSF is a triad of Ferry System Security staff, Washington State Patrol and the US Coast Guard. As part of the Marine Highways System, the Ferries have oversight from multiple agencies; Washington State Department of Transportation (WSDOT) as well as the US Coast Guard on operational and regulatory issues, with the WSP providing terminal security with their K9 units and uniformed officers riding the vessels on the bridge. Onboard ship, the level of security has increased significantly since 9/11. Surveillance cameras, intrusion alarms, logged entries and more are transmitted to security personnel in real-time from every ship. Details are tightly held and require Security Clearances to even work on the equipment.

BC Ferries has a new $8.5M Operations and Security Center located in downtown Victoria. In a crisis, the two full-time Ops stations can be augmented with a third position if circumstances warrant. In addition, their Emergency Operations Center (EOC) is connected to the Operations Room and would be activated in a full Incident Command System (ICS) structure in a crisis. Because Victoria and Seattle are located in earthquake zones, BCF backs up their operation with a mirrored hot-site located in a building built for a 9.5 earthquake. Staff can relocate to that building in approximately 10 minutes from their current location if necessary. WSF can re-locate to the City of Seattle's EOC, also built to the highest earthquake standards.

Each has only two dispatch watch standers on duty during heavy operational hours, and WSF reduces that to a single dispatcher during quieter hours. Technology, Automated Information System (AIS), Vessel Tracking System (VTS) and webcam networks help keep track of vessels, emergencies, disruptions and threats - a key reason they can operate with such limited crews. At BC Ferries, vessel tracking screens powered by MS Virtual Earth and AIS, display ship locations on a large satellite map in the Ops Center. Dispatchers can toggle between 700 live video camera feeds that monitor facilities, terminal traffic, waiting lines, and more. Much of this information and some camera views are shared freely with the public. When the onboard ship cameras are integrated into the system in near future, the number of camera feeds will jump to over 1100.

Integrating all of the incoming data into a coherent picture was the brainchild of Gregg Clackson, Director of Operations and Security. "I knew what I wanted it to look like and what had to go into the picture," says Clackson. He contracted Cameleon software integrators to fulfill the vision, though he's quick to say it wasn't all his ideas. He elicited support for the expanded use of automation with a promise to captains and dispatchers alike that the new program would simplify their lives and significantly reduce the paperwork involved in reporting an incident. "When they heard that," says Clackson, "they asked how soon it could be done." Today, the Incident Commander, usually the Captain, makes one phone call to the Ops Center to set the response process in motion. From that point on, the Incident Commander speaks only to the Ops Center. He no longer has to field dozens of endless repetitive phone calls. Ops personnel initiate the automated reporting process that includes notification alerts to pre-identified staff. Public Affairs then activates their Social Media process to notify customers of any system problems that may influence their trip planning. BC Ferries' Twitter account boasts over 13,000 followers.

Since the simplified reporting system was introduced, reported incidents have jumped significantly. According to Clackson, this is a result of under-reporting in the old system, not an actual increase in incidents. Today, trackable results give Security personnel a realistic view of events that allows them to better prepare and plan for future events.

Despite the differences in the size and

(Photo Credit: Kathleen Gleaves)

BC Ferries Operations Center with dashboard displaying output from multiple sources all integrated into a cohesive picture that allows two watch-standers to manage the entire system.

(Photo Credit: Kathleen Gleaves)

Washington State Ferry Kitsap usually runs the route between Seattle on the mainland and Bremerton on the Olympic Peninsula.

scope of their Security and Operations Centers, both agencies handle an impressive range of incidents over the course of a year. BCF reports about 6000 incidents per year, mostly stolen bags or other customer issues, but they also handle numerous larger issues; accidents with injuries, rendering assistance at sea – sometimes performing active rescues, other times acting as a windbreak while Coast Guard assists vessels in heavy seas.

In 2011, BCF vessels responded to 21 marine emergencies and 58 medical emergencies. WSF attended to over 1500 medical priority loads in 2011. Hospital care and emergency medical events cannot be handled in many of the island communities and the ferries frequently answer emergency calls to transport ambulances and patients to critical care facilities on the mainland. During any emergency response, Ops Center Dispatchers manage the overall event, though individual Captains remain in control of their ships.

If the incident size makes it impossible for dispatchers to manage the incident while simultaneously keeping the general operation going, an EOC may be activated in an adjoining room. Says Christopher Kennedy, WSF Fleet/Facility Security Officer, "We want to keep response personnel close to our Dispatch stations, but removed enough to not interfere with their jobs." In a larger scale event, command would likely shift to the WSP EOC with liaisons sent to the USCG's Joint Harbor Operations Center (JHOC). Well-trained staff and top-notch technology combine to ensure that these two marine transportation giants continue to operate safely and securely in quiet times, yet are able to respond quickly to emergencies of all kinds.

Finite Element Solutions

For the Global Offshore Market

By Spiro J. Pahos

The international marine industry faces unprecedented challenges today. Energy costs are rising, as are concerns about reduced pollutant emissions, water ballast treatment and other environmental impacts. A tight credit market and cash-strapped operators mean that engineers must deliver designs with a high degree of fidelity and reliability while reducing the development cycle. Extreme weather, hazardous cargoes and other challenging operating conditions present the need to continually innovate, implement new materials and deliver analyses confidently.

How can naval architects overcome these challenges? One answer lies in leveraging the power of engineering simulation in an integrated environment with broad capabilities.

For more than 40 years, ANSYS' robust capabilities allow engineers to conduct design analyses and optimization studies that reflect the most demanding environments – ultimately helping naval architects to design new hulls, appendages, sails, propellers, platforms, and other equipment.

By using finite element (FE) technology, engineers can quickly arrive at groundbreaking innovations without investing time and money in physical prototypes. Engineers can subject their designs to extreme temperatures, waves, wind loading, cargo weights and other real-world conditions to assess their response. Not only can engineers verify and introduce their ideas faster, but they can predict how their designs will perform under actual operating conditions. Engineering resources are amplified, as design teams these days rely on advanced numerical modeling to automate and streamline the design process.

Marine and offshore engineers face special challenges as their designs must withstand a range of operational, transient, accidental and dynamic loads.

Improved Support for Large Simulations

Geometrically modeling the complexities of an offshore structure is a numerically large and compound task. So naval architects often rely on high-performance computing (HPC) environments to conduct these simulations.

Improved performance for large models is a primary focus for ANSYS to reduce product development cycle times and lost productivity. The technology is designed to deliver maximum speed and efficiency across multiple computing processors. ANSYS customers have leveraged HPC environments and enhanced technologies to achieve significant reductions in their simulation runtimes, particularly when running distributed tasks across multiple processors. Fluid–structure interaction problems that rely on computational fluid dynamics (CFD) studies are now easier to set up, solve and post-process with ANSYS CFX and ANSYS Fluent. In ANSYS Workbench, popular CFD solution methods share a common workflow, where interaction with other products is enabled through controlled workflows. This reduces the learning curve for engineers who want to use both CFD technology and structural engineering solutions.

Figure 1: ANSYS DesignXplorer helps engineers to weigh a number of design variables before arriving at an optimal solution.

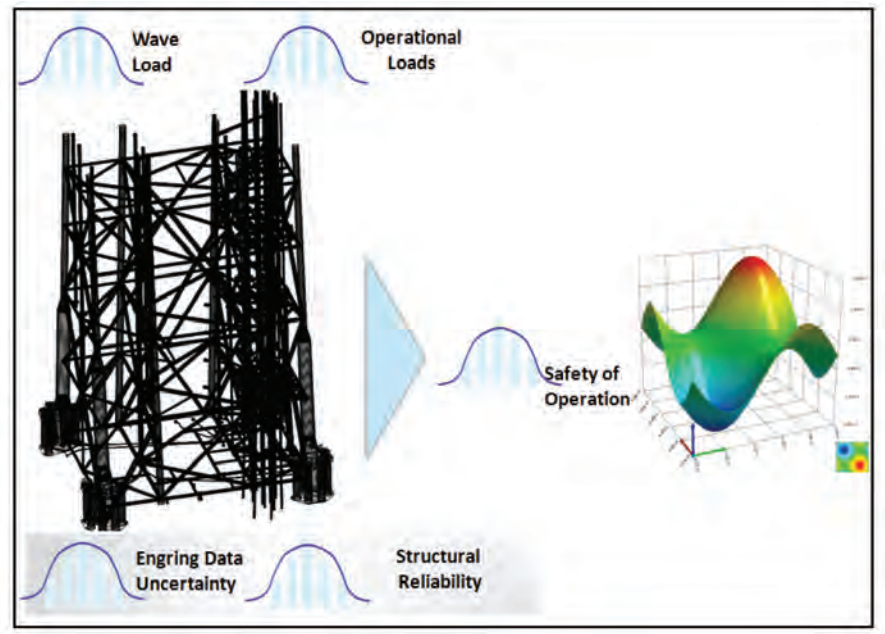


Figure 2:
Post-processing piles in Workbench (left) and in the traditional ANSYS interface (right)

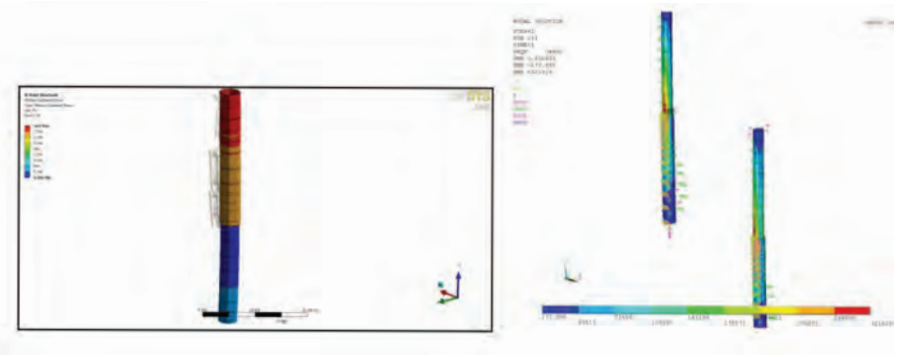
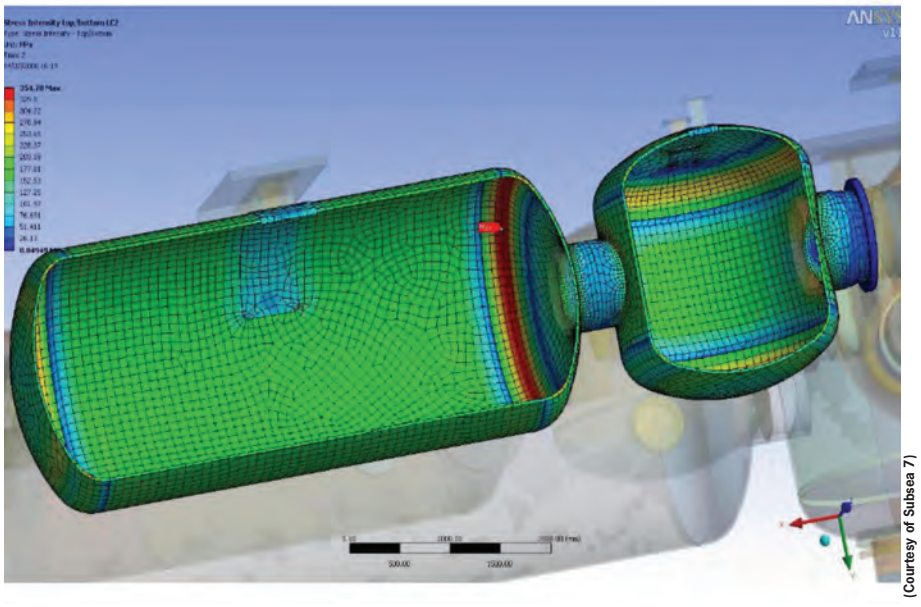


Figure 3: Stress intensity results of the decompression chamber



(Courtesy of Subsea 7)

Customized Capabilities

While many technology enhancements benefit all ANSYS users, improving solvers targeted specifically at marine applications, including industry-leading solutions ANSYS Aqwa and ANSYS Asas, has been a top priority.

Both Aqwa and Asas have benefited from major changes in the last few years, with the intention to add even more capabilities in the future. Recent enhancements include more user-friendly modeling, the ability to import geometries from third-party CAD packages, trouble-free design parameterization, efficient load definition and the option to choose multiple wave theories.

In addition, ANSYS DesignXplorer offers improved capabilities for conducting optimization studies. A new direct optimization system can gather information via data links to other systems or components that contain design-point data. This new system supports earlier decision-making, decreasing overall development cycle and eliminating a lengthy trial-and-error period. Engineers can easily visualize the tradeoffs among design variables and make choices that support the desired output. **Figure 1** demonstrates a number of design variables considered in the design of a jacket structure.

Design assessment in Workbench now includes code-checking capabilities with Beamcheck and Fatjack. Design Assess-

ment supports code checking, fatigue analysis and post-processing of user-defined results. Post-processing speed has been significantly improved, decreasing from minutes to seconds. Results can now be obtained and presented in a single result object, based on multiple intervals, wave cases or spectra.

The powerful Splinter technology from Asas has migrated into Workbench to support simulation of soil–pile interaction of monopiles or pile groups. New built-in macros enable soil–pile interaction analysis via the use of command objects. The analysis can be solved in the traditional ANSYS interface if the engineer needs to take a close look at the piles themselves. **Figure 2** shows a soil–pile interaction model post-processed in Workbench Mechanical (left), and in the traditional ANSYS interface (right).

