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(Image: BAE Systems)

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(Photo: Greg Trauthwein)

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With the passing of another month, the fervor over the Costa Concordia disaster, at least in the eyes of the public, has subsided, as new global disasters feed the daily news machine. As the trial of the ill-fated ship's Master, Captain Francesco Schettino has just now started, undoubtedly the ship; the 32 lives lost; and the countless lawsuits to follow will pop back to the front page on occasion.



The real story, though, has not yet been written.

Stripping away emotion, maritime disasters come and maritime disasters go, and depending on the magnitude and the locale, the indelible mark arrives in the form of new laws, usually from the International Maritime Organization but possibly from individual port states, and if we are really lucky, individual states. I mention locale, as the Costa Concordia case is a painstaking reminder of our priorities. An ultra-modern, \$600m cruise ship meets disaster, 32 people die and the story is an international event of, excuse the expression, Titanic proportions. But when, for example, an overcrowded ferry in a developing nation sinks and kills hundreds, it's a news ticker item with a short shelf-life and mutterings that "something should be done."

We report time and again in these pages of the wonderful new technologies being developed daily that are designed to make maritime operations more safe, efficient and profitable. An equal number of times we report, particularly when discussing casualties, that technology is not the "silver bullet" to prevent accidents, as it has been proven time and again that the vast majority of accidents are caused by simple human error.

But there is a middle ground, and without a doubt the proliferation of state-of-the-art training and education facilities and the commitment by responsible, well run shipping companies to institute and maintain a culture of safe operations will certainly have a positive effect in making maritime a safer industry. While the cruise industry has certainly weathered its share of bad press, and while any industry is open to scrutiny and improvement, the cruise sector is a clear leader in terms of safety training, and overall has an impeccable record of taking people out and bringing them back safely.

Last month I had the pleasure to speak with Captain Bill Wright, Senior VP of Marine Operations at Royal Caribbean Cruises Ltd., the man responsible for the safe operation of 24 ships, including the world's two largest. Royal Caribbean is in the headlines this month as it has moved all of its simulation training and education operations into a brand new, custom-built Resolve Maritime Academy, the brainchild of Resolve's Joe Farrell, who has built a career – a life – at facing and solving maritime problems. The ribbon will be cut on the facility this month; the story starts on page 64.



Solving problems is perhaps the keenest skill that someone in the Ship Repair sector can possess, as problems seen in the shipyard are rarely ever the same. This month *MR* delves deep into the global ship repair sector, a sector which has been hard hit by the global economic downturn, as shipowners delay or cancel major modifications, opting instead to focus solely on regulatory dockings. Coverage of the sector — from Bayonne to Brazil, Bahrain to Mumbai — starts on page 30.



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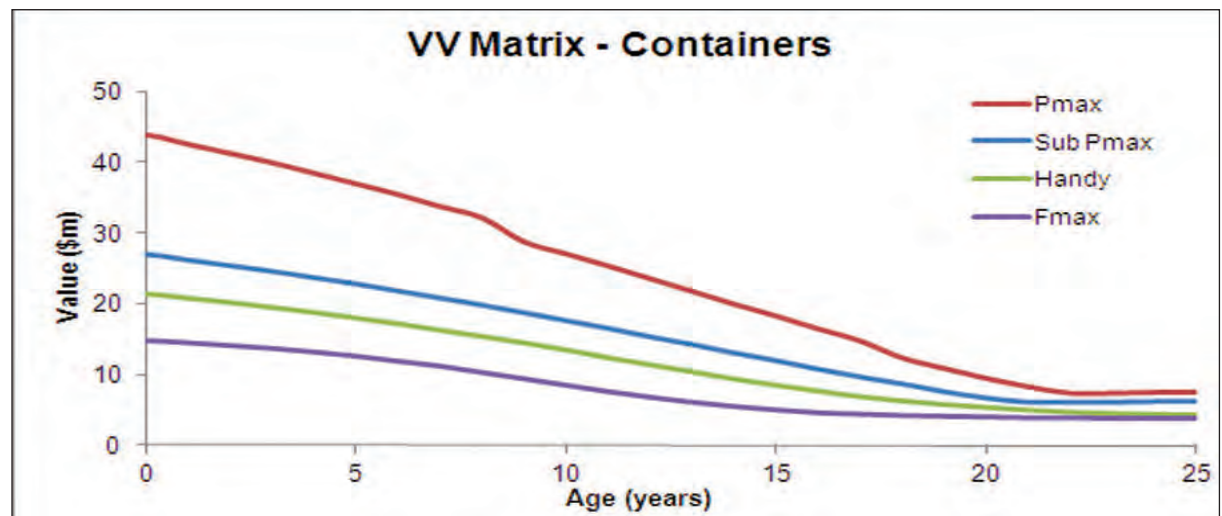
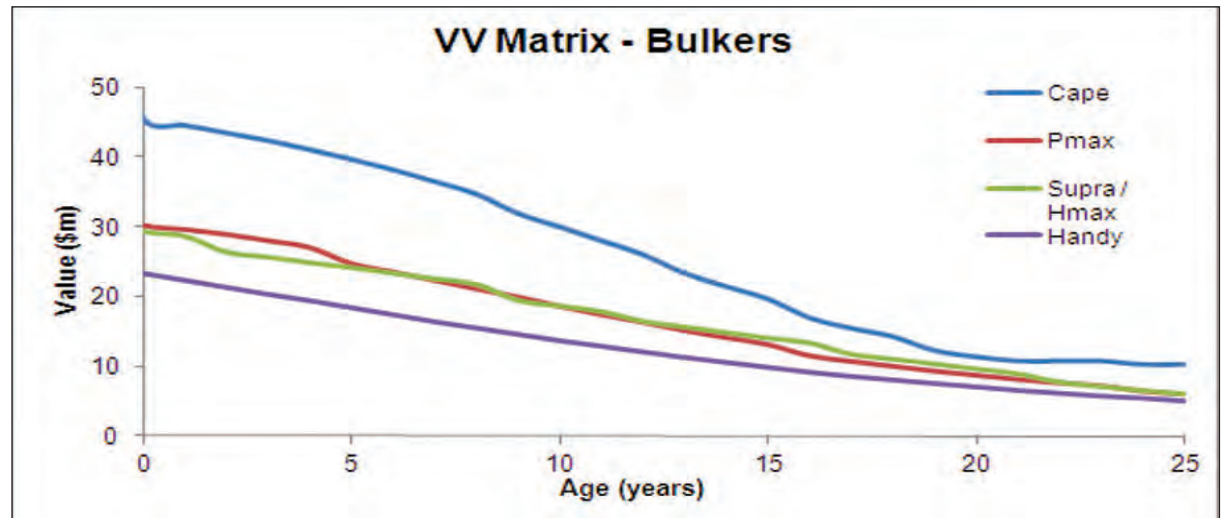
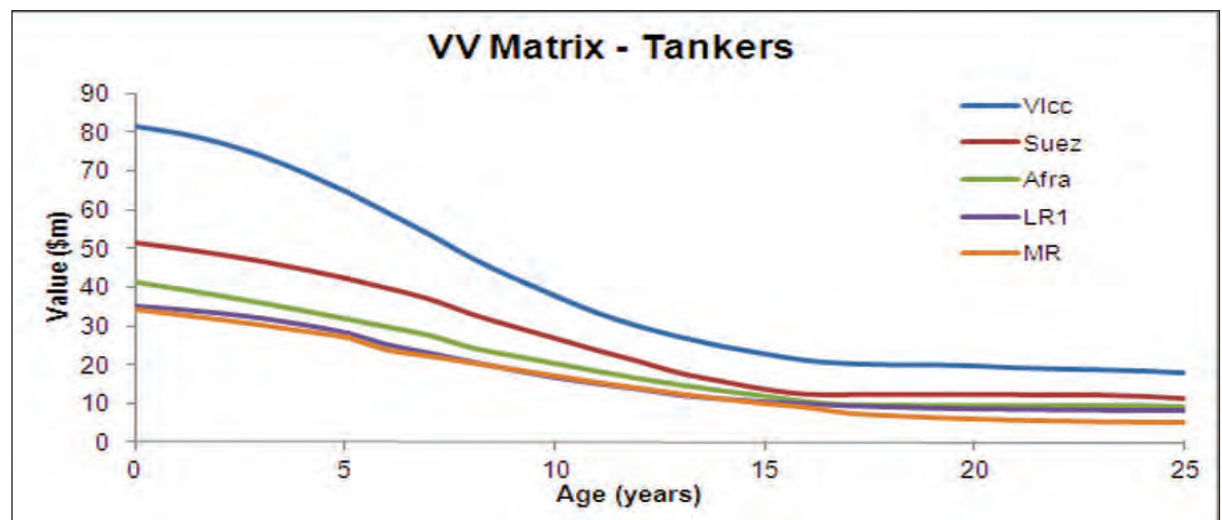
28 February 2012

VV Mini Matrix

Built	Tankers					Bulkers				Containers			
	Vlcc	Suez	Afra	LR1	MR	Cape	Pmax	Supra / Hmax	Handy	ULCV	Pmax	Handy	Fmax
2012	81.6 310k	51.6 160k	41.3 110k	35.2 75k	34.3 50k	45.5 180k	30.3 80k	29.3 60k	23.2 30k	166.3 16,000	43.9 4,250	21.5 1,400	14.7 750
2007	64.8 310k	42.4 160k	31.8 110k	28.4 75k	27.1 50k	39.7 180k	24.8 75k	24.1 55k	18.3 30k	131.5 15,000	37.0 4,250	18.1 1,400	12.5 750
2002	37.8 305k	26.8 155k	20.2 105k	16.9 70k	17.1 45k	30.0 175k	18.7 75k	18.6 50k	13.6 30k	N/A --	27.1 4,000	13.6 1,400	8.4 750
1997	22.8 300k	13.6 145k	11.8 105k	10.6 65k	9.9 45k	19.6 170k	13.2 75k	14.0 48k	9.8 30k	N/A --	18.3 4,000	8.6 1,400	4.9 750
1992	19.7 285k	12.2 145k	9.3 100k	8.8 65k	5.9 40k	11.3 150k	8.8 70k	9.6 45k	7.0 30k	N/A --	9.5 3,750	5.5 1,400	3.9 750
1987	17.9 250k	11.2 130k	8.9 95k	8.4 65k	5.0 40k	10.2 140k	6.1 65k	6.0 42k	5.0 30k	N/A --	7.5 3,750	4.4 1,400	3.7 750

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



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DY4001 is the lead ship of the Crown 63 series, an innovative series of 63,500-DWT bulk carriers, which last month completed its sea trial. According to the shipbuilder, the vessel's speed trial was proven beyond its design prediction and met all guarantees. DY4001 was built by Dayang Shipyard, designed by Sinopacific Group Design, classed by BV and is owned by SETAF. Compared to the Crown 58 58,000-DWT bulk carrier series, Crown 63 has a 9% increased deadweight but offers a reduced fuel consumption of 13% at the same service speed. Jean Labescat, Technology Gen-

eral Manager of SETAF reportedly was satisfied with the outcomes of the sea trial. "DY4001 features outstanding performance and its design gives consideration to the owner's operating benefits."

DY4001 was scheduled for delivery in late February 2012, with a succession of 22 sisterships to follow.

Based on Crown 58, the Crown 63 has optimized its body lines and improved the design for bulbous bow, propeller and rudder bulb, helping to achieve an optimal combination in various critical elements and then improve propulsion efficiency. By adopting low-sulfur fuel

Pictured, L to R, at the Yangzhou naming ceremony in February 2012 for the JS Amazon are Jacques de Chateauvieux, Chairman and CEO of Jaccar Holding, Didier Bouttier, Senior VP of BV Asia, Pacific and Middle East Zone, Jean Labescat, General Manager of Setaf Saget, Bernard Anne, MD of BV Marine Division, and Simon Liang, Chairman and CEO of Sinopacific Shipbuilding Group.

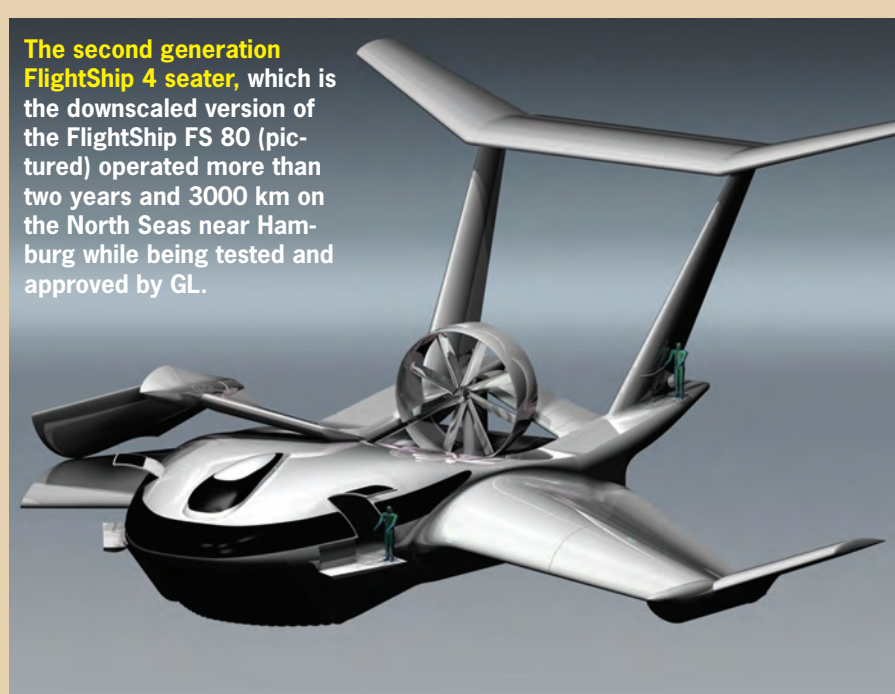
Interesting Concept, but ... Will it FLY?

The notion of melding the strengths of aviation (speed) and maritime (cargo capacity) are certainly not new, having been eyed by engineers and inventors essentially since the inception of flight. FlightShip is a novel concept originated by Prof. Dr. Lippisch in the late 1960's, and according to the developer, the time for idea to evolve from concept to market reality is now, given the stringent nature of the maritime business in terms of emissions and fuel economy.

In trial for going on four decades, FlightShips were developed and for the first time built by Prof. Dr. Lippisch's former team members financially supported by the German Government. According to the team, FlightShips are representing the future of weightless high speed transport above the seas. To date a pair of proof-of-concept FlightShips were built and are in operation, according to the owner both approved by IMO and Germanischer Lloyd. The FlightShips can be certified, registered and insured as maritime vessels (IMO WIG class B) and can be operated with a valid boat captain's license only, according to the FlightShip developers. When navigating in a marina and during taxi-mode, the wings are by-folded and the FlightShip is propelled by its two diesel engines and Waterjets. The retractable undercarriage allows the vessel to move independently from water to

land by using a ramp. For takeoff the wings are lowered and locked in ground effect mode and a certain amount of the propeller stream is guided underneath the fuselage as a patented lift off aid, reducing approximately 80 percent of the vessels overall weight. After a short transition the FlightShip is lifting up, finally hovering above the surface. The entire fuselage is designed to be a lifting body, increasing the dynamic lift and providing a huge cabin volume.