The recent addition of the intuitive Python programming language enables engineers to create user-defined graphical user interfaces (GUIs) in Workbench that support their pre- and post-processing needs. This technology can be accessed via the ANSYS Customization Toolkit (ACT), which supports a customized interface for interactive input, definition of restrictions and constraints, rapid validity checks, and decision-making support at the application level. For marine engineering studies, ANSYS Mechanical now includes built-in rotordynamics capabilities that reflect a more sophisticated way to study rotating machinery. The process for setting up analyses and applying loads has been streamlined and shortened. A GUI is used to define bearing properties and loads. When used with parameterization tools in DesignModeler, in conjunction with DesignXplorer, ANSYS solutions can shave time off the development process. ANSYS has served the marine industry for decades. The experience of thousands of global users has been incorporated into solutions specifically tailored for the marine industry. **Figure 3** depicts the FE results of a decompression chamber in a 24-man saturation diving system onboard a dive support vessel. The design had to meet certain stress criteria from a pressure- vessel design code. In another application, **Figure 4** shows a contour plot of stresses of the swivel and riser hang-off platforms housed in the inner turret system in a FPSO vessel. The design had to meet stress criteria against class rules.

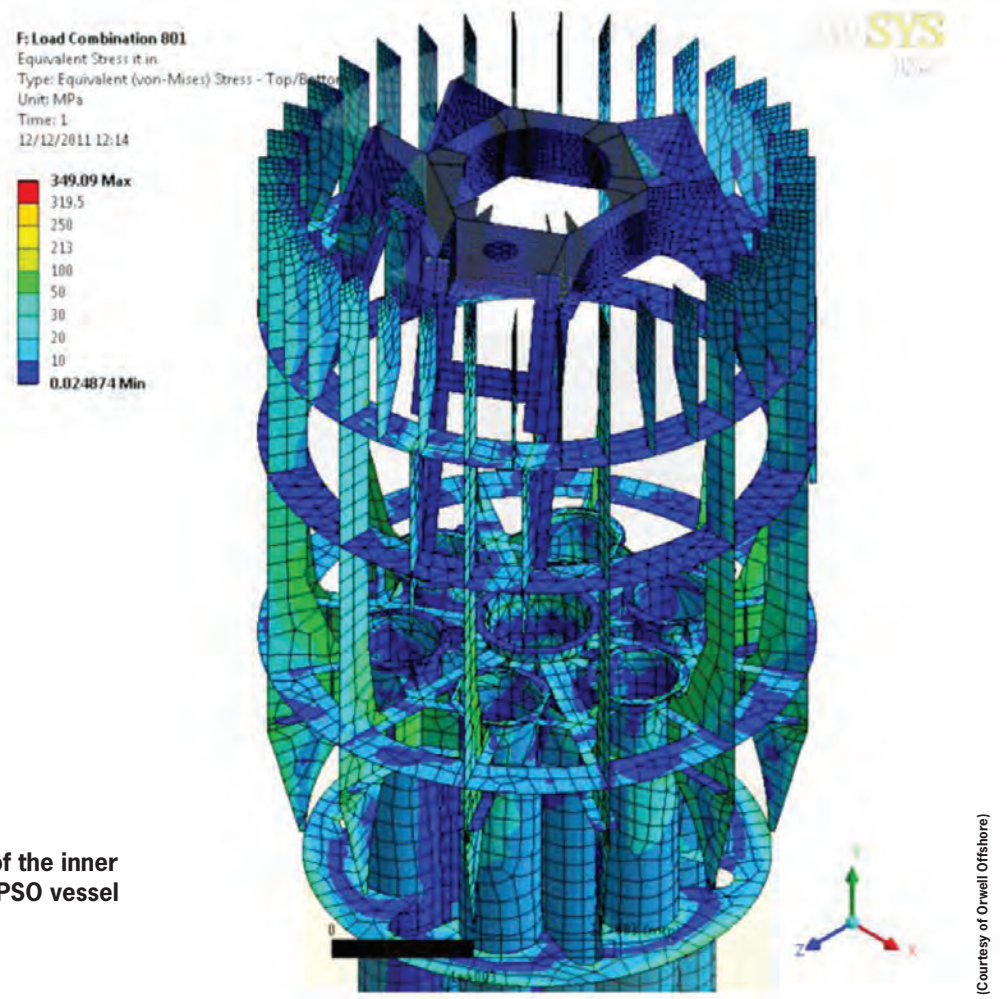


Figure 4:
Stress plot of the inner turret in a FPSO vessel

(Courtesy of Orwell Offshore)

Charting a Confident Course

A professional engineer's world continues to change with ever-increasing demands for faster, larger, yet accurate FE solutions. Simulation technology can deliver answers from conception to decommissioning with integrity and performance. Few systems face the rigors of marine structures. With four decades of experience, ANSYS can confidently provide the tools to analyze your assets with a comprehensive range of technologies.

ANSYS is committed to making continuous improvements that reflect new engineering challenges. Whatever the future brings, ANSYS can help engineers chart a confident course toward market leadership.

About the Author
Spiro J. Pahos is a technical services engineer at the UK office of ANSYS, Inc., one of the world's biggest CAE providers to the engineering industry. He received his M.Eng. and Ph.D. from the Universities of Glasgow & Strathclyde. Email: **spiro.pahos@ansys.com**

Virtual Towing Tank

State-of-the-Art and Future Trends

By Boris Bucan & Marta PedišicBuca, BrodarskiInstitut, Zagreb, Croatia; Jaehyoung Jun, CD-adapco, Seoul, Korea; and MilovanPeric, CD-adapco, Nürnberg, Germany

The use of computers to solve hydrodynamics problems in shipbuilding started in early days of scientific computing – as early as in aerodynamics and aerospace. Due to limited computing resources at that time, potential flow model was used in both aero- and hydrodynamics. However, while simulations based on Euler equations, Reynolds-averaged Navier-Stokes equations (RANSE) and most recently partially resolved Navier-Stokes equations (so-called "large-eddy" – LES – or "detached-eddy" – DES – simulations) have become established tools in aerodynamics, ship hydrodynamics is still predominantly simulated using methods based on potential flow. There are good reasons for this:

- **The presence of free surface with its arbitrary deformation and breaking makes the simulation difficult and commercial software that can perform coupled simulation of flow and motion of floating bodies has only recently become available.**

- **The computational effort for simulations based on Navier-Stokes equations is several orders of magnitude larger than for methods based on potential theory.**

Methods based on RANSE have been used in research institutions for marine applications for quite a while, but extensive use of such methods only recently become a commonplace. In addition to the need to account for flow features which potential flow model does not cover (turbulence, viscous effects, breaking waves etc.), the availability of inexpensive computer clusters and easy-to-use commercial software has greatly facilitated this trend. Also, new generations of engineers are being educated in computational fluid dynamics (CFD) and are thus eager to adopt these new simulation methods. Regular conferences and workshops dedicated to the use of CFD in marine engineering are also influencing this trend (e.g. NuTTS – Numerical Towing Tank Symposium, held every year and for the 15th time in 2012).

Although some people claim that simulations will replace experiments completely, we believe this will not happen any time soon. One reason is that CFD still uses models that need to be validated for each new application area (like turbulence and two-phase flow or phase change models). Also, some simulations – while in principle possible – would take too long to be performed with sufficient accuracy so experiments are the more efficient approach (like for maneuvering and sea-keeping problems). The combination of the two approaches is the best way towards optimum products: simulation can be used in early design stages and provides a wealth of information that helps understand the physics of the problem, while well-designed and instrumented experiments are needed to validate CFD tools.

However, there are many problems that can be solved today with CFD very efficiently with a satisfactory accuracy. Below are the elow results of several recent validation studies, before discussing industrial applications and future trends.

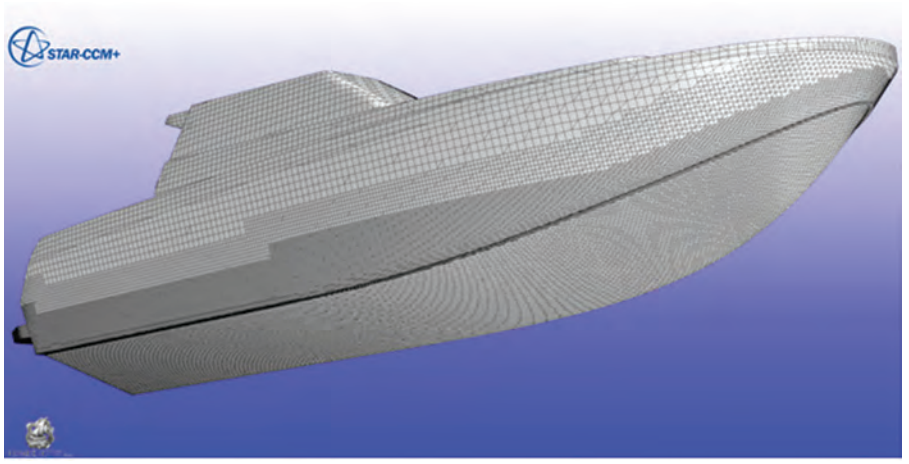
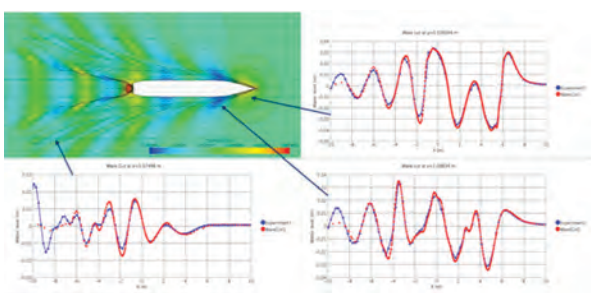


Fig. 5:Computational grid on the surface of a patrol boat.

State-of-the-Art in Commercial CFD

All results presented here were obtained using new-generation software STAR-CCM+ from CD-adapco. It is based on finite-volume method and can use control volumes (CVs) of arbitrary polyhedral shape. This allows handling of complex geometries and changes in CV-topology since there are no limitations to the number of faces one CV can have. A range of turbulence models, an interface-capturing scheme for free surfaces, a cavitation model, moving and overlapping grids, sliding surfaces and a dynamic fluid-body interaction (DFBI) model are also available. Compressibility effects in both liquid and gas phase are accounted for. The software also contains a CAD-modeler and repair tools so that the body of flow domain can easily be obtained even if the ship is defined by the shell of hull surface. The computational grid defining CVs is created fully automatically and the user can prescribe the size of control volumes using line, surface and volume control parameters. The whole process from CAD to solution can easily be automated and saved in templates so that non-experts can perform parametric studies once the simulation is set up by a knowledgeable engineer. This also facilitates the use of optimization software (like FRIENDSHIP-Framework from Germanischer Lloyd) since it can automatically vary geometry and other parameters and perform CFD-simulations by executing tem-

Fig. 1: Predicted wave pattern around KCS-hull at Froude-number 0.26 and comparison between predicted (red) and measured (blue) wave profiles along three longitudinal cuts.



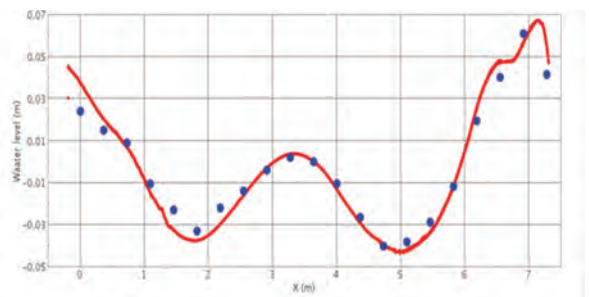
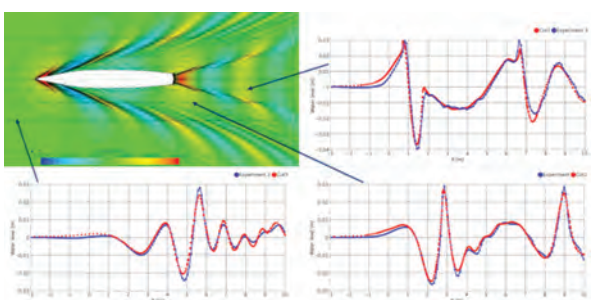


Fig. 2: Predicted profile of wetted hull surface for the KCS at Froude-number 0.26: simulation (red line) and experiment (blue dots).

Fig. 3: Predicted wave pattern around DTMB-hull at Froude-number 0.28 and comparison between predicted (red) and measured (blue) wave profiles along three longitudinal cuts.



plates with replaced geometry. More information about CFD that applies to most commercial software can be found in Ferziger and Peric (2003, 2008).

There are other software tools on the market that cover most of the above-named features to a varying level of detail and a new user is advised to check all options to find the best tool for particular purpose.

Validation of CFD for Marine Applications

The authors of this article were involved in several recent validation studies. Results from prediction of resistance, trim and sinkage of KCS-hull were presented at the Gothenburg-workshop in 2010 and will not be repeated in detail here (see Enger et al, 2010).We only note that the trend with varying Froude-number was well predicted for all three quantities, and that systematic grid refinement was used to demonstrate convergence towards a grid-independent solution. In particular, the resistance was predicted within 1% of the measured value on the finest grids (comprising around 3 million CVs) for all three hulls investigated at the workshop. Here only the results for wave profiles are given which were not presented at the workshop. Results from other contributors can be seen in Workshop Proceedings (Larson et al, 2010).

Figure 1 shows predicted wave pattern around KCS-hull (KRISO Container Ship) at Froude-number 0.26 (fixed position) and comparison between predicted and measured wave profiles along three longitudinal cuts. The simulation is performed in model scale with hull length of 7.2786 m, draft of 0.34177 m (230 m and 10.8 m in full size, respectively) and speed of 2.196 m/s. The solution domain extended to about 1.5 hull lengths behind, below and sideways and around 1 hull length above and ahead of ship. The grid had around 2 million control volumes and the computing time was about 5 hours on 8 processors. In these simulations wave damping with an exponential growth of resistance to vertical fluid motion was applied within a zone 7 m wide along inlet, side and outletboundary.