The power of FlightShip, according to developers, is the space and flexibility of its cargo/cabin area, designed to be spacious and flexible to meet most any cargo/passenger configuration need. In addition, it provides the speed of an aircraft yet negates some traditional drawbacks, such as the need for an airport and common infrastructure. The state of the art glass cockpit is equipped with all controls, navigation and communications equipment, autopilot, radar, Direct Height Control, ECDIS, WaMos, AIS complying with IMO and the clients specification's. FlightShips are designed to maintain high speeds up to 250 km/h, designed to be powered using bio fuels, LNG and Hydrogenium can be utilized to drive the turboprop turbines. FlightShips are manufactured in carbon fiber and advanced composite materials which results in low weight, long lifespan and signifi-



The second generation FlightShip 4 seater, which is the downscaled version of the FlightShip FS 80 (pictured) operated more than two years and 3000 km on the North Seas near Hamburg while being tested and approved by GL.

cantly reduced maintenance schedules.

Once the FlightShip reaches the desired cruise speed, it is designed to ride smoothly on its own ram air cushion. FlightShips are not affected by the impact of waves, current or swell and do not generate wash, wake or waves. During cruise mode one engine can be switched off to further increase the fuel efficiency. Unlike any other ship the FlyShips are able to gain altitude and fly above obstacles, ships, swamps, mangroves and even land. The maximum altitude is limited to

100m. The first generation FlightShip FS-8 (Airfish) is today operating as an 8 seater high speed passenger ferry in Singapore, maintaining an average speed of 120 km/h powered by a single V8 car engine. The second generation FlightShip 4 seater, which is the downscaled version of the FlightShip FS 80 operated very successful more than two years and 3000 km on the North Seas near Hamburg whilst being tested and approved by Germanischer Lloyd.

Email: flyshipq@gmail.com

system, the vessel's SOx emission has been reduced. According to Mr. Chen Jingwei, Deputy General Manager of GreenSeas Marine Technology of Sinopacific Group, Crown 63 experienced a one-year initial design optimization and went through tank tests five times at The Hamburg Ship Model Basin, Hamburgische Schiffbau-Versuchsanstalt GmbH (HSVA)).

Crown 63 adopts low-speed two-stroke electronic injection diesel engine from Doosan Engine. Its electronic injection system provides higher precision in fuel injection, features sufficient combustion and long working time, which turns out to be efficient in reducing the fuel consumption as well as NOx emission.

BV issued Energy Efficiency Design Index (EEDI) for the lead ship of Crown 63, which is also BV's first EEDI certificate in Asia. Meanwhile, the Green Passport certificate will be issued for this vessel (DY4001) by BV as well.

BV Issues EEDI for JS Amazon

Bureau Veritas issued its first EEDI (Energy Efficiency Design Index) certificate to the ultramax geared bulk carrier JS Amazon, the lead ship in a new generation of 'CROWN63' vessels developed by China's Sinopacific Shipbuilding Group with bulk carrier expert Setaf-Saget.

The 63,300 dwt vessel is designed for the carriage of bulk cargoes, including coal, iron ore, grain and cement, as well as a range of dangerous cargoes. Its GHG (Green House Gas) performance when measured in accordance with IMO's Energy Efficiency Design Index is twenty per cent better than the requirement under MARPOL Annex VI and already reaches the Phase II requirement normally set for the years 2020/2024. Its deadweight was achieved as a result of an advanced design fully compliant with the Common Structural Rules. The vessel can carry 5.2 per cent more cargo than other bulk carriers of comparable size.

"This vessel marks the start of a new series of ships which will be exemplary contributors to a greener and cleaner world, shaping the image of shipping for the future," said Bernard Anne, Managing Director of BV's Marine Division.

Working with Sinopacific and a number of different owners, BV has classed 42 vessels of the 'CROWN58' series of supramax bulk carriers already delivered or still under construction. It is also responsible for the classification of 32 vessels on order in the 'CROWN63' series, and anticipates more to come.

Tugs "Get a Lift" to Moroccan Port

Two Damen Stan Tugs 2608, the Ibrahim 1 and the Jacques, were shipped from the anchorage of Halong Bay, Haiphong to Casablanca by the Atlantic Winter, an 800t lifting capacity HLV

chartered by Thorco from Reederei Heino Winter. The tugs were ordered by JL Tug and Fedala Tug. Both are Moroccan, privately owned maritime services companies. Ibrahim 1 will be operated by JL Tug in the Port of Jorf Lasfar and Jacques will be operated by Fedala Tug in the Port of Mohammedia.



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St. Johns Delivers Tugs for Australian Terminal Project

St. Johns Ship Building of Palatka, Fla. delivered two custom built twin screw push tugs, the Lady Shayne and the Lady Dashelle, for Smithbridge of Brisbane Australia. These 25-ft. tugs feature twin John Deere model diesel engines with a

combined rating of 600hp and conventional shaft drives with reversing gears. "The Lady Shayne and Lady Dashelle will be assigned to a very high profile marine construction site in Botany Bay in Sydney, Australia where a new bulk liq-

uid terminal is being built to accommodate tankers," said Ron Mason, Marine Operations Manager and New Construction Projects Manager for Smithbridge.

The Shayne and Dashelle will handle the 160-ft by 80-ft piling barge as it goes



through the piling process for the terminal. In addition to these newbuilds, St. Johns Ship Building will begin work on a second pair of identical tugs, as well as a pair of 39-ft truckable tugs, for Smithbridge. The Smithbridge Group specializes in civil and marine design and construction and operates in Australia, New Zealand, Guam and New Caledonia. Smithbridge has been recognized for its engineering innovations, outstanding job performance and high safety standards by organizations such as the Civil Contractors Federation, the Institution of Professional Engineers NZ, the Structural Engineering Society of New Zealand and the Guam Contractor's Association.

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Main Particulars

Length, o.a.	25.8 ft.
Beam	13 ft. (Outside of fenders)
Draft	3.5 ft.
Main Engines	2x John Deere Model
Gearboxes	2x Twin Disc, Ratio= 2.88:1
Tailshafts	2x 2 3/4" Diameter Crest Aqua Met
Rudder Shafts	2x 2 3/4" Diameter Crest Aqua Met
Flanking Rudders	2x 2 3/4" Diameter Crest Aqua Met
Propellers	2x 35" X22" X4 Blades
Forward Deck Winches	2x 20t
Navigation Mast	Collapsible for transportation
Bilge System	2x 12volt Bilge Pumps
Steering	Kobel Hydraulic

Raidco Delivers Four Patrol Boats

Raidco Marine delivered four of the first of a series of 11 Patrol Boats to the Gendarmerie Nationale. Designed by Camarc, the new patrol boat has been sold by Raidco Marine, Lorient, and built by Ufast in Quimper, France. With new features for monitoring and intervention, this 33-knot, 11m patrol boat is different from previous patrol boats delivered by Raidco Marine. Using VSMP modeling (virtual symmetric multiprocessing architecture) these vessels are designed to provide coastal surveillance missions in the nautical band 5 and are unsinkable. Thanks to its hard chine deep V-shaped hull the vessel combines high performance and exceptional sea keeping qualities for its patrolling roles and is capable of reaching high chase speeds. The UFC 11.00 Alu is powered by twin Yanmar 6 LPA STP 315 hp engines @ 3800 rpm coupled to twin Ultra Dynamics' UltraJet UJ305s waterjets via ZF63 reduction gearboxes; during sea trials the patrol boat reached a speed of 34 knots. Reverse and steering is via an Ultra Dynamics hydro-mechanical control system.



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The GARBAGE Revolution

As international, national and regional authorities continue to clamp down, vessel owner/operators must be more mindful of their waste handling procedures.

About the Author

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There was a revolution at IMO Headquarters in July 2011 – and few noticed. While all the attention was focused on greenhouse gas issues, such as the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP), changes to MARPOL Annex V raised little controversy. In IMO’s official summary of the 62nd session of Marine Environment Protection Committee (MEPC), which occurred on 11-15 July 2011, adoption of the revised MARPOL Annex V (garbage) merited only three sentences – and the revolutionary provision was reported in the following phrase: “the inclusion of a new requirement specifying that discharge of all garbage into the sea is prohibited, except as expressly provided otherwise”.

The import of this phrase was not discussed in the IMO report, or in any report that I have seen issued by IMO member states or maritime organizations that closely follow IMO developments.

This revision, which comes into effect on 1 January 2013, represents the official adoption of the precautionary principle into the International Convention for the Prevention of Pollution Sea by Ships (MARPOL Convention). The precautionary principle (also referred to as the precautionary approach) was previously incorporated into the London Dumping Convention by means of the 1996 Protocol. As stated in that Protocol, the precautionary approach is intended to take preventative measures when there is reason to believe that wastes or other matter

introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relationship between the inputs and their effects.

In other words, the precautionary principle reverses the burden of proof so that the proponent of discharging a certain type of material must now prove that such discharge will not cause harm to the marine environment. Previously, garbage of almost any type could generally be discharged into the ocean unless there was a provision banning or limiting such discharge.

A number of new terms are being added to the definitions regulation of revised Annex V. Among the new terms are: cargo residues, domestic wastes, en

route, food wastes, incinerator wastes, and operational wastes. The definitions of these terms are not surprising, but, when conjoined with the precautionary principle, it significantly impacts what can be disposed of legally at sea and under what conditions. Failure to include any particular material within the revised definitions results in a prohibition against disposal at sea of that material as garbage. Inclusion of a particular material as a particular type of garbage may increase the restrictions on disposal even when allowed.

A prime example of how routines are being turned on their heads is dunnage. Under the current version of MARPOL Annex V, dunnage is treated as general garbage that will float. Outside of spe-



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In other words, the precautionary principle reverses the burden of proof so that the proponent of discharging a certain type of material must now prove that such discharge will not cause harm to the marine environment. Previously, garbage of almost any type could generally be discharged into the ocean unless there was a provision banning or limiting such discharge.



cial areas, it is to be disposed of as far as practicable from the nearest land, but, in any case, at least 25 nautical miles from land. Under the revised version of Annex V, disposal at sea of dunnage will be prohibited. This will leave the master with two options: (1) incinerate it; or (2) transfer it ashore when in port for land-based processing. Many break-bulk ships, among others, utilize large quantities of dunnage in the carriage of their commercial cargoes. Currently, most dunnage is disposed of at sea when no longer serviceable. Few ships will have the capability to incinerate significant amounts of dunnage. Disposal ashore can be expensive. Carriers and shippers should ensure that the added expense of disposal ashore is adequately addressed in charter parties, contracts of affreightment, and bills of lading so as to eliminate future surprises and disagreements.

At the same time, ports and facilities must start planning now for the increased

demand placed on shoreside reception facilities. The revision to Annex V clearly will result in a quantum increase in the volume of garbage being offloaded by ships during their port calls. Reception facilities will be expected to handle the greater volume, while not delaying ships and cargo-handling facilities with their already tight schedules.

Cargo residues that cannot be recovered using commonly available methods of unloading may be discharged, outside of special areas, more than 12 nautical miles from the nearest land, but only if those residues do not contain any substances classified as harmful to the marine environment.

In a concession to livestock exporting nations, the revised Annex V provides that, outside of special areas, animal carcasses may be discharged as far from the nearest land as possible.

Cleaning agents or additives contained in cargo hold, deck, and external surface

wash water may be discharged into the sea, but only if those substances are not harmful to the marine environment, and then only when the vessel is not in a special area. This change will make many standard cleaning agents and additives obsolete and will open up new markets for companies that can supply conforming cleaning agents and additives.

The requirement for a garbage management plan is also being changed. Previously, such plans were only required for ships of 400 gross tonnage and above. Under the revised Annex V, the requirement for a garbage management plan is being extended to ships of 100 gross tonnage and above and to fixed and floating platforms. It should be noted that the expansion of the categories of garbage in the definitions regulation will result in an expansion of the potential provisions in the garbage management plan. The garbage record book is being changed to more closely resemble the oil record

book. In addition to the inclusion of the new categories of garbage added by adoption of new terms in definitions regulation, entries must now also reflect discharges to shoreside reception facilities.

As shipboard garbage becomes increasingly regulated, stakeholders must exercise caution. Various nations, but particularly the United States, have adopted a strict enforcement policy regarding operational discharges of oil into the water. As ballast water management has progressed, a similar approach is taking place in that arena. Masters and chief engineers have gone to jail and ship owners and operators have incurred significant fines and penalties for violation of those requirements. The same hardline approach will undoubtedly be taken with regard to garbage management after requirements imposed by the garbage revolution enter into force. Owners, operators, masters, and officers on ocean-going ships need to prepare now.

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CONTINUAL PROGRESSION

Bollard Pull & Escort Trials at MARIN

MARIN carried out an extensive array of tests for bollard pull & escort trials and it boosted its offering with new dedicated equipment.



About the Author
 Henk van den Boom is manager at the Trials & Monitoring department of MARIN, the Maritime Research Institute Netherlands. MARIN offers simulation, model testing, full-scale measurements and training programmes, to the ship-building and offshore industry and governments.
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Bollard pull is derived from a trial where the towline is connected to a bollard and the power settings are increased to MCR (Maximum Continuous Rating). The tension in the towline is then measured by a calibrated and certified load cell. “Sustained bollard pull”, “maximum static bollard pull” and “maximum bollard pull” are derived from the measured continuous tension. To conduct the required measurements during bollard pull and escort trials MARIN Trials & Monitoring has recently expanded its meas-

urement equipment. The range of available load cells has now been extended to have a capacity of 250 tonf. Additionally, the new load cells are equipped with wireless, high range data transmission and a Moving Base Real-Time-Kinematic GPS” system has been acquired to record the horizontal towline angle during escort trials.

This system consists of two Real-Time-Kinematic GPS receivers working in a Rover/ Base setting. One system is placed on the escorted vessel and the

other on the escort tug. In this way the track and the heading of both vessels are recorded as well as the towline angle. This is important real time information to determine the maximum steering force obtained. During both bollard pull and escort trials the developed shaft power of the tug is derived from the shaft torque and rpm measured by MARIN’s SMART system.

ESCORT NOTATION TRIALS

To receive a Class ‘escort tug’ notation

the maximum steering force that can be produced by the tug on the vessel, as well as the time it takes to swing from board to board, have to be established. For this purpose escort trials are conducted where the escort tug is connected to the stern of a large vessel. While the vessel maintains course and its pre-set speed, the tug swings sideways to produce the maximum steering force on the vessel. The time required to achieve maximum steering force from one side to the other is also measured.

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Safety, Fuel Efficiency & Reduced Emissions

Key Benefits of Third-Generation Marine Technology

By Iain Weir-Jones, Ph.D, P.Eng.