Figure 2 shows the profile of wetted hull surface. The agreement between experiment and simulation is rather good. This information and the distribution of pressure and shear stress along hull surface which simulation also provides – in addition to velocity distribution around the hull – allows engineers to judge performance of different hulls in optimization studies. **Figure 3** shows the wave pattern and profiles for the DTMB-hull (David Taylor Model Basin, Hull No. 5415) at Froude-number 0.28, fixed position with specified sinkage and trim. The model scale was used again for better comparison with experiments, with hull length being 5.72 m and draft 0.2477 m (142 m and 6.15 m in full size, respectively) and speed of 2.097 m/s. The size of solution domain and wave damping zone relative to hull length as well as the number of grid points and computing time were similar to those for the KCS hull. The agreement between experiment and simulation is as satisfactory for this hull type as for the container vessel. Accurate prediction of free surface deformation (wetted hull surface, waves) is

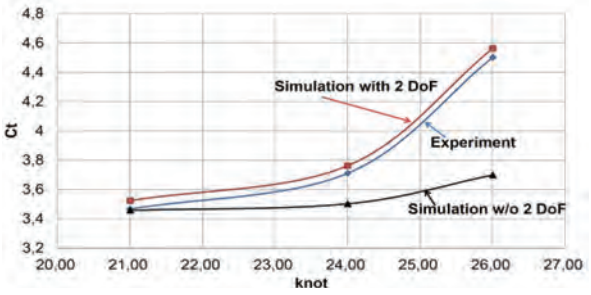


Fig. 4: Prediction of resistance of KCS-hull in fixed position and with free trim and sinkage, compared with experimental data for the free condition.

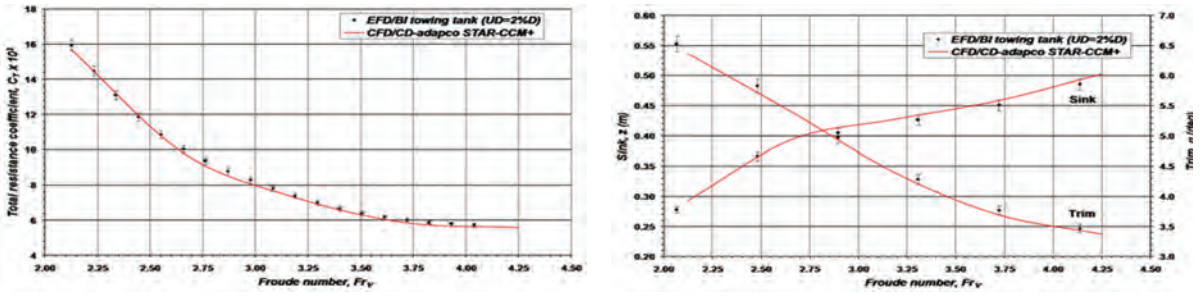


Fig. 7 & Fig. 8: Comparison of predicted total resistance (upper) and trim and sinkage (lower) for the patrol boat over a range of speeds.

important when Froude-number is larger than about 0.1 (depending on hull shape); for lower Froude-numbers, the effect of waves on resistance is small (1% to 2%) and one can replace free surface with a slip wall. Taking into account trim and sinkage is essential for larger Froude-numbers, while at smaller values one can compute the flow for fixed hull position.

Figure 4 shows results of a validation study for KCS-hull at different speeds. Experiments were conducted with free trim and sinkage, while simulations were performed for both fixed and free condition at three Froude-numbers. The simulation results are within 2% of experimental data and reproduce the trend very well (always slightly over-predicting the resistance) when trim and sinkage are accounted for, while the discrepancy is too large when these are neglected and the speed is high (18% at 26 knots).

At BrodarskiInstitut in Zagreb, detailed validation studies were conducted for two vessels: a tanker and a patrol boat. Results for the tanker were published earlier and will not be reproduced here in detail (see Bucan et al, 2008). We only note that the predicted resistance agreed with experimental data to within 2% for both design and ballast condition. The wave patterns and the wake field were also in good agreement between simulation and experiment. Here the results for the patrol boat will be presented, which were not previously published.

Figure 5 shows the hull shape and the grid on hull surface; the total number of control volumes was around 3.4 million. **Figure 6** shows the predicted wave pattern and the convergence of monitored quantities (resistance force, trim and sinkage) during computation. The flow field is always initialized with the vessel speed (reference frame is moving with vessel) and the resulting drag force is initially very large; for this reason, the hull is held in fixed position for some time (here 2 s) before heave and pitching motions are allowed. With high-speed vessels of this kind, the steady state is reached after about 10 s. The Froude-number was varied between 2.1 and 4.25 and a comparison of measured and predicted resistance, trim and sinkage is showed in **Figure 7**. A very good agreement (within measurement uncertainty) is obtained in the whole range of speeds.

The conclusion from these validation studies is that the results from virtual towing tank are reliable for a wide range of vessel types (tankers, container ships, military vessels, high-speed boats). In other studies good results were also reported for tug boats, supply vessels and other floating structures. The simulation can therefore be used as a design and optimization tool. For preliminary studies, one can use relatively coarse grids (around half a million cells, with computing times less than an hour using 8 processors). As the optimum is narrowed down, a set of grids of different fineness (with average grid size being reduced by a factor 1.5 to 2 from one grid to another) should be used to increase the confidence in solution and estimate the level of discretization errors.

Application of Flow Simulation in Shipbuilding

Simulation is nowadays routinely used in larger shipyards, ship model basins and classification societies for predicting resistance, trim and sinkage. In addition, it is also used to predict wind forces, distribution of exhaust gases (both for underwater and stack exhausts), sloshing in tanks, ballast water management, heat transfer problems etc.

A growing application area is the prediction of self-propulsion. Manufacturers of ship propulsion systems often carry out such simulations for the whole system (vessel with propeller and all other appendages), since optimization of components alone (e.g. propeller in free stream) does not guarantee an optimal performance of the complete system. Positive experience in this field has been reported by Voith Turbo Schneider Propulsion (Palm et al, 2011) and FORCE Technology (Simonsen and Nielsen, 2011). An example of such an investigation conducted by CD-adapco in Korea is here presented.

The hull with computed wave pattern is shown in **Fig.8; Fig. 9** shows detail of grid around propeller and rudder. The propeller has 5 blades and is embedded in a cylindrical region which can rotate with propeller; the grid then slides along the interface to the grid that is attached to hull. An alternative approach – which is now in its latest version also supported by the STAR-CCM+ software – is to simply overlap the grid attached to propeller over the grid attached to hull. The motion of hull is automatically superposed with the rotation of the propeller. For both regions, trimmed Cartesian grids with local refinement and prism layers along walls were used. For the propeller region, one can also use polyhedral grids; for the grid around hull, trimmed Cartesian grid is more suitable since one can then selectively refine cells in each direction for a better resolution of free surface without

Fig. 6: Predicted floating position of the patrol boat, generated waves and convergence of total resistance (blue), sinkage (red) and trim (green) towards a steady state.

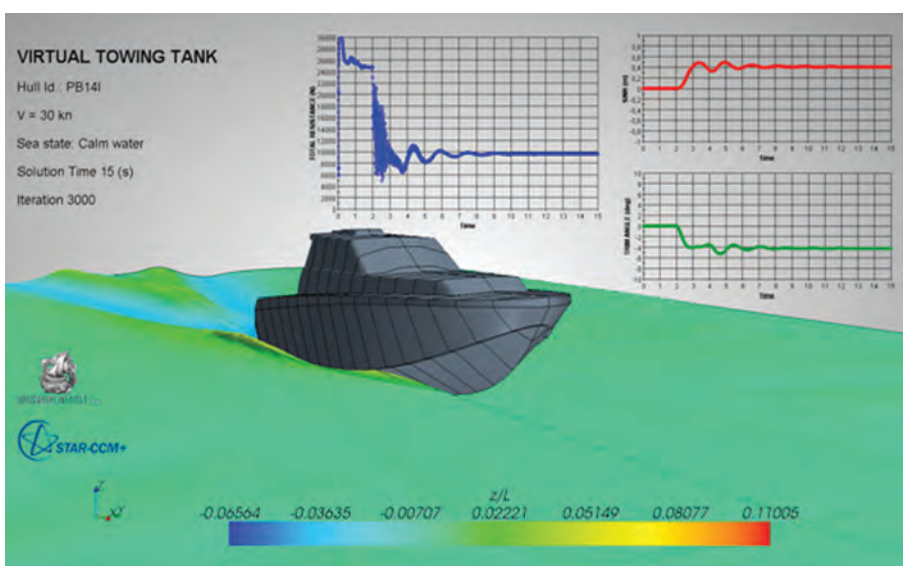
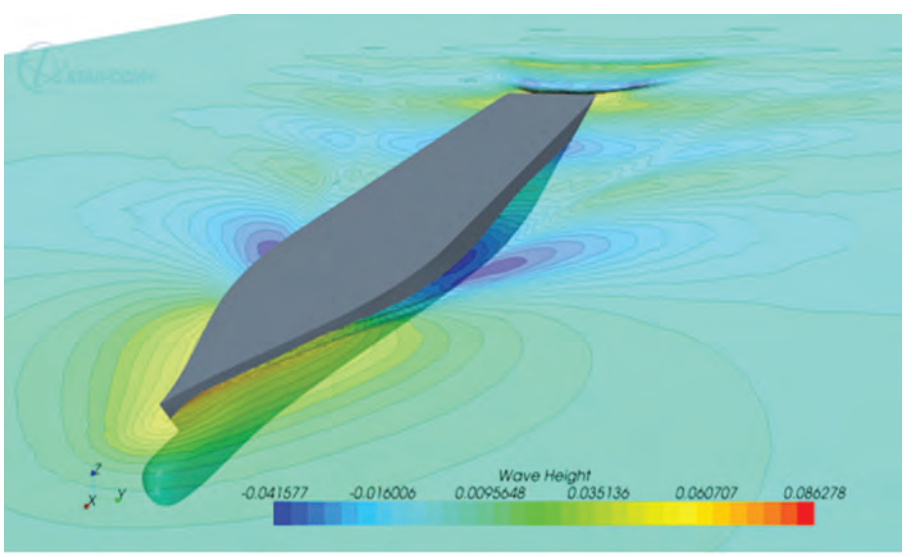


Fig. 8: KCS hull and predicted wave pattern during self-propulsion tests at Froude-number 0.26.



affecting grid quality. The total number of CVs in this study was around 3 million. The design vessel speed was 24 knots, corresponding to Froude-number of 0.26; simulation was conducted in model scale for better comparison with experiments and the hull length was 7.28 m. The computation was performed in a frame of reference attached to the hull, so water flows toward hull with 2.196 m/s. The hull is initially kept in fixed position until the flow has adapted from initially constant speed and flat surface to the presence of ship and waves around it. During the first 70s, a rotating frame of reference was assigned to the propeller region so it was not rotating during this time and the time step corresponded to 100° rotation. For the next 30s, the propeller region is rotating with the design speed of 9.5 rps, but the large time step is kept. After that, the time step was reduced to correspond to 10 degree rotation for a period of six propeller rotations. Finally, for two more propeller rotations, the time step was further reduced by a factor of 10 (rotation by 1 degree in one time step). This procedure was developed to minimize the computing effort until a balance between thrust, resistance and towing force is achieved. The computing effort for reaching the quasi-steady state was still 2 days using 16 processors. The predicted velocity wake is shown in **Fig.11**; it agrees qualitatively well with iso-lines from experimental data.

The computation with the design propeller rotation rate of 9.5 rps resulted in a larger residual force than in experiment, cf. Fig. 11 (7.6% discrepancy). The computation was then continued for several propeller rotations with a larger rotation speed (9.65 rps), which then resulted in a smaller residual force (3.2% discrepancy). The computing cost to obtain this result is about 25% of the effort required for the first solution. For better interpolation accuracy, another rotation rate was computed (9.575 rps), which enabled estimation of self-propulsion point at 9.612 rps.

Future Trends

Powerful computers with multi-core processors and tens of gigabytes of memory have become affordable for everyone. Even small companies can nowadays afford a cluster with a considerable computing power. With an adequate software and hardware resources engineers can already now perform simulations of water and air flow around floating vessels taking all geometrical details into account. This allows an easier product design and optimization and a reduction in the number of required experiments. With an ever increasing power of modern computers, finer grids, smaller time steps and more sophisticated turbulence models (like large-eddy simulation) will be used to study performance of complete systems. With overset grids it will be possible to also study motion of vessels in extreme waves, slamming effects, interaction of two or more vessels etc. By coupling CFD-methods for RANSE with methods based on potential theory, in which the RANSE-approach is used in the vessel vicinity and potential theory further away, one will be able to follow wave propagation over larger distances. We ex-

pect that optimization software like FRIENDSHIP-Framework will be extensively used in the future to help engineers in various optimization tasks, especially when it comes to unconventional designs, energy-saving devices etc. Also, coupling of CFD-tools to finite-element codes for structural analysis is already becoming a commonplace, allowing for analysis of complex fluid-structure interaction problems. Taking compressibility of both air and water into accountand using fine spatial grids and small time steps will eventually lead to prediction of hydro- and vibro-acoustic effects. It is also expected that research and education in the field of simulation in marine engineering will continue to be supported by both industry and governments, since even the best tools are only useful in hands of capable users.

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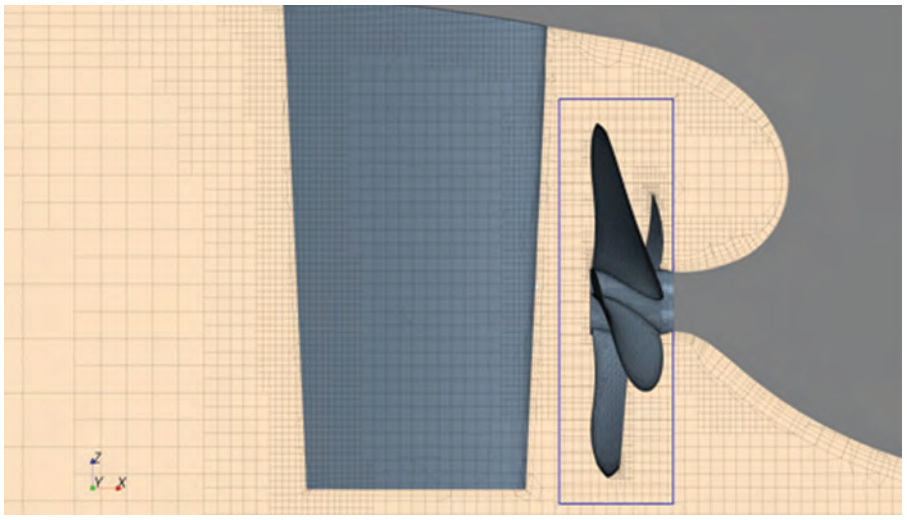


Fig. 9:
Computational grid around propeller and rudder (highlighted is the boundary of the region rotating with propeller).