Ferries and ocean going vessels can now sail more efficiently, save fuel, and reduce CO2 emissions by using the Automated Draft Indicator System (ADIS). Weir-Jones Engineering Ltd. has recently released the third generation of ADIS. ADIS defines the position of the static water plane relative to the vessel. In this way, the position of any part of the ship relative to the water plane can be determined. Based on these measurements, the position and orientation of the vessel including the draft, freeboard, heel and trim are established. The calculations are carried out in real-time and these parameters are continuously updated and displayed. The system is designed to offer:

- Accurate draft measurements (better than ± 10 mm) are displayed, greater precision is available if required.
- Real-time loading information about hogging, sagging and trim.
- ADIS digital bridge display can show the draft of the vessel, port and starboard, forward, amidships and aft and cargo tonnes to go.
- The ADIS installation requires no underwater hull penetrations.

Safety: When installed on displacement hulls, ADIS enables operators to:

- Record precisely how much cargo has been loaded or unloaded.
- Improve the handling of vessels, or precisely monitor the trim of a floating structure.
- Keep accurate hard copy loading records to satisfy regulatory requirements.

Loading: On cargo vessels and ferries, the system pays for itself by improving fuel efficiency, eliminating disputes about the exact weight of cargo loaded and discharged, and optimizing loading.

Fuel Efficiency (trim control): In addition to the benefits of enhanced stability and passenger/ cargo safety, the use of ADIS on ocean going vessels offers two benefits that are becoming important in terms of the environment: improved fuel efficiency and reduced CO2 emissions. Consider a 300,000 dwt capesize tanker sailing in ballast at about 17 knots. A thirty day voyage, Europe to the Gulf, would consume ~ 2400 tonnes of fuel, ~ 80 tpd, costing ~ \$700/tonne, or \$1.68 million. Recent studies in Europe and by Mitsui in Japan indicate that fuel consumption efficiencies of between 5% and 7% can be achieved by optimizing the trim of the vessel. Using the lower figure of 5% produces a fuel saving of approximately \$80,000/trip in ballast, with commensurate reduction in CO2 emissions of more than 300 tonnes.

PRINCIPLE OF OPERATION

The ADIS system is equipped with four ultrasonic transceivers. In standard configuration, each transceiver generates short bursts of ultrasonic energy and captures the reflections from the water surface. The embedded microprocessor in the sensor measures the travelling time of the generated ultrasonic wave and accurately determines the distance of the water surface from the known position of the transceiver.

In addition, the sensor uses an internal temperature sensor to compensate for temperature effects on the measurements. The sensor digitally sends the distance values which define the position of the water plane relative to the vessel to the central processing unit. In the central processing unit, the position of any part of the ship relative to the water plane is accurately calculated. The draught of the vessel is determined based on the measuring of the port and starboard freeboard, fore and aft. The depth of the keel below the water plane is calculated using the dimensions of the vessel and proprietary algorithms, which ensure accuracy by correcting for the presence of propeller wash in dock and waves while underway. Two or more bridge display outputs are available for double ended vessels or for alternate display locations. The bridge display provides six digital readings; draught forward and aft, draught and freeboard amidships, port and starboard. Data can also be routed to other data storage systems such as the Hull Condition Monitoring System and the Voyage Data Monitoring System.

About the Author

Dr. Iain Weir-Jones has more than forty years of experience in the design and development of proprietary monitoring and analytical systems. He can be reached at

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Maritime Pollution

And Other Legislation Outlooks which will make headlines in 2012

It has been almost two years since the Deepwater Horizon incident occurred on April 20, 2010. As a result of this incident, although there have been many bills introduced in Congress to address issues raised by this incident, as well as numerous related hearings, Congress was unable to see the way clear to actually enact any pollution-related legislation, or for that matter any substantial maritime legislation in 2011. The following is a summary of the action taken by Congress last year and a perspective on such legislation for 2012.

2011 PROPOSED LEGISLATION SUMMARY

The Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE)/U.S. Coast Guard Joint Investigation Team finally released the final report on the Deepwater Horizon incident on September 14, 2011. The report is comprised of Volume I, covering the areas of investigation under the jurisdiction of the Coast Guard, and Volume II, covering the areas of the investigation under BOEMRE jurisdiction. There is also a supplement to Volume I—the Final Action Memo from Coast Guard Commandant Adm. Bob Papp. Around the same time, Congressman LoBiondo and Congressman Mica co-sponsored and introduced the Coast Guard and Maritime Transportation Act of 2011, H.R. 2838 (the bill typically used for enactment of maritime legislation) on September 2, 2011. This bill was reported to the Committee on Transportation and Infrastructure on October 10, 2011 and ultimately it was passed by the House on November 15, 2011 and immediately referred to the Senate for action.

H.R. 2838 includes provisions addressing the following major topics. Coast Guard reform; shipping and navigation (including provisions on the Marine Transportation System, rebuild determinations in foreign shipyards, dockside safety examinations, classification soci-

To date in 2012, Congressional focus has certainly shifted away from oil spill safety and response in 2011 to job creation, economic growth, and election related issues. In addition, budgetary and regulatory reform issues dominated the Congress at the end of 2011. There has been no movement in 2012 with regard to either pollution or general maritime legislation except for the publishing of S. 1665.

eties, and short sea transportation); miscellaneous (including provisions on the merchant mariner evaluation program, notice of arrival for vessels operating on the outer continental shelf, the distant water tuna fleet, coastwise endorsement waivers, standby vessels, and a report on impediments for U.S.-flag vessels to compete in international transportation markets); commercial vessel discharges reform (ballast water legislation that would preempt state actions to regulate ballast water discharges); and certain piracy provisions. The only Deepwater Horizon-related provision was section 608 addressing “standby vessels.” This controversial provision would require an owner or operator of an offshore facility or floating facility to locate a standby vessel nearby to provide immediate response to an offshore incident. No further action has been taken on H.R. 2838 to date.

The Senate on the other hand, introduced its version of maritime legislation in the form of the Coast Guard Authorization Act for Fiscal Years 2012 and 2013 on October 6, 2011, S. 1665. No further action was taken on S. 1665 in 2011. However, on January 26, 2012, S. 1665 was reported by Senator Rockefeller with

an amendment in the nature of a substitute and referred to the Committee on Commerce, Science and Transportation.

S. 1665 includes provisions addressing the following major topics. Coast Guard administration (including a requirement to maintain U.S. polar icebreaking capability); shipping and navigation (including a provision related to classification societies); miscellaneous (including provisions related to oil spill liability trust fund investments, vessel new build determinations, documentation with a coastwise endorsement for three LNG vessels, notice of arrival for vessels operating on the outer continental shelf, and a higher volume port area regulatory definition change for pollution response purposes).

It is clear from the provisions actually included in both H.R. 2838 and S. 1665, that Congress generally avoided including controversial Deepwater Horizon pollution-related provisions in these bills. We understand that the strategy had been to propose separate bills in both the House and the Senate to address more controversial spill related matters. However, as evidenced by the void of specific spill focused proposed legislation in 2011, Congress simply ran out of time given other priorities to move forward on

About the Author

Jonathan K. Waldron, partner at Blank Rome, counsels clients worldwide in maritime, international, and environmental law matters, including maritime security. Mr. Waldron is the co-author of the Maritime Security Handbook and is ranked by Chambers USA and Who's Who Legal as a leading maritime attorney.



comprehensive spill legislation to implement remedies following the Deepwater Horizon spill in 2010.