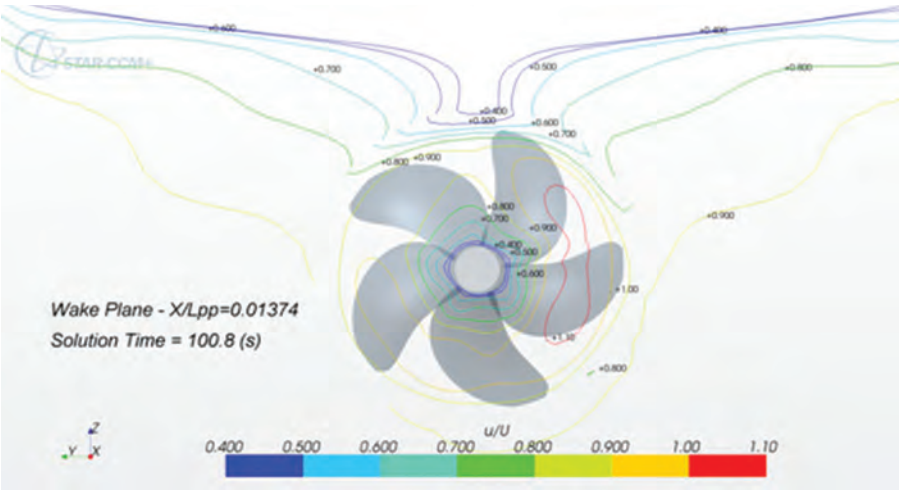


Fig. 10:
Predicted velocity field in the propeller wake.

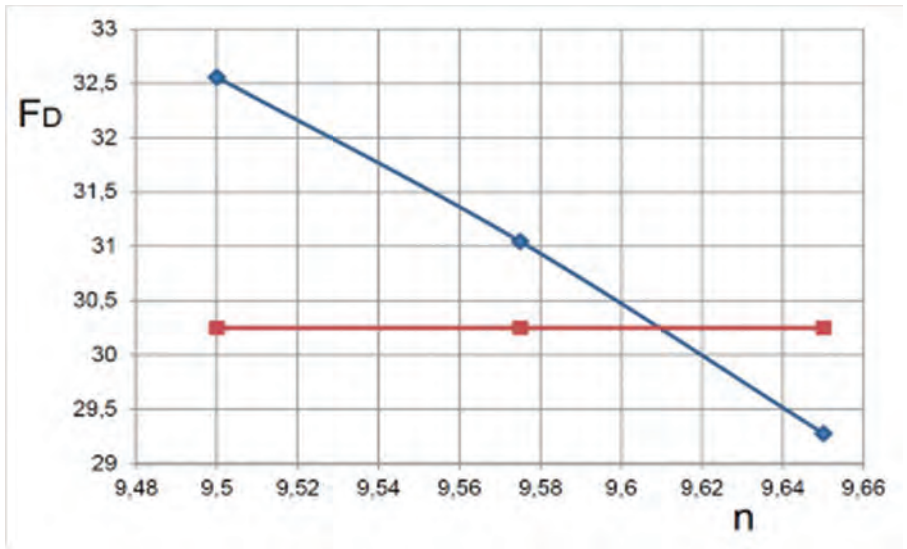


Fig. 11:
Determination of self-propulsion point by interpolation.

Furuno Launches New ECDIS

While there are countless new product, system and service launches at major trade fairs such as the recently concluded SMM in Hamburg, Germany, when a company with the stature of Furuno unveils a system, it is a show within the show.

Furuno, a $1 billion business with 80% coming from the marine sector and 2500 employees globally in the marine sector, introduced its new ECDIS models FMD-3200 and FMD-3300, saying they are ready for launch during the autumn 2012.

The FMD-3200, with a 19-in. LCD, and the FMD-3300, with a 23.1-in. LCD, are designed to deliver enhancements in terms of user interface as well as functionality. The new ECDIS are designed for newbuilds and retrofits, to fulfill ECDIS mandatory carriage that has been phasing in from July 2012.

"A big emphasis of this project was to make it (the new ECDIS models) easy to use and understand," said Bill Haynes, Deep Sea Product Manager, Furuno. Importantly, all hardware for the system is Furuno-built, and features of the new system incorporate insights and advice from real navigators. For example, the InstantAccess Bar.

Key to the new system is a streamlined chart management scheme designed to provide easy chart management independent of the chart providers.

The new ECDIS is compatible with Jeppesen Dynamic Licensing and it supports the Admiralty Information Overlay (AIO).

Focus on the Man/Machine Interface

The new units were created to provide the operator with quick access to the tasks and functions to be performed in the midst of vessel operation. The new ECDIS employs intelligently arranged Graphic User Interface elements: Status Bar and InstantAccess Bar, that deliver task-based operation scheme to give the operator direct access to necessary operational procedure. The Status Bar at the top of the screen provides operating status, including modes of operation and presentation. The InstantAccess Bar on the left edge of the screen provides quick access to functions available in each of the ECDIS operating modes. The contents of the InstantAccess Bar change according to the operating modes selected on the Status Bar. This combination of the Status Bar and InstantAccess Bar covers virtually the entire operation. The new ECDIS uses advanced chart-drawing engine that delivers instantaneous chart redraw with the seamless zooming and panning, hence making the ECDIS operation stress-free.

"A big emphasis of this project was to make it (the new ECDIS models) easy to use and understand,"
Bill Haynes, Deep Sea Product Manager, Furuno.

Moreover, its operation philosophy is based upon the same logic as the control scheme of a mouse that people are accustomed to in using a PC, and all operations can be controlled with the use of trackball of the control unit by means of left-clicking, right-clicking and using a thumbwheel.

www.furunousa.com

CAT Debuts C175-16 in Germany

On the occasion of SMM 2012, Caterpillar Marine launched new diesel, dual fuel and gas engines.

C175-16
Marine Propulsion Ratings

Rating	Speed (rpm)	Power (bkW)
A	1600	2001
A	1600	2082
B	1600	2168
A	1800	2239
A	1800	2428
B	1800	2550

Engine Dimensions	
Length, overall	4515 mm (177.8 in)
Width, overall	1857 mm (73.1 in)
Height, overall	2478 mm (97.6 in)
Weight (approx.)	13 041 kg (28,750 lb)
Bore	175 mm (6.9 in)
Stroke	220 mm (8.6 in)
Displacement	84.67 L (5166.88 cu. in.)
Rated Speed	1600 to 1800 rpm
Aspiration	Turbocharged-Aftercooled
Cooling	Jacket Water & SCAC

Refill Capacity	
Lube Oil System	907 L (240 gal)
Cooling System	303.5 L (80.2 gal)
Fuel System	Common Rail
Oil Change Interval	1000 hrs
Rotation (from flywheel end)	Counterclockwise
Flywheel and flywheel housing	SAE No. 00
Flywheel Teeth	183
Engine Management System	A4 ECU
Configuration	V-16, 4-Stroke-Cycle-Diesel

The C175-16 from Caterpillar is the first Cat engine with core ACERT Technology, designed and built from the ground up, according to Robert Hallengren, Marine Products Director, Caterpillar Marine Power Systems. It offers maximum performance along with EPA Marine Tier 3 and IMO Tier II emissions compliance with no after treatment, and is positioned to comply with EPA Tier 4 and IMO Tier III rules. Introduced in Germany at the SMM exhibition, the engine already has more than two years field experience in other industries, including mining trucks and stationary power, and is moving now into marine and offshore oil and gas applications. It is available today in the 2001 to 2168 bkW power range; and will be available starting in early 2013 in the 2239 to 2550 bkW range. With unrestricted continuous and heavy-duty ratings, you get more power with plenty of room for growth, so you maximize productivity while minimizing cost of ownership.

The C175-16 is simply one plank in the Cat platform to broadly expand its strategic focus on maritime assets and their power needs, according to Nigel Parkinson, Managing Director, Caterpillar Marine Power Systems. "We are investing twice as much in R&D as we were 3 years ago, to help fill some of the product gaps," he said.

> "We are investing twice as much in R&D as we were 3 years ago, to help fill some of the product gaps"
>
> **Nigel Parkinson, Managing Director, Caterpillar Marine Power Systems.**

The C175-16 is positioned as a fully integrated marine power sy stem, and boasts 13% more power for increased productivity, and a standard warranty on all factory packaged components to help drive down the overall cost of ownership.

C175-16 Design Features

1 Caterpillar Common Rail Fuel System This system features electronically controlled, fully flexible injectors, enabling optimal combustion and low emissions at all levels, along with better transient response.

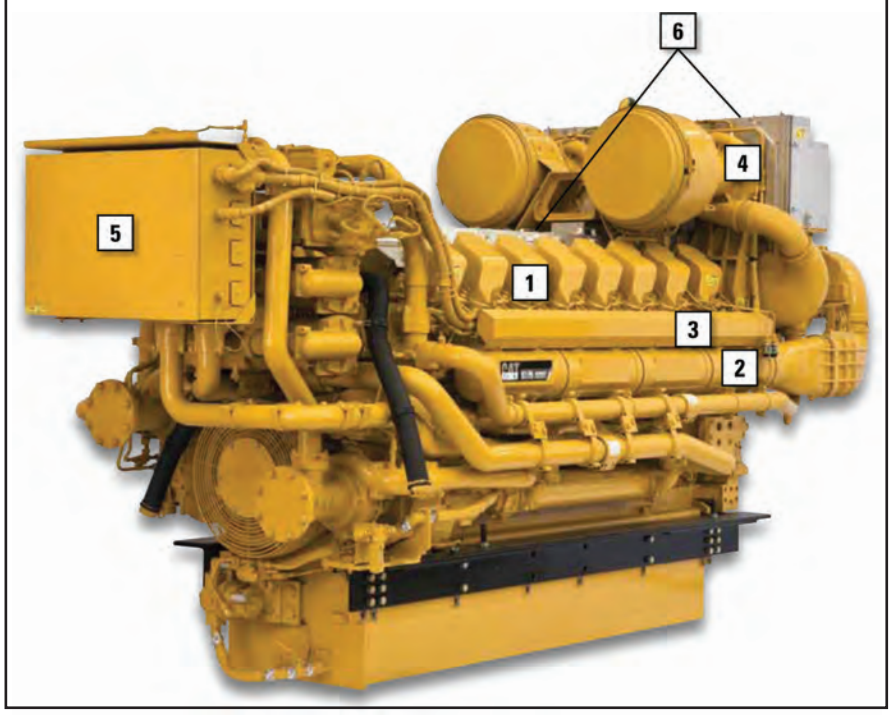
2 Cross-flow head design
Improved airflow helps the air/exhaust flow meet emissions and optimize fuel consumption.

3 Simplified electrical system
Allows for easy installation and maintenance, reducing up front and service costs.

4 New generation of turbochargers designed specifically for the C175
• Cast titanium impeller offers five times longer low-cycle fatigue life, and compressor blades are twice as resistant to high-cycle fatigue.
• Turbochargers are mounted on cast pedestals and center-positioned to eliminate external oil drain lines, reducethe chance of oil leaks, and improve turbo efficiency. The flexible bellows connections used on inlets/outlets of the turbine and compressor housings minimize leakage and provide isolation from external vibrations, motions, and thermal expansion.

5 Marine Classification Society approved monitoring, alarm, and protection system: Offered as a factory-installed and warranted option; single source for the whole package.

6 Thermo-laminated heat shields for exhaust components Easier to install and remove, they save time and money during service. The no-gap fitting enhances safety with better hot spot coverage.



Raytheon Anschütz Steering Gear Control for Carnival

Germany's Raytheon Anschütz won a contract to supply NautoSteer Advanced Steering Gear Control Systems to two prototype cruise ships being built at Fincantieri's Monfalcone shipyard for Carnival Corporation.

The new ships will operate under their Princess Cruises brand, and at 141,000 gt and with a capacity of 3,600 passengers, the ships will be the flagships in the Princess fleet and the largest ships ever built at Fincantieri. The delivery of the first ship – Royal Princess – is planned for spring 2013, the second is expected one year later.

Raytheon Anschütz supplies a redundant Standard 22 gyro compass system, the new NautoSteer AS Steering Gear Control, and the autopilot NautoPilot 5300 coming with a color touch display and fuel saving capabilities such as weather adaptivity and a heading and rudder plotter.

The NautoSteer AS steering gear control system onboard the cruise ships includes features, such as integrated steering failure monitoring, wire-break monitoring and data integrity monitoring. Another feature is a simplified steering mode selector switch with two independent steering positions: A 'Direct NFU' tiller that controls the steering gear directly without use of electronics and a 'Main' steering position for all other controls based on redundant CAN-bus technology.

"Nautosteer AS prevents from switching from a defective steering control to another defective steering control position," said Olav Denker, Product Manager, Raytheon Anschütz. "In case of an evasive action or emergency, when time is crucial, this architecture supports the crew in their fast and safe decision making."

The Princess ships will be equipped with a main steering control system consisting of follow-up bustillers, a handwheel and the adaptive autopilot NP 5300. Rudder mode operator units allow activating synchronous or independent rudder control. Within the main steering control system take-over of steering control is possible from any steering position on the bridge by pressing a single button.

www.raytheon-anschuetz.com

Raytheon Anschütz will supply NautoSteer Advanced Steering Gear Control Systems to two prototype cruise ships being built at Fincantieri's Monfalcone shipyard for Carnival Corporation.