2012 MARITIME LEGISLATION PREDICTION

To date in 2012, Congressional focus has certainly shifted away from oil spill safety and response in 2011 to job creation, economic growth, and election related issues. In addition, budgetary and regulatory reform issues dominated the Congress at the end of 2011. There has been no movement in 2012 with regard to either pollution or general maritime legislation except for the publishing of S. 1665. We understand that the Senate is seeking floor time potentially to take action on S. 1665 that could ultimately result in the Senate passage of the Coast Guard Authorization Act for Fiscal Years 2012 and 2013.

If the Senate can find time to take action on S. 1665, that would cue up some kind of a possible conference between both the House and the Senate to push maritime legislation in 2012. In addition, both the House and the Senate could decide to push for pollution-related legislation later in 2012.

That legislation could proceed either independently, or at some point in 2012 be combined with the Coast Guard Authorization pending legislation. Another key factor potentially affecting pollution-related legislation is related to when the Department of Justice will complete its investigation into the Deepwater Horizon incident and finally publically release its indictments against the companies responsible for the spill and any individuals.

In conclusion, given all of the other economic related priorities coupled with the fact that this will be an election year, on balance it would appear that it will be difficult for Congress to make maritime legislation a priority this year resulting in the enactment of significant maritime legislation in 2012—we shall see.

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“Specific Orders” Doctrine

Misapplication to the Benefit of Jones Act Plaintiffs

You own a vessel. Your captain advises the engineer that a winch may be slipping, with the implication that it be checked at some point and in accordance with vessel safety rules. The engineer, unbeknownst to the captain and other members of the crew, proceeds immediately and without adhering to lock-out/tag-out procedures which require the disengagement of the engine powering the winch. His long hair inadvertently gets caught in the cable being spooled onto the winch drum which causes a fur-

ther and gruesome entanglement as the engineer is essentially spooled in along with the cable. The engineer's family commences litigation pursuant to provisions of the Jones Act seeking in excess of an eight (8)-figure judgment. Your singular liability defense is based upon the fact that the engineer, a trained and supervisory individual, contributed to, if not solely caused his own death by failing to follow the very safety rules he assisted in creating and was charged with implementing. After trial and with the jury as-

signing ninety percent (90%) fault to the engineer, the court refuses to reduce the verdict accordingly. The lawyer for the family of the engineer convinces the misinformed and misguided court that the engineer was under “specific orders” at the time and, therefore, cannot be considered contributorily negligent. The unfortunate result is that you, the vessel owner, are denied the benefits of the Jury's finding of contributory negligence and, as a result, are required to satisfy the entire, resultant judgment as opposed to one diminished in accordance with the apportionment of fault to the engineer. Depending upon the amount of damages awarded by the jury and the percentage of fault apportioned to the engineer, the loss to you may be more than considerable.

With increasing frequency and even regularity, courts are being asked to apply the “Specific Orders” Doctrine in precisely this incorrect way based upon an unfortunate case precedent, which distorted and expanded the application of the Doctrine to the point when any crew member merely fulfilling his job requirements is relieved of the obligation to do so responsibly by utilizing safe alternatives. A general order to merely pursue and accomplish usual job responsibilities, as outlined in the preceding example, or a call for assistance, are being sought by lawyers for plaintiffs to be deemed as a “specific order” and thus covered by the Doctrine. A vessel owner and its lawyer, unfamiliar with the Doctrine and, more importantly, the attempts to misapply it, may directly suffer from their ignorance when a substantially more significant judgment is formed from a seemingly favorable jury verdict. Moreover, the costly alternative of perfecting an appeal may likely not prove successful if your lawyer's efforts to advise the court of the correct application of the Doctrine during the course of the trial and, particularly, when the court composes its instructions for the jury, are insufficient. In other words, it is incumbent upon your lawyer to correctly advise the court of the correct application of the Doctrine and by providing properly phrased instructions, let the court's error not be preserved. Additionally and indirectly, a reasonable and amicable resolution prior to trial may be precluded as a consequence of the party's disparate evaluation of their respective positions borne from a misunderstanding of the meaning and application of the Doctrine. Knowing and comprehending the true parameters of the Doctrine, and

the methods utilized to perpetuate its misapplication, are crucial to safeguard the necessary defense of contributory negligence. Accordingly, such knowledge must be injected in all phases of the litigation process, including the investigation and discovery phases, as well as when the court's instructions are being formulated for and distributed to the jury.

The “Specific Orders” Doctrine was promulgated and has been maintained as a consequence of certain practical impressions regarding seamen and a desire to equitably determine entitlement with respect to claims brought by them. The work of a seaman aboard a vessel might be considered inherently dangerous. In the past, simply undertaking a voyage had dangers associated with it. More recently, the dangers are likely associated with the equipment and appurtenances required to accomplish some of the tasks performed on a vessel, particularly with respect to off-shore drilling rigs and drill ships. As a result, any general agreement to perform the usual duties of a seaman might be considered an assumption of a risk. Inasmuch as the assumption of a risk by an individual normally abrogates recovery in the event of injury or death, the body of law governing seaman and vessel owners eliminated the assumption of a risk defense previously available. In other words, a vessel owner is barred from asserting an assumption of a risk defense in a personal injury or death case, lest the defense be utilized to effectively preclude a recovery by or on behalf of any seaman who could be deemed to have assumed all risks simply as a consequence of an acceptance of employment on a vessel.

The past abrogation of the assumption of a risk defense in particularly a Jones Act litigation matter was not, however, intended to eliminate the availability to vessel owners of the contributory negligence defense. Instead, an important distinction was created and acknowledged between what would be considered a general order, or an order which leaves a seaman choices or alternatives as to how best to perform a task, as opposed to a specific order, or an order to perform a task in a particular and precise manner or an order pertaining to a task which can be or is to be performed in only one manner. The focus is, of course, upon the existence of choices or alternatives available to a seaman. If choices or alternatives exist, a seaman must exercise reasonable care in selecting amongst them how best to proceed with respect to the completion

Maritime Reporter & Engineering News


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of a particular task. If reasonable care is not exercised, contributory negligence exists and must be considered when calculating damages from a jury verdict and, thereafter, formulating a judgment. If no choices exist for a seaman required to perform a task, whether the absence of choices has occurred because the task may be performed in only one manner or because the task was assigned with instructions to perform it in a certain and precise manner, no opportunity exists for a seaman to exercise reasonable care. Under these circumstances, a seaman cannot be considered to have been contributorily negligent inasmuch as no opportunity existed to exercise, or fail to exercise, reasonable care.

Knowledge of the distinction between these types of orders must be utilized during the investigation and discovery phases of all litigation matters. Investigatory interviews with crew members undertaken immediately after an incident must focus upon the fact that the seaman involved in an incident was performing job duties in any manner selected by the seaman. In any injury matter, such investigatory interviews should necessarily include the injured seaman who, without the intrusion of counsel, may more honestly respond to inquiries or suggestions that choices or alternatives were available regarding the performance of the task involved. A positive response at this time from a seaman shall likely preclude a credible change of testimony to the contrary during the course of a deposition and trial. Notably, the existence of safer choices or alternative methods constitutes a critical inquiry not only when a seaman performs tasks associated with usual job responsibilities, but also when a seaman suffers an incident while responding to a request for assistance.