Hempel Debuts New Cargo Hold Coatings

Hempel launched Hempadur Impact 47800, a coating for bulk carrier cargo holds. Hempadur Impact is designed to offer high-end abrasion, impact and corrosion resistance, and according to the company completes its range of cargo hold coatings. Hempadur Impact is designed to protect ship cargo holds from both mechanical damage and the severe abrasion caused when loading hard angular cargoes, and comes with a 7.5 year major repair interval.

A low-VOC, pure epoxy coating, Hempadur Impact is available in grey, red and aluminum shades. It can be applied all year round to steel surfaces prepared to a minimum of Sa 2 .

Hempadur Impact 47800 at a glance

- 7½ year major repair interval
- 76% volume solids
- VOC compliant (below 250 g/l)
- Certified for carriage of grain & FDA compliant for dry food contact
- Dry film thickness: 2 x 125µm
- Time to carry first hard cargo: 3 days at 35°C

www.hempel.com

Rolls-Royce Marine Gas Engines: U.S. EPA Approval

Rolls-Royce said the U.S. Environmental Protection Agency (EPA) approved for sale in the U.S. market its marine gas engine designed to improve fuel efficiency, cut harmful methane emissions and meet international environmental standards set to take effect in 2016.

"This Certificate of Conformity by the EPA for our latest gas engine is good news for the US marine industry because LNG as a vessel fuel is indisputably the best long-term solution for ship owners," said Neil Gilliver, President, Merchant, Rolls-Royce.

The EPA Certificate of Conformity is issued for the C-engine range from Rolls-Royce. These engines are already in operation on car ferries and coastal ferries in Europe, and are being installed on the world's first gas powered tugs to be used in operation for the major Norwegian oil company Statoil.

"The EPA approval gives us a head start in the US market," said Gilliver, "and we are proud to be able to provide ship owners with an efficient and long-term solution for reduced fuel consumption and emissions. Furthermore, this latest C26:33 engine, which is highly suitable for tugs, articulated tug barges, ferries, coastal vessels and offshore support vessels, has cut methane slip to very low levels."

The Rolls-Royce marine gas engine ranges fulfill the requirements for operation in Emission Control Areas and the very strict International Maritime Organization (IMO) Tier III rules that come into force in 2016, and the forthcoming and even tougher Tier IV emissions limits.

About the C-engine type

In the latest C26:33 engine, C02 emissions are reduced by 22% compared to engines burning liquid fuel, NOx emissions are cut by 92%, while emissions of SOx and particulates are negligible. The design of the C26:33 cuts methane slip, which up until now has been seen as a disadvantage of gas engines, to very low levels. These engines are in operation on the cross-fjord road link ferry Boknafjord (engine room pictured right) and an Island Offshore platform supply vessel, on order for cargo vessels in Europe, and are being installed on the world's first LNG fuelled tugs for Bukser & Berging to be used in escort operation for the major Norwegian oil company Statoil. The cylinder bore is 260mm and the stroke 330mm. Six, eight or nine cylinders in line give a

power range at maximum continuous rating from 1,460kW to 2,910kW at 900rpm or 1,620kW to 2,430kW at 1,000rpm. The specific fuel consumption is low over the whole load range and engine efficiency is high at about 49%.

ELSYS Elcome's New Electrical Switchboard System

Elcome International introduced the new ELSYS family of marine electrical switchboard and power management systems which incorporate new-generation switch-gear components with the aim of reducing size and weight, and a modular design to allow flexibility in tight spaces.

"The ELSYS systems are designed and manufactured in our modern switchboard production facility in Dubai," said Jimmy Grewal, Executive Director, Elcome International. "We design, build, install and service complex integrated electrical systems, including main and emergency switchboards, control consoles, motor control centers, feeder panels and distribution panels for naval, coast guard and commercial marine vessels to meet applicable industry standards including IEC 60439-I, IEC 60068 and IEC 60529."

Elcome is capable to supply a turnkey electrical package for marine vessels using in-house manufacturing and components from major international electrical suppliers, including distribution boxes, battery chargers, rectifiers, transformers and integrated automation systems. Target market segments include both new build and refits, including bulk and container carriers, multi-utility vessels, anchor handling tug/supply vessels, bollard-pull tugs, offshore supply vessels, and DP1/DP2 diving, pipe-laying and cable-laying vessels.

www.elcome.ae

Globestar Odyssey III Marine Computer

CCS-Inc. introduced the Globestar (GS) Odyssey III, the latest version of its marine computer for navigation, shipboard monitoring and control systems. It is a 3U rack mount industrial computer that is fully compliant with the IEC 60945:2002 standard for marine use. The GS Odyssey III offers Intel Core i7 performance, multiple I/O ports and expansion slots as well as an optional removable storage bay and a slim chassis. The GS Odyssey III features a 19-in. aluminum rack mount chassis with 17-inch depth and runs on Windows XP Professional or Windows 7.

www.ccs-inc.com/portfolio/computers-profile/gs-odyssey-iii

Engine Monitoring Unit from Actisense

Actisense, a marine electronics brand from Active Research Limited, is releasing its new Engine Monitoring Unit (EMU-1). It is a specialized Analogue to NMEA 2000 Interface, designed to operate specifically with engines on water craft. The device is now in beta testing with distributors set to enter production immediately thereafter. The EMU-1 will be designed to simplify the conversion of analogue engine parameters (of temperature, pressure, Tach / RPM etc.) into the corresponding NMEA 2000 engine parameter PGNs. The device has been designed to simplify processes and reduce the number of input/output wires required at each engine. The EMU-1 can handle 6 gauge/parameter inputs (these can be instead of the gauge or in parallel with the gauge), 4 alarm inputs, 2 Tach inputs and 2 additional auxiliary inputs, which are flexible to suit each installation. Most notably, the device will be backwards-compatible with older engines.

www.actisense.com

Nano Fuels

Nano Fuels Technology (NFT) is a performance enhancer and liquid fuel catalyst providing fuel efficiency, pollution reduction, mechanical longevity. Nano Fossil Fuel Technologies unique product achieves for its brown and blue water boats and ships, Improved Fuel Economy, Improved Engine Performance, Reduced Exhaust Emissions by 90 Percent, Improved Fuel Stability, and Elimination of Microbial Growth. Saving customers money and reducing their carbon footprint, Nano Fuels represents the true "green" solution.

www.kickasphalt.us

ZF Marine Transmissions in USCG FRC Vessels

ZF Marine announced its involvement with the US Coast Guard FRC project. The USCG vessel Bernard C. Webber, first of the new 154 ft. Sentinel Class Fast Response Cutters (FRC), was recently commissioned. ZF Marine provided two ZF 23560C Marine Transmissions for each vessel. With a patrol boat or light duty rating well in excess of 4300 kW @ 2100 rpm, these robust transmissions will support the vital service role of the new FRC vessels. Today, more than 200 US Coast Guard boats and cutters are sailing with ZF Marine transmissions.

www.zf.com

Goltens Wins GL Approval for In-Situ Crankshaft Annealing

Goltens said that the Goltens Worldwide Group of companies had been awarded worldwide approval of its repair process for the In-Situ annealing of medium speed 4-stroke diesel engine crankshafts. This certification follows a formal review by Germanischer Lloyd of the crankshaft annealing process and related governing documents and procedures.

The approved procedure is designed to reduce excessive hardness in damaged crankshaft journals through annealing (heat treatment) of the crankshaft with a minimum amount of material removal. **The process is specifically targeted at salvaging crankshafts that would otherwise** be condemned and require replacement due to the severity of the hardness exceeding engine maker specifications. Goltens' experience has demonstrated that this hardness can be significantly reduced to within acceptable limits and that, after annealing, finish machining can restore the machinery to service with significantly less loss of crankshaft diameter as well as the avoidance of costly shaft/equipment removal and replacement.

"This certification is the culmination of years of R&D and successful applications across a wide range of engine makes and models in the field and in the workshop by our technical teams. Obtaining Germanischer Lloyd approval is validation that our process is safe, repeatable and effective in repairing crankshafts that would otherwise likely have been condemned. Further, the fact that approval covers our global network of stations and not one location demonstrates the value of our investments in consistent tooling and repeatable processes" said Paul Friedberg, President of Worldwide Services for Goltens.

www.goltens.com

Veripos Mobile for Offshore Positioning

Veripos, suppliers of GNSS positioning to the offshore industry, introduced a new-generation configurable receiver designed to provide integrated mobile solutions for a wide range of offshore location and heading applications, the LD4 HDT. Weighing less than 2kg, the compact IP55-rated unit can be configured to deliver a robust and accurate heading and any positioning solution provided by Veripos's range of satellite-derived services. Calculating differing positional solutions in addition to GNSS headings, the system can output both finished and raw data to external equipment and QC software for processing.

Using dual GNSS antennas to receive GPS and Glonass L1/L2 signals for subsequent computing of robust moving baseline vector/heading RTK fixed solutions, the LD4 HDT can typically provide either sub-metre or decimetre accuracies in addition to precision headings when receiving proprietary Veripos Apex and Ultra service corrections.

Upgradable for both future GNSS RTK operations and USB and Ethernet communications, typical system applications include back-up to mechanical gyro heading for hydrographic multibeam survey and geophysical vessels and construction barges. Others cover support for near-shore survey vessels requiring rapid mobilisation with low space requirements in addition to offshore construction emplacements involving remote monitoring via radio data telemetry.

www.veripos.com

SKF Marine Condition Monitoring Kit

SKF has available the SKF Marine Condition Monitoring Kit to carry out reliable, simplified condition monitoring onboard ships and enables ship operators to take a first step towards condition-based maintenance.

With the SKF Marine Condition Monitoring Kit, even a non-trained user may interpret the results of vibration data measurements and locate the source of the fault in the machinery. The marine-specific software with marine typical equipment models is loaded in the SKF Microlog Advisor Pro and is preconfigured to convert the measured data into an easy-to-understand colour-coded result.

E-mail: colin.roberts@skf.com

Bollinger Delivers First Ocean Class Tug to Crowley

Bollinger Marine Fabricators, L.L.C., Amelia, La., delivered the Ocean Wave, the first of four "Ocean" class tugs, to Crowley Maritime Corporation.

"We are extremely proud of our Ocean Class team and the delivery of the first in class tug, Ocean Wave," said Chris Bollinger, EVP, Bollinger Shipyards. "Our partner, Crowley and Jensen, as well as our numerous vendors, have worked hard to develop and deliver a premier vessel into the International marine market and we look forward to future deliveries of sister Ocean Wind and DP2 vessels Ocean Sky and Ocean Sun."

The Ocean Wave is the first of the Ocean class tugs and is the first of two 10,880 BHP tugs that are featured with DP1 capabilities. Ocean Wave is twin screw with controllable pitch propellers (CPP), in nozzles with independent high lift rudders. The hull is welded steel construction and is outfitted for long range ocean towing, dynamic positioning, fire-fighting, rescue and salvage towing, as well anchor handling. The vessel is designed and outfitted with all tanks containing oil and oil traces inboard of the side shell to create a double hull and designed for zero discharge of any machinery cooling water, gray or black water, further safeguard the environment.

"Taking delivery of this first ocean-class tug is a significant milestone for Crowley and our customers who will benefit from its use on their projects," said Tom Crowley, company chairman, president and CEO. "These Jensen Maritime-designed towing vessels – three of which are under construction at Bollinger – are a new generation of powerful, high-tech and environmentally friendly workhorses for Crowley that will further solidify our standing as an industry leader in ocean towing, salvage and offshore marine support for the upstream energy industry."

Propulsion for the Ocean Wave is provided by two (2) Caterpillar C-280-12 Tier II diesel engines, designed to operate on Ultra Low Sulfur Diesel fuel and each is rated at 5440 BHP @ 1000 RPM, driving the 153.5" diameter CPP Propellers through Reintjes LAF 5666 reduction gears. The bow thruster is a Berg VFD 850 HP unit. Electric power is provided by two (2) 1475 KVA shaft generators, one (1) 340 kW Caterpillar C-18 Tier II auxiliary generator (Harbor Generator), and one (1) 125 kW Caterpillar C-6.6 Tier II emergency generator system. The towing and deck equipment is featured with an Intercon – DW275 hydraulic winch with upper drum capacity for 3,000 ft. of 2.5-in. wire and lower drum with 4,200 ft. of 2.75-in. wire, Triplex tow pins, Triplex shark jaws and an open stern roller. The vessel is U.S. flagged and complies with all applicable rules and regulations for unrestricted ocean towing, International Load Line Certificate, SOLAS and ABS DP1, Green Passport classification.

Acta Marine Takes Four Shoalbuster AHTS'

Damen Shipyards Group will supply Acta Marine with four Shoalbuster anchor handling tugs. Three of the anchor handling tugs will be supplied from Damen Marine Services' charter fleet, while Damen Shipyards Hardinxveld will be supplying the fourth, a new Shoalbuster, in March 2013. "Shoalbusters are excellent multi-purpose vessels that we will be able to use all over the world in dredging and marine contracting projects, as well as for oil and gas projects and offshore wind projects", says Govert-Jan van Oord, managing director of Acta Marine. The DMS Eagle and DMS Globe are Shoalbuster 2609s that will be deployed in the Persian Golf as they were before. The DMS Dunnock and the new ship are larger, 3,300 horsepower units and a bollard pull of 45-50 tons. These latter two vessels are the sister ships of the Coastal Vanguard, which Acta Marine purchased from Damen at the end of 2010. The DMS Dunnock will be transferred in Singapore in January 2013, putting the ship in an excellent location to take on charter assignments in Southeast Asia and Australia. The new Shoalbuster is currently under construction in the Netherlands and will be delivered in March 2013. All Shoalbusters are built by Damen Shipyards Hardinxveld.