Preparing all witnesses for presentation at deposition and trial must also be considered, with precise warnings provided that they be wary of efforts by opposing counsel to characterize things simply as “orders” and, particularly, “specific orders” when, in fact, they were merely general orders. What the witness may otherwise have considered a matter of semantics or an unimportant general characterization has profound importance with respect to legal applications. Finally, and most importantly, the following definition of “specific orders” must be submitted to the court when it forms its Charge to the jury, and it should be placed before any question presented to a jury concerning contributory negligence. A “specific order” is given when a seaman is told to perform a specific task in a particular way, or, in other words, the

seaman has no real choice as to how to perform that task. If [the seaman] has reasonable alternatives available to him, he is not acting under specific orders and must act reasonably in performing his job duties. In the event the court declines to include such a definition, as it may

well do misguidedly premised upon the fact that it is not included in the Texas Pattern Jury Charge or other forms, error will have been preserved for appeal. Any failure to heed these warnings may result in a disappointing conclusion to a litigation matter, as well as an unjust result.

About the Author

Daniel D. Pipitone, the chair of Chamberlain Hrdlicka's Admiralty Section, has more than 30 years of legal experience.



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Spring Cleaning

Should Include Evaluating Insurance Strategy

By Ray Martino, President,
Travelers Ocean Marine

An essential part of spring cleaning is sorting through what you have, deciding what needs to be kept, and throwing out what can safely be eliminated. The tidy end result lets you move forward in the best shape possible.

An annual "spring cleaning" of insurance coverage is equally valuable for a business operation. Whether the economy is booming and cash flow is substantial, or times are tight and shaving costs is essential, a business should step back at least once a year, take a look at its assets, and evaluate its current risk management strategy. The goal is to make sure the company is maximizing its benefit from premium dollars.

In addition to involving internal experts, such as legal counsel and accountants, a company may also benefit by working closely with its insurance agent and carrier to understand both exposures and the insurance options available. The following list will help start the process.

FOUR FACTORS TO WEIGH

No one wants to pay more premium than absolutely necessary. But when a loss occurs, you also want to have the right coverage so there are no unpleasant surprises. As a guide, business owners should consider the following four factors when making insurance decisions.

1. ASSET VALUES

The premium for property insurance is linked to the value of the asset covered, so paying attention to current values is an important strategy for controlling costs. Whether the asset is a barge, a pier or the building the business is run from, property values are subject to change over time. That means keeping the same policy value year after year may leave a business either under or over insured.

For example, the pricing for vessels has been on a roller coaster since the economy contracted sharply in 2008. Today, the value of commercial vessels has recovered somewhat and recreational boats have stopped deteriorating, but small lux-

ury yachts are still under tremendous pricing pressure.

In addition, the replacement value of vessels in new and used markets are often driven by the price of steel, which has been rising from the pressure of overseas demand.

Similarly, the cost to replace physical structures such as docks or buildings fluctuates with the price of materials and labor, and is also linked to the rising and falling fortunes of the construction industry.

Some asset values are easier to determine than others. There are multiple sources to determine the value of a building, such as industry estimates of construction costs per square foot. A pier's value similarly can be determined by having someone provide an estimate of what it would cost to replace.

Vessel valuation, however, can be trickier, since many vessels are specialized for certain jobs or customized in ways that make the used market an unreliable guide. Trade publications and even con-

versations with competitors can be helpful, but the most accurate answer will typically come from a professional survey. To avoid the cost of an independent survey, vessel owners sometimes can turn to insurers that have surveyors on staff.

2. DEDUCTIBLE LEVELS

As a theoretical matter, deciding on a deductible level is all about the amount of risk a company is comfortable taking on and its ability to shoulder the burden of coming up with the cash if a loss occurs. On a practical basis, however, it is important to look at the interaction between the level of deductible and the premium cost, as well as the company's expected number of claims.

Take an owner who can easily afford to cover \$5,000 in costs if something goes wrong, but who wants to save on premiums by raising the deductible to \$25,000. The key question is not only can the owner afford that level of out-of-pocket expenditure, but also how much will be saved annually by taking on that addi-

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tional risk? If the savings is only a few hundred dollars each year, is it worth the added worry?

On the other hand, trying to avoid all risk by buying insurance that covers losses from the first dollar may also not meet a company's needs. If based on prior loss records a business has \$5,000 in losses each year, it is reasonable to assume that the insurer will build that cost – plus overhead and profit margin – into the premium.

This leaves the customer who elects to have no deductible in the position of trading dollars with the insurance company – and doing so at a loss.

Working closely with an educated agent or broker to talk through all the options may help your company choose the right deductible that targets any unexpected risks.

3. LIABILITY LIMITS

Determining the right liability limits is a complex decision that should involve a company's lawyers, accountants and possibly even the owner's estate planner. Several factors are in play, including what kind of losses a business may be ex-

posed to, how high an award a jury might grant in the event of a loss, what type of legal entity the company is, and what assets need to be protected. In today's litigious society, with ever-increasing jury awards and rising defense costs, having inadequate liability limits can spell the end of a going concern. Finding the right liability limit is, therefore, an important element of managing risk.

4. COVERAGE TERMS

Both commercial and personal insurance are highly regulated businesses that frequently allow for "apples-to-apples" comparisons when customers go shopping for policies. However, the ocean marine insurance industry is different. Two policies may look very similar, but in fact contain significant coverage differences. These differences could leave the unwary business owner without the coverage he thought he had.

By working with an experienced agent, a company can better understand the different coverages offered by a variety of insurers and make an informed choice that is right for the company's level of risk and types of exposure.

One good strategy is to go with an insurer that has a long track record in ocean marine.

Think about it as the difference between a specialist and a generalist. Insurers that continuously serve the maritime industry likely have a higher incentive to provide good service. Similarly, a carrier that specializes in ocean marine is more likely to provide a range of viable policy options for each unique maritime risk.

TWO ADDITIONAL STRATEGIES

To keep premiums as low as possible, companies can use two other strategies to reduce risk. The first is to shift risk whenever possible to other parties through contractual agreements. For example, a contract with a vendor doing work on a pier whose negligence may cause a fire or other damage should include language that places responsibility firmly on the vendor.

Requiring the vendor to show proof of insurance that adequately covers both your company's liability and its own liability before work begins is an added safeguard that should not be overlooked.

The second strategy is to put solid risk control measures in place. These controls may range from having standardized hiring, orientation and safety training procedures in place to reduce the chance of human error, to making sure that equipment is well maintained to reduce accidents and business interruptions. Insurers often consider these types of risk control practices when assessing risk and pricing a policy.

Adequate risk control measures may help lower a company's loss record, which may in turn reduce its premiums over time.

AN ANNUAL CHORE

As 2012 gets underway, it is the right time to review many things about how your business operates.

Assessing your insurance needs and making sensible adjustments to your coverage should be an important annual ritual.

Guided by the list above and with the help of your insurance agent and carrier, you may find better ways to strengthen your coverage and control your risks at an affordable cost.

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LNG as Fuel: The Time is Now

The appeal of LNG as fuel for maritime applications continues to grow, as energy costs continue to soar, emission standards tighten and acceptance of the new tech helps to drive down the cost of acquisition and life-cycle maintenance. For an update, Maritime Reporter examines recent developments.

A number of leaders have emerged globally in the technical specification of both transporting and using LNG as a marine fuel, but among the classification societies perhaps none has been as progressive as **Det Norske Veritas (DNV)**. Anyone familiar with the class society knows that environmental mandate lies at its core, and LNG as marine fuel is widely regarded as a savior of sorts in terms of emission reductions from marine vessels.

Based on operational experience and safety records, DNV seems convinced that LNG is the fuel of the future, and the organization has rolled out a number of high-profile concept vessels, led by the DNV Triality project to introduce a VLCC concept, and followed by the Ecore (Very Large Ore Carrier Concept) and its Quantum containership concept.