Navy JHSV Christened

Theresa Gilliam Pitts, sponsor of Joint High Speed Vessel (JHSV) 2, USNS Choctaw County, breaks a bottle of champagne during the christening at the Austal Shipyard. Secretary of the Navy Ray Mabus named the ship after three U.S. counties located in Mississippi, Alabama and Oklahoma; places he said demonstrate core American values of hard work, putting family first, and community service. (U.S. Navy photo by Chief Mass Communication Specialist Sam Shavers/Released)

USNS Choctaw County (JHSV 2), the second of the Navy's new joint high-speed vessels designed for rapid intra-theater transport of troops and military equipment, was christened Sept. 15 during a ceremony at Austal USA in Mobile, Ala. Military Sealift Command will own and operate Choctaw County and the other joint high-speed vessels, or JHSVs, that are under contract to be built for the Navy. Choctaw County will have a crew of 21 civil service mariners working for MSC who will operate, navigate and maintain the ship. Secretary of the Navy Ray Mabus was the ceremony's principal speaker. The ship is named for three counties in America, located in Mississippi, Alabama and Oklahoma, which share the name Choctaw County.

Twenty-nine women from the 1966 graduating class of Ackerman High School in Ackerman, Miss., served as the ship's sponsors. Lead sponsor, Theresa Gilliam Pitts, a retired teacher, broke the traditional bottle of champagne across the bow to formally christen the ship while she and the other sponsors present said in unison, "For the United States of America, we christen thee USNS Choctaw County. May God bless this ship and all who sail in her."

The 338-foot-long aluminum catamarans are designed to be fast, flexible and maneuverable, even in shallow waters, making them ideal for transporting troops and equipment quickly within a theater of operations. The 20,000-square-foot mission bay area aboard JHSVs can be reconfigured to quickly adapt to whatever mission the ship is tasked with, such as carrying containerized portable hospitals to support disaster relief or transporting tanks and troops. JHSVs are capable of transporting 600 tons of military troops, vehicles, supplies and equipment 1,200 nautical miles at a high average speed of 35 knots and can operate in shallow-draft, austere ports and waterways, providing U.S. forces added mobility and flexibility. The JHSVs' aviation flight decks can support day and night flight operations. Each JHSV also has sleeping accommodations for up to 146 personnel and airline-style seating for up to 312.

Clifford

Young

Marchetti

Rickerson & van Emmerik

Hutchison

Gerbrecht

Kong

BAE Systems' Clifford Honored

Bill Clifford, president of Norfolk-based BAE Systems Ship Repair, received the Frank C. Jones Award, presented by the American Society of Naval Engineers. (Pictured above is ASNE President Ronald Kiss (left) and U.S. Rep. Randy Forbes (Va.) and Bill Clifford.) Clifford was honored by his peers at the annual Fleet Maintenance and Modernization Symposium held in Virginia Beach. The annual award recognizes leaders in naval engineering who have substantially and significantly contributed to ship maintenance and alteration programs for naval vessels. Prior to joining BAE Systems, Clifford spent more than 20 years in the private sector serving in senior management positions at several shipyards. From 2001 to 2005, he was a managing partner of Pacific Shipyards International, LLC, a Hawaii consortium of Honolulu Shipyard, Inc. and Honolulu Marine, Inc. He also served as vice president of new construction at Atlantic Marine in Jacksonville, Fla., and director of ship completion at Bath Iron Works, Maine.

Young, Marchetti Promoted at Cummins

Cummins reorganized its Commercial Marine Business around five market segments: commercial transport; offshore oil and gas; passenger transport; government/defense; and special use (fishing). In line with this reorganization, the company has named Greg Young Director of Strategic Growth – Commercial Transport and Waldemar Marchetti Director of Strategic Growth – Offshore. Young will be located in Daventry, U.K. and will report to Jenny Bush, GM for the Commercial Marine Business. Marchetti will continue to be based in São Paolo, Brazil, and will also report directly to Bush.

Rickerson & van Emmerik Win Thomas B. Crowley Sr. Memorial Scholarships

Webb Institute, a four-year college specializing in Naval Architecture and Marine Engineering, announced the selection of Don Rickerson '13 and Justin van Emmerik '13 as the 2012 – 2013 Thomas B. Crowley Memorial Scholarship recipients. Thomas B. Crowley Sr. Memorial Scholarship Program is awarded annually to one or two students, who, in the eyes of the Scholarship Selection Committee at Webb Institute, have demonstrated leadership qualities, school and community involvement, interest in and dedication to the maritime industry, and academic promise.

The Thomas B. Crowley Scholarship Program was established at Webb Institute in 2007. The Crowley Scholarship was established at Webb Institute in conjunction with The Marty Johnson '88 Leadership Fund. Marty was a longtime employee of Crowley Maritime and the company wanted to establish an appropriate fund in his memory.

Hutchison to Retire

John C. G. Hutchison closes a 42 year career at this year's Work Boat Show in New Orleans. Born in Philadelphia on April 1,1941, John Hutchison played collegiate golf at Duke University and Moravian College, and coached the golf team at Lehigh University before being drafted in 1966. A Viet Nam vet, 2nd LT, Infantry Branch, John returned home in 1970 and worked at the Bethlehem Steel Corporate Office in Bethlehem, PA, and other Bethlehem offices in Burns Harbor IN, Johnstown PA, and Sparrows Pt., MD. John was a consultant to Marvin Miller in Washington DC followed by Hopeman Brothers, Waynesboro, VA. He became the Swiss Keller Vermipan agent, and later the Thermax agent in North America. John joined Panel Specialists as an employee in 1985 as their Marine Sales Manager.

Atlas Elektronik Canada Founded

The Atlas Elektronik Group founded a subsidiary in Canada. Atlas Elektronik Canada Ltd has been set up to establish a strong and reliable partnership with the Royal Canadian Navy and Canadian authorities. As potential main contractor, Atlas Elektronik Canada will provide ATLAS products and solutions for current and future Canadian users.

Atlas Elektronik Canada is headquartered in Victoria BC onsite of the Vancouver Island Technology Park.

Kong Joins A/S Dan-Bunkering

Dena Kong, 29, has joined Dan-Bunkering as Marketing Executive. Dena has previously worked in the shipping and airline industry. She is a native of Beijing and will be based in Dan-Bunkering's Beijing office. E-mail: dek@dan-bunkering.com.cn

Astrium Makes Announcement on Marlink, Vizada Brands

At SMM in Hamburg Astrium Services Business Communications announced it will act as a leader in the maritime satellite communication industry. This new division of Astrium Services consists of the combined Vizada and its affiliate Marlink, following their acquisition by Astrium in December 2011. Astrium is part of EADS. Astrium Services is the 'satellite services' unit of Astrium, comprised of four business divisions: Business Communications, Government Communications, Satcom Systems & Solutions, and GEO-Information Services. The Vizada Group, including its affiliates such as Marlink, Vizada Networks, TDcom etc., joins Astrium Services to form a leading provider in fully managed satellite services with a global reach in diverse industry sectors.

The new Astrium Services Business Communications entity will host all commercial satcom activities of Astrium Services, serving three main markets: Maritime, Enterprises and Aero. In the maritime market, the company will continue providing services in the same structure as today: indirect through the existing, well-established service provider channel whereas Marlink will remain an independent commercial organization focusing on maritime end customers. As a consequence, the Vizada Group will rebrand into Astrium over the next months from October 2012. The Marlink brand will remain unchanged.

Corvus Energy supplies Østensjø Rederi

Corvus Energy is supplying Norwegian ship owner Østensjø Rederi with a turnkey lithium - ion battery management system for the fleet's newly designed vessel. The new unit will be used to support oil rig operations in the North Sea and feature the latest technology and environmental standards. Ship construction is expected to complete in September 2013.

Obituary
Nelson Yeo

The Board and Management of the Keppel Group announced the passing of Nelson Yeo, Managing Director (Marine), Keppel Offshore & Marine Ltd (Keppel O&M) and Managing Director, Keppel Shipyard Ltd, a wholly-owned subsidiary of Keppel O&M, after suffering a brain haemorrhage while on business in London. He is survived by his wife Siew Hua and two sons. "All of us at Keppel O&M are greatly saddened by the sudden passing of Nelson," said Tong Chong Heong, CEO, Keppel O&M. "This year marks the 30th year since he joined Keppel. From a shiprepair management trainee at Keppel Shipyard, he has worked his way up to his current position as Managing Director. Truly exemplifying the Keppel "Can Do!" spirit, Nelson has always relished the challenges of complex work assignments and overseas postings. Chor How Jat, Executive Director of Keppel Shipyard, has assumed the position of Acting Managing Director, and will take over the management of Keppel Shipyard's businesses and operations.

Mr Yeo, 55, was the Managing Director (Marine) of Keppel O&M and the Managing Director of Keppel Shipyard. He was also Chairman of Keppel Philippines Marine Inc., Keppel Subic Shipyard Inc., Keppel Batangas Shipyard Inc., Keppel Smit Towage Pte Ltd, Maju Maritime Pte Ltd, Keppel Singmarine Pte Ltd and DPS Bristol (Holdings) Limited. He also served as a member of the Workplace Safety and Health (WSH) Council's Marine Industries Committee, Ministry of Manpower; AIDS Business Alliance, Ministry of Health; and is also a member of the American Bureau of Shipping; South East Asia Advisory/Technical Committee in Lloyd's Register and the Singapore Technical Committee in Nippon Kaiji Kyokai.

MARITIME REPORTER AND ENGINEERING NEWS

2013 Editorial Calendar

January
Ad Close: Dec 21

Ship Repair & Conversion

MARKET:
U.S. Navy Vessel Technology

TECHNICAL:
Pumps, Valves & Pipes

PRODUCT:
Marine Propulsion Equipment

SPECIAL REPORT:
Offshore Vessel Design & Operation

BONUS DISTRIBUTION:
ASNE DAY Feb 21-22 Arlington, VA

February
Ad Close: Jan 25

Cruise & Passenger Vessel

MARKET:
Satellite Communications

TECHNICAL:
Ballast Water Treatment

PRODUCT:
Marine Electronics & Navigation Buyer's Guide

SPECIAL REPORT:
Maritime Simulation

BONUS DISTRIBUTION:
Seatrade Mar 12-15 Miami, FL

March
Ad Close: Feb 22

Training & Education

MARKET:
U.S. Coast Guard Annual

TECHNICAL:
Software Solutions

PRODUCT:
Coatings & Corrosion Control

ROUNDTABLE:
From Fleet Management to Navigation & Remote Monitoring

BONUS DISTRIBUTION:
CMA Mar 18-20 Stamford, CT **NACE** Mar 17-21Orlando, FL
Workboats Exchange Apr 1-14 Amelia Island, FL
Sea-Air-Space Apr 8-10 MD

April
Ad Close: Mar 22

Offshore Energy Edition

MARKET:
Innovative Offshore Service Vessel Design & Outfitting

TECHNICAL:
Maritime Salvage & Recovery

PRODUCT:
Deck Machinery, Winches & Ropes

REGION:
Houston, Texas - Global Maritime & Offshore Hub

BONUS DISTRIBUTION:
OTC 2013 May 6-9 Houston, TX
Marine Money May 8 Houston, TX
CIMAC May 13-16 Shanghai, CN

May
Ad Close: Apr 26

Energy Production & Transportation

MARKET:
Specialty Workboats, Patrol, Escort Craft & RIBS

TECHNICAL:
Modern Marine Power

PRODUCT:
Fuels, Lubricants & Additives

REGIONAL FOCUS:
Scandanavia

BONUS DISTRIBUTION:
Norshipping June 4-7 Oslo, NO

June
Ad Close: May 24

Annual World Yearbook

MARKET: Training & Education- Leading Institutions

TECHNICAL:
Integrated Bridge-Navigation & Radar

PRODUCT:
Ship Repair- Tools & Techniques

ROUNDTABLE:
Coatings & Corrosion Control

THIRD ANNUAL MARITIME PHOTO CONTEST

BONUS DISTRIBUTION:
Marine Money June New York, NY
MegaRust June 25-27 Newport News, VA

July
Ad Close: Jun 21

Maritime Security Edition

MARKET:
Classification & Ship Registry

TECHNICAL:
Oil Spill Respons & Recovery

PRODUCT:
Marine HVAC, Insulation & Piping

August
Ad Close: July 26

Shipyard Edition

MARKET:
Maritime Communications- Condition-Based Monitoring & Maintenance

TECHNICAL:
Offshore Deepwater Exploration & Production

PRODUCT:
Maritime Tools - Welding & Cutting

THE ARCTIC: Challenges & Opportunities

BONUS DISTRIBUTION:
Offshore Europe Sept 3-6 Aberdeen, UK
NEVA Sept 24-27 St. Petersburg, RU

September
Ad Close: Aug 23

Marine Propulsion Annual

ROUNDTABLE:
Workboat Academy - Training & Education

TECHNICAL:
Offshore Service Vessels (OSVs)

PRODUCT:
Heavy Lifting- Deck Machinery & Cranes

SPECIAL REPORT:
Clean Water Technologies

BONUS DISTRIBUTION:
Int'l Workboat Oct 9-11 New Orleans, LA
OTC Brasil Oct 8-10 Rio de Janeiro

October
Ad Close: Sept 20

Marine Design & Construction

MARKET:
Marine Firefighting, Safety & Salvage

TECHNICAL:
The Electric Ship: Drives, Batteries, Transmission & Control

PRODUCT:
CAD/CAM & Software Solutions

REGION REPORT: The Netherlands

BONUS DISTRIBUTION:
SNAME Nov 6-8 Seattle, WA
Europort Nov 5-8 Rotterdam, NL

November
Ad Close: Oct 25

Marine Propulsion Annual

MARKET:
Offshore Deepwater - Structures & Systems

TECHNICAL: Training & Education

PRODUCT:
Marine Electronics - Navigation Products & Software Solutions

REGIONAL FOCUS:
Middle East Maritime Cluster

BONUS DISTRIBUTION:
MARINTEC China Dec 3-6 Shanghai, CN

December
Ad Close: Nov 22

Great Ships of 2013

MARKET:
U.S. Navy Fleet Supply & Support

TECHNICAL:
Port Infrastructure - Loading & Offloading Ships

PRODUCT:
Maritime Port & Harbor Security

Synthetic Rope for Regional Cabled Ocean Observatory


Putnam

Yale Cordage announced its Unitrex XS Max Wear Rope was selected by L-3 MariPro Inc. for use in the University of Washington's (UW) Regional Scale Nodes (RSN) project. Yale's Unitrex XS Max Wear Rope, a high-tech cousin of Yale's Uniline Rope, is a parallel-cored synthetic cable. The rope is constructed of Spectra core fiber modulus, wrapped with a protective layer of neoprene tape and over-braided with a tough jacket of high tenacity polyester for superior lightweight strength, resiliency and resistance to stretch. Specifically, the undersea application requires a high strength, lightweight line with continuous length capabilities suitable for use on cable ship drum capstans. The university's RSN primary infrastructure network consists of a single shore observatory in Oregon, and includes two cable lines with nearly 800km of fiber-optic cable and seven primary science nodes on the southern portion of the Juan de Fuca tectonic plate in the Northeast Pacific Ocean.

Voith: Major Order for Offshore Brazil

Voith received a major order for the delivery of 60 variable-speed planetary gears type "Vorecon." The Vorecons will enter service in offshore production on the oil fields on the huge pre-salt cluster in the Atlantic approximately 300 km outside Rio de Janeiro. The operator is a consortium led by the Brazilian mineral oil group Petrobras. Production of the first Vorecon at Voith in Crailsheim is already underway.

Imtech Marine Starts Ops in Brazil

Imtech Marine recently opened an office in Santo, Brazil, establishing its own presence in the South American market. It is in line with Imtech Marine's strategy to extend its service network to all major ports in the world. Santos will soon be followed by a new office in Rio de Janeiro. "We have a true global presence and are 'just around the corner' for many shipping companies with our 90 plus offices," said Eric van den Adel, Managing Director, Imtech Marine. "We are proud to have added Brazil to our global map."

SpecTec Grow in the Middle East

SpecTec signed its first contract with Mubarak Marine LLC, a contract for the supply of AMOS2 Software. It includes one full office installation for the Mubarak Marine's headquarter in Dubai and five Vessel installations. The software is expected to be installed onboard five Offshore Tugs vessels, in order to reduce operational complexity related to the Planning Maintenance System, help decrease the costs of the Procurement actions and give the due IT support to Dry Dock operations. Database consultancy is to be provided by the technical staff of SpecTec in the Middle East.

Mubarak Marine is a marine services organization based in Dubai providing services such as Offshore Towing, Salvage, Port Operations, Heavy Lift, Emergency Rescue and Response. The company offers a variety of vessels to suit the ever-growing needs of client base in the Middle East and beyond. From inception, Mubarak Marine fleet has grown to a great thirty three vessels and many new additions are scheduled for the rest of current year.

Drydocks World, ABB: Cooperation Agreement Reached

ABB Turbocharging will now have a dedicated service point for ABB turbochargers in the Drydocks World facility in Dubai. A Memorandum of Understanding was signed at the SMM in Hamburg.

DNV's Hull Integrity System Integrated with AMOS

DNV and AMOS system supplier SpecTec have launched an all-in-one planned inspection and maintenance system for ship structures. AMOS is a system that crew and management are already familiar with, and in combination with DNV's Hull Integrity Management system, the software's accessibility further simplifies inspection planning, reporting and monitoring.

The new combined application uses the DNV vessel-specific hull inspection forms and procedures that come as part of the Hull Integrity Management (HIM) system. The easy-to-use software has unique 3D inspection and reporting functionality that helps with the early detection of defects so they can be dealt with before they lead to costly off-hire time. HIM adds a further dimension to the AMOS planned maintenance system which supports tasks such as maintenance, efficient spare parts logistics and the production of quality and safety documentation. A vessel structure model is established in the AMOS component hierarchy, and it is combined with HIM's vessel-specific hull inspection information and any diagrams showing areas that require special attention.

Hong Kong Fatal Ferry Crash

There will be no fast answers

Harrowing accounts of the moments after two ferries collided in Hong Kong on Monday night are being played out in the local media.

Hong Kong woke up on Tuesday morning to the horrifying news that at least 24 people had been killed and dozens injured following the ferry collision.

That figure quickly rose to 38 as more bodies were pulled from the sunken Lamma IV ferry that went down after the crash. High-speed catamaran Sea Smooth managed to limp to shore with its bows badly smashed.

The Lamma IV was filled with employees of Hong Kong Electric and their families and was en route to Victoria Harbour a short distance away to watch the spectacular National Day fireworks display.

At 8.23pm Lamma IV was rammed on the port side. Witnesses describe a massive impact that threw passengers violently around the cabin or overboard. Panicked and disoriented, the passengers struggled to make their way out of the stricken vessel.

But for many people on the ferry, time ran out. **The collision appears to have torn open watertight areas in the stern and the ferry began taking water. Shockingly, it stood on its tail and sank within two minutes**, witnesses said, leaving more than 120 passengers little time to find lifejackets or the exits. Divers found many of the bodies trapped inside the vessel. Police have arrested seven people – the captains of both ferries and other crew – and have promised a thorough investigation. Despite the tragic loss of life, the sweeping arrests will not make the investigation any easier, and probably scare crew members into silence. It is the worst maritime disaster in Hong Kong in 40 years. The deadliest occurred on August 16, 1971, when the Hong Kong-Macau ferry, Fat Shan, sank during Typhoon Rose, killing 88 passengers and crew. Only three people survived.

More recently, the oil rig supply vessel Neftegaz-67 collided with mainland bulk carrier Yao Hai on March 22, 2008, off Lantau Island. Eighteen crew from the supply vessel died.

Following a lengthy investigation and court proceedings, both captains and the two pilots on board the bulk carrier were jailed. However, the cargo ship captain and one of the pilots were freed on appeal. The sentences of the Neftegaz captain and the chief pilot were later reduced pending an appeal in January. Hong Kong's relationship with the sea is a long one, with hundreds of islands scattered across the territory and a vibrant fishing industry. Thousands of vessel arrivals and departures have made the city a container shipping hub port and a busy transshipment centre. The Marine Department has the procedures in place and the traffic controls to prevent collisions, so even with some of the busiest waters in the world, fatal accidents should not be regarded as inevitable. There will be no fast answers to what is certain to be a drawn out inquiry, but as with all disasters, the lessons learned via an investigation are vital in preventing one happening again..

Posted by Greg Knowler (Hong Kong) on MaritimeProfessional.com

It's a Matter of Economics, Remember

Too little port investment impacts business; the US economy

Economics makes maritime veterans shudder, but ports and ships are built because of economics and trade links.

Which is why the American Society of Engineers takes so much notice of economic effects of port and inland waterway investment. If America only maintains its current level of investment in these systems, the losses to its economy will increase shipping costs annually. By 2020, lost value of exports will be $270 billion and will rise to almost $2 trillion by 2040. Roughly $1.3 trillion in business sales will be lost by 2020, rising to $7.8 trillion by 2040. The cumulative loss in national GDP will be about $700 billion by 2020 and reach $4 trillion by 2040. Disposable personal income will be lost, with losses projected at almost $872 billion through 2020 and $4.5 trillion through 2040. With this reduction in production, income, and spending, there are projected to be 738,000 fewer jobs in 2020," the engineers' report says.

"By 2040, the job losses will grow to almost 1.4 million — jobs that will be lost due to the lack of U.S. competitiveness in global trade and because the nation's households and businesses will be spending more for commodities that arrive by marine ports and are transported to market via inland waterways."

Problems on the waterways are cascading. "Maintaining existing conditions and levels of unscheduled delay on the nation's inland waterways will already require almost $13 billion by 2020 and an additional $28 billion by 2040. Current funding levels can support only $7 billion through 2020 and an additional $16 billion through 2040. A total of 27 percent of these needs entail the construction of new lock and dam facilities, and 73 percent are estimated for the rehabilitation of current facilities." The civil engineers' analysis is not all utterly bleak. "The needs are not expected to increase sharply or exponentially, but will peak after 2020, when critical age and capacity thresholds are likely to be reached."

Extra costs will be faced because of congestion at the main ports. The report comes out with a remarkable assertion that in 2010 the total for the country was $1.1 billion, with Los Angeles accounting for $440 million and New York $280 million. There is likely to be some disagreement with this assessment, if only because congestion is such a broad term and because different factors can come into play, some of which are beyond human control On the waterways, delays are sure to get worse, says the report. In 2009 there were 6,500 scheduled delays and 12,000 unscheduled. The total number of hours of delay was 82,000 and 74,000 respectively.

Lost trade through ports and waterways due to the investment gap between 2012 and 2040 is put at almost $3 trillion.

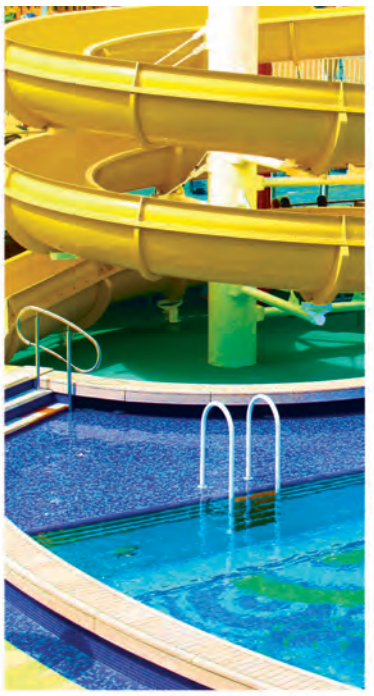
Posted by Martin Rushmere on MaritimeProfessional.com

Capt. William Bainbridge, USN

An early Father of the U.S. Navy, e established a tradition of bold leadership that continues to this day

William Bainbridge (1774-1833) entered the US merchant marine in 1789. Through self-education and hard work, he became a mate and, at 19, was given command of the merchant ship Hope (140 tons with four nine-pound guns). In the Caribbean, he was hailed by a British schooner to stop and be boarded. He refused and a firefight ensured. Although the schooner carried more guns, Bainbridge had a better-trained crew, and forced the British schooner to strike colors. Bainbridge joined the then one-year-old United States Navy in 1798 and was appointed to command the galley Retaliation. While cruising in the Caribbean during the Quasi-War with France, the Retaliation was captured by a pair of French frigates. Bainbridge and the galley were taken to Guadeloupe. He convinced the Governor of Guadeloupe to release him and a number of American prisoners and to restore the Retaliation to his command – and promptly sailed back home. In 1800, he was given command of the frigate George Washington and tasked with carrying tribute to the Dey of Algiers. At that time, the U.S. and various European powers paid tribute to the Barbary Pirates for safe passage of their merchant ships through the western Mediterranean. Many ships for which tribute had not been paid were captured and their crews forced into slavery. During this distasteful mission, Bainbridge was employed by the Dey to carry gifts to the Sultan of Turkey. Bainbridge was instrumental in securing an order from the Sultan to the Dey obliging him to release 400 US merchant mariners. Upon his return to the U.S. in 1801, Bainbridge was given command of the Essex and assigned to cruise against marauding Barbary pirates. When the War of 1812 commenced, Bainbridge was assigned to command the Constitution (Old Ironsides). On 29 December 1812, the Constitution defeated and captured the larger British frigate Java.

Posted by Dennis Bryant on MaritimeProfessional.com



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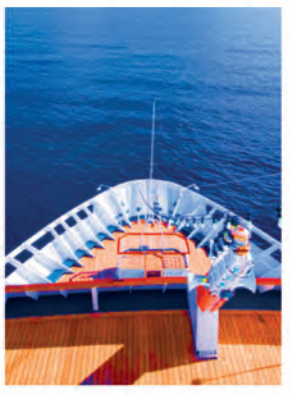

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BUYER'S DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR assumes no responsibility for errors. If you are interested in having your company listed in this Buyer's Directory Section, contact Mark O'Malley at momalley@marinelink.com

AUTOPILOT SYSTEMS

AG Marine, 5711 34th Ave NW 2nd floor, Gig Harbor, WA , tel:253 851-0862, fax:253 851-0865

BARGE FABRICATION

McDonough Marine Services, 1750 Clearview Parkway Suite 201, Metarie, LA 77063, USA , tel:(504) 780-8100, fax:(504) 780-8200, mcdonoughmarine@marmac.net

BOW AND STERN THRUSTERS

Omnithruster Inc., 2201 Pinnacle Parkway Twinsburg, Ohio 44087, Cleveland, OH 44139, USA , tel:330 963-6310, fax:330 963-6325, widmer@omnithruster.com contact: Kurt Widmer, www.omnithruster.com

CABLE TRAY SYSTEMS

Niedax-Kleinhuis USA, Inc., 2260 Westbrooke Drive Building K, Columbus, OH 33619, USA , tel:(614) 921-8469, fax:(614) 921-8676, sales@niedaxusa.com

CAPSTANS

Coastal Marine Equipment, 20995 Coastal Parkway, Gulfport, MS 39503-9517, USA , tel:228-832-7655, fax:228-832-7675, sales@coastalmarineequipment.com , www.coastalmarineequipment.com

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COATINGS/ CORROSION CONTROL/ PAINT

Jotun Paints, 9203 Highway 23, Belle Chass, LA

PPG Protective & Marine Coatings, One PPG Place, 38N Pittsburgh, PA 15272 USA

Rustibus, 2901 WEST SAM HOUSTON PKWY, N. SUITE E-325 HOUSTON, TX 77043 , tel:(832) 203-7170, fax:(832) 203-7171, djj@rustibus.com contact: Dominic Jordan

COMMUNICATIONS

Jepessen Marine, Hovlandsveien 52 PO Box 212, Egersund , tel:011 47 51 46 4700, info.marine@jeppesen.com , www.jeppesen.com/marine