The Triality design incorporates three environmental features; a ballast free and V-shaped hull design, a VOC re-condensation system and the prime element – LNG as fuel. Employing a 13,500 cu. m. LNG fuel tank with an operational range of 25,000 nautical miles, the design elements allow a 34 percent reduction in CO₂ emissions.

While LNG comes filled with promise, there remain hurdles that will take years to traverse.

“The biggest challenge right now is the infrastructure; simply put the ability to fuel the vessels,” said Tony Teo, Business Development Director, DNV North America Maritime. The situation as it stands is the classic “chicken and the egg”: does the industry invest in LNG vessels and hope that ample bunkering stations pop up; or is the investment in infrastructure needed to spur new investment in vessels.

According to Teo, at the outset, the fuel option will be attractive to carriers that run predictable routes – shuttle tankers, passenger ferries, even cruise ships – to be able to concentrate LNG fueling infrastructure in a rationale manner.

Recently, the matter of using LNG as

fuel was studied in depth for the **Washington State Ferry** system, culminating in the January 2012 report “*Evaluating the Use of Liquefied Natural Gas in Washington State Ferries.*” (http://www.leg.wa.gov/JTC/Pages/LN_GasFerryFuel.aspx)

The study investigates the use of LNG for fuel on Washington state ferry vessels — existing vessels, as well as the planned 144-car class vessels, addressing the fuel consumption benefit of LNG compared with diesel; Coast Guard regulations for storage and transport of LNG; security risks and strategies to reduce risk; the impact of LNG on vessel performance, including vessel speeds; and marine insurance costs, and capital cost associated with utilizing LNG on vessels.

In 2010, WSF — which fuels its fleet with a blend of biodiesel and ultra low sulfur diesel — consumed more than 17.3 million gallons of fuel, and diesel fuel represents 29.2 percent of WSF's 2011-2013 biennium operating budget, or \$135.2 million.

The study is comprehensive in the examination of both newbuild and retrofit projects for the company's full range of vessels, but an over-riding theme was: the

cost for construction of new vessels is higher, balanced with a tremendous potential savings in fuel due to the switch to LNG, and the recommendation of employing design, classification and construction yards with previous experience on the specific technology.

Is North America Ready to Catch Up

In Europe more than 100 vessels use the LNG for propulsion, including vessels that deliver LNG. The growth has been fueled by shortsea shipping, ferry services and offshore supply boats.

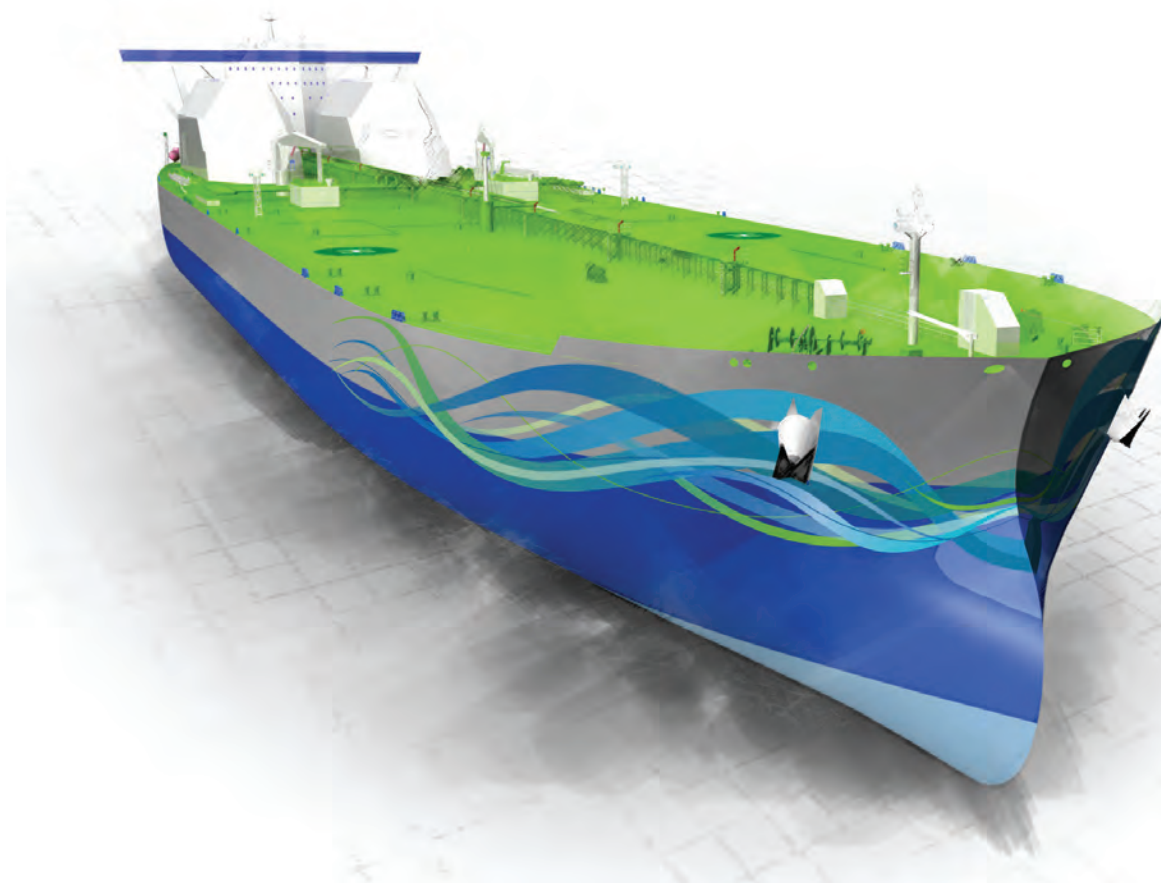
Wärtsilä has played a major part in the LNG expansion with a leading market share in both number of vessels and hours running. These four-stroke engines employ technologies that provide low emissions and maximum fuel efficiency in several different engine sizes – the Wärtsilä 50DF, 34DF and 20DF. Their design influence does not stop at the engines. Wärtsilä also provides LNGPac, a complete LNG storage system with bunkering station, delivery controls, cold box compartment and glycol-water heating unit.

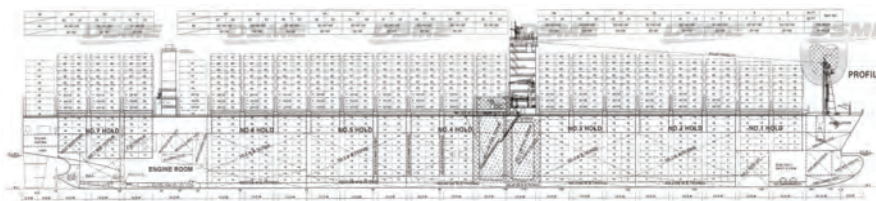
The Containerships

While DNV has taken the lead on many matters LNG, it certainly is not the only class society to study, and forward the notion of this alternative fuel. **Bureau Veritas (BV)** has given approval in principle for the basic design of a 14,000-teu containership to be powered by LNG. The design was developed in a joint industry project between Korea's **Daewoo Ship-**

The Concepts

DNV has been progressive debuting three major concept designs for LNG-powered ships including a VLCC (**Triality**, pictured left); a Very Large Ore Carrier (**Ecore**) and a Containership (**Quantum**) (pictured below)





(Image Courtesy Bureau Veritas)

LNG Fueled Ferries

Recently, the matter of using LNG as fuel was studied in depth for the Washington State Ferry system, culminating in the January 2012 report "Evaluating the Use of Liquefied Natural Gas in Washington State Ferries."

<http://www.leg.wa.gov