COMMUNICATIONS SERVICE

David Clark, PO Box 15054, Worcester, MA 01615, USA , tel:1-800-298-6235, Sales@davidclark.com

CONSOLE- GMDSS

Engine Monitor, Inc., 191 James Drive West, St. Rose, LA 08872, USA , tel:(504) 620-9800, fax:(504) 620-9801, emonitor@emi-marine.com

CONTROL SYSTEM- MONITORING/STEERING

Omega Engineering, One Omega Dr., Stamford, CT 06907, USA , tel:203 359-1660, fax:203 968-7192, kkwait@omega.com contact: Kathy Kwait, www.omega.com

CRANE - HOIST - DERRICK - WHIRLEYS

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

DECK FITTINGS

Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016, USA

DECK MACHINERY- CARGO HANDLING EQUIPMENT

AF Theriault & Son, P.O. Box 10, Meteghan River, NS B0W 2L0, Canada , tel:902 645 2327, fax:902 645 2174

DMW Marine Group, 1123 St Matthews Rd Chester Springs PA 19425 , tel:(610) 827-2032, dw@dmwmarinegroup.com

JonRie InterTech, LLC, 982 Whispering Oak Circle, Manahawkin, NJ 60007, USA , tel:(609) 978-3523, fax:(609) 978-4959, BJDME@marinewinch.com contact: Brandon Durar, www.marinewinch.com

Liebherr nenzing Crane Co., 7075 Bennington Street, Houston, TX

Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016, USA

DIVING & SALVAGE

Hydrex Headquarters, Haven 29 – Noorderlaan 9 Antwerp 2030, Belgium , tel:32-3-213-5300 (24/7), fax:32-3-213-5321, hydrex@hydrex.be contact: Dave Bleyenberg, www.hydrex.be

Hydrex US, 604 Druid Rd E; Clearwater, FL, USA , tel:727-443-3900 (24/7), fax:727-443-3990, info@hydrex.us contact: Dave Lamon, www.hydrex.us

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Mitsubishi Engine North America, Inc., 1250 GREENBRIAR DRIVE, STE. E, ADDISON, IL 10550, USA , tel:(630) 268-0750, fax:(630) 268-9293, than@mitsubishi-engine.com

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Nano Fossil Fuels Technology, LLC, 561 Keystone Avenue, STE. 322, Reno, NV , tel:(775) 356-0280, fax:(775) 356-0283, nanofuels@sbcglobal.net

GALLEY EQUIPMENT

Jamestown Metal Marine Sales, Inc., 4710 Northwest 2nd. Ave. Boca Raton, FL 33431 , tel:561-994-3900 #3112, fax:561-994-3969, allen.powell@jamestownmetal.com

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

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GYROCOMPASS

AG Marine, 5711 34th Ave NW 2nd floor, Gig Harbor, WA

HOISTS

Coastal Marine Equipment, 20995 Coastal Parkway, Gulfport, MS 39503-9517, USA , tel:228-832-7655, fax:228-832-7675, sales@coastalmarineequipment.com , www.coastalmarineequipment.com

HVAC

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

HYDRAULIC SYSTEMS

HYTORC, div. of Unex Corporation, 333 Route 17 North, Mahwah, NJ , tel:201-512-9500, fax:201-512-9615, btapp@hytorc.com

INTERIORS

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

Thermax Marine-Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76501, USA , tel:813 340-3940, fax:813 264-2507, thermax@panelspec.com contact: John Hutchinson, www.thermaxmarine.com

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LIFT EQUIPMENT

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

Imenco AS, 271 Kingsdale Toronto, Canada M2N 3X6 , tel:(713) 480-7777, al.cohen@imenco.com

Liebherr nenzing Crane Co., 7075 Bennington Street, Houston, TX

Walker Magnetics, 2195 Wright Brothers Avenue Columbus, OH 43217

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MARINE ENGINEERING

Imenco AS, 271 Kingsdale Toronto, Canada M2N 3X6 , tel:(713) 480-7777, al.cohen@imenco.com

MARITIME TRAINING & SCHOOLS

Freelance Software, 39 Peckham Place, Bristol, RI 40223, USA , tel:(401) 556-1955, fax:(401) 396-9717, chris@hawsepipe.com contact: Christopher Dady, www.hawsepipe.net

METEOROLOGICAL INSTRUMENTS

R.M. Young Company, 2801 Aero Park Dr., Traverse City, MI , tel:231-946-3980, fax:231-946-4772, vsherman@youngusa.com

MONITORING SYSTEMS

SPM Instrument Inc., 780 Bailey Hill Rd. Suite 3 Eugene, OR 97402, Eugene, OR

MOORING PRODUCTS AND SYSTEMS

PSI/Tideslide, 3075 Shattuck, Ste 801, Saginaw, MI , tel:989-695-2646, fax:989-695-2648, mbaluha@tideslide.com

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Marlink, Offices in: Oslo, London, Hamburg, Brussels, Athens, Dubai, Mumbai, Singapore, Tokyo, Washington DC and Houston , tel:+32 70 233 220, fax:+32 2 332 3327, customer.service@marlink.com

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Imenco, 16111 Park Entry Dr., Ste 100, Houston, TX , USA , tel:(713) 480-7777, fax:909-626-8326, al.cohen@imenco.com contact: Al Cohen, www.imenco.com

Jambon Marine Service, 20804 Highway 1 South, Golden Meadow, LA , tel:(985) 475-5402, dani@jambonboats.com

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Wartsila, Puotikuja 1, Vaasa , tel:011 35 8107090000 contact: Jessica Akerberg, www.wartsila.com

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SAFETY PRODUCTS

Landfall Navigation, 151 Harvard Avenue, Stamford, CT , tel:203 487-0775

SATELLITE COMMUNICATIONS

Boatracs, 9155 Brown Deer Rd. Ste 8, San Diego, CA , tel:858 458-8107, fax:858 458-8116

Delta Wave Communications, Inc., 8001 Hwy 182 E. Morgan City, LA 70380 , tel:(985) 384-4100, fax:(504) 617-6393, tom.clark@deltawavecomm.com contact: Tom Clark

Delta Wave Communications, Inc., 8001 Hwy 182 E. Morgan City, LA 70380 , tel:(985) 384-4100, fax:(504) 617-6393, tom.clark@deltawavecomm.com contact: Tom Clark

SEATING

H.O. Bostrom, 818 Progress Ave., Waukesha, WI 53186, USA , tel:262.542.0222, fax:262.542.3784, sales@hobostrom.com contact: Mike Oemichen, www.hobostrom.com

SEPARATORS

Westfalia Separator, 100 Fairway Court, Northvale, NJ

SHIPYARDS

HORIZON SHIPBUILDING, INC., 13980 Shell Belt Road Bayou La Batre, AL 36509

STEERING GEARS/ STEERING SYSTEMS

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Measurement Technology NW, 4211 24th Avenue West, Seattle, WA , tel:206 634-1308, LCI@mtnw-usa.com contact: Matt Mostad, www.mtnw-usa.com

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JonRie InterTech, LLC, 982 Whispering Oak Circle, Manahawkin, NJ 29501, USA , tel:(609) 978-3523, fax:(609) 978-4959, BJDME@marinewinch.com

Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016, USA

Environmental Safety & Health Manager
Job Location: USA, Ketchikan, AK

Environmental Safety & Health Manager - 39224
Posted: July 9th | Open Until: August 9th, or until filled |
Location: Ketchikan, AK
About Alaska Ship and Drydock

As Alaskans, we have firsthand experience with the challenging conditions that vessels and crews encounter. We depend on those who sail to transport our supplies and our friends and families. Knowledge of vessels and the harsh conditions of our long coastline and maritime communities gives us an exceptional commitment to quality ship repair and construction. To that end, we continually increase our skills and capabilities for ship repair, new vessel construction and large fabrication projects.
Job Purpose

Under the general guidance and supervision of operational managers, this role ensures a safe and compliant work environment through review, oversight and enforcement of Alaska Ship & Drydock and all other applicable regulations and directives with regard to Hazardous Material Management, Safety and Environmental Protection. Program design, goals and objectives for this role are established by the Company's Safety and Environmental departments. As a result this position maintains a strong dotted line relationship to both of those departments.
Duties

(This is not an all inclusive list of the regular job duties. Other responsibilities within the accepted job scope will apply.)

1. Provide regular feedback to the management team regarding the organization's overall performance on safety and environmental goals and related compliance. To include providing recommendations for improvement, and program modifications that will help improve employee safety and health.
2. Recommend appropriate corrective measures which may include one on one employee coaching/counseling, formal corrective action, or shutting down work being performed to assure employee safety and health.
3. Interfaces with appropriate regulatory agencies as required. (OSHA)
4. Supervises the work of outside vendors as necessary to assure deliverables are being met.
5. Conduct and document the daily Fire & Housekeeping inspections of work being accomplished on Vessels.
6. Promote the Alaska Ship & Drydock's Safety Strategy through awareness and support to achieve the objectives and goals set in the strategy.
7. Coordinate and record Shipyard Competent Person duties.
8. Coordinate asbestos abatement activities as needed.
9. Coordinate inspections required by a Certified Marine Chemist.
10. Coordinate & Identify impacts of hazardous materials, recyclables and generation of waste disposal from preliminary work items.
11. Coordinate paint sample collection and submittal as required.
12. Compile and maintain Contractors Hazardous Materials Information Sheets (CHMI), Waste Information Sheets (WIS), and MSDS files and paint and asbestos sampling analysis.
13. Establish and conduct compliance inspections of ASD Hazardous Materials Lockers.
14. Communicate and conduct daily job box training with project employees to raise Environmental, Safety, and Health issues to the appropriate levels to maintain focus on obtaining the goals of the company safety strategy.
15. Develop and administer Hazardous Material Handling training for all employees to be given during new employee safety orientation training and bi-annual refresher training to current employees, updating training presentations and ensuring employee training records are updated accordingly.
16. Conduct and record respirator fit testing and annual refreshers, annual Fire Watch Training.
17. Continually monitors existing equipment, ensure calibration is current and makes recommendations for modification and or replacement.
18. Aggressively review Material Safety Data Sheet (MSDS) information from Alaska Ship & Drydock and its subcontractors.
19. Maintain all records and manifests required for compliance with local, state or federal regulations pertaining to safety and environmental areas.
20. Conduct and document weekly all hands safety meetings.

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Human Resources
Vigor Industrial LLC
Email: Daava.Mills@vigorindustrial.com
Web: http://vigorindustrial.com/jobs/details/39224

Production Manager -
Job Location: USA, Seattle, WA

Production Manager - 42275

Posted: August 31st | Open Until: Filled | Location: Seattle, WA
About US Fab

US Fab is part of the Vigor Industrial family of industrial services. We are an innovative manufacturer based in the Pacific Northwest. From sea-worthy barges to methane gas recycling systems, we use advanced technology and specialized manufacturing to meet our customer's needs.

(Many of the exciting Seattle opportunities have been created because the Company has been awarded two Washington State Ferry contracts. The anticipated duration is through the end of 2014. As a result, the continuance of this position beyond the referenced projects will be contingent upon future project awards being obtained.)
Job Purpose

This position is responsible for leading project based job results, specifically delivery under budget and on-time. This is accomplished by leading the development and execution of a daily plan of the day that successfully supports overall project objectives. Interfaces with and takes direction from the Ship Manager in generating executable plans to deliver to Supervisors executing the work. Assists the Supervisors and work station Leads in mitigation strategies as soon as variances from schedule are identified. Daily progressing against daily plan is required to identify and mitigate variances. Will be required to learn and perform functions of Project Manager on smaller projects that do not necessarily require the services of a Project Manager. Will report directly to Director of Manufacturing to support work for non-project based work not supported by a Ship Manager.
Duties

(This is not an all inclusive list of the regular job duties. Other responsibilities within the accepted job scope will apply.)

1. Coordinates estimates into work plans and work schedules utilizing MS Project and ensures materials are delivered to work stations as needed. Coordinates scope of work, Crafts workers and subcontractors needed to complete jobs on time and within budget.
2. Sequencing units of work to meet required delivery dates and maintain project profitability within or ahead of budget. Removes roadblocks identified by Supervisors / Leads and Production workers.
3. Promotes a safe working environment using daily safety briefs. Promoting/enforcing PPE, discussing job hazard analysis, and accident prevention.
4. Supports supervisors in resolving any issues and eliminating barriers that may compromise the successful completion of the plan of the day and elevate those issues they are unable to resolve.
5. Supports the estimating and planning phases of the project by attending meetings and supporting the creation of the estimate and the quality of the plan with the PMT and Central Staffing as needed.
6. Responsible for identifying and aligning external resources to support the execution of the project. These groups include any and all departments that interface with production such as Engineering, Procurement, Manufacturing and Facilities.
7. Primary liaison between workers or leads at each of their responsible work stations regarding communications relative to performance on safety, quality, budget and schedule.
8. Manages subcontract production through subcontractor's onsite supervisors.
9. Coordinates Supervisors and workers in prioritizing activities/jobs to meet or exceed customer expectations while assuring best use of shipyard facilities and resources.
10. Utilizes Central Staffing services for trade specific issues and for establishing a manning plan for each project.
11. Identify and report (CFR) changes in scope of base work package by initiating/writing the CFR to clearly describe the problem and provide a recommended action/resolution.
12. Understands and implements company and departmental policies/procedures.

The position operates within established policies and procedures covering each work station. The individual must have agreement from Director of Manufacturing to revise standard work practices regarding safety, environmental rules and revision to work shifts. He/she is accountable to make decision for selection of supervisors, has responsibility to work with Ship Manager to develop build strategy plans. The incumbent is accountable for over 1 million dollars in annual revenue.

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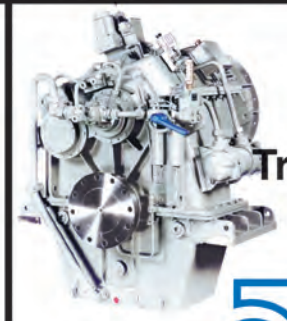

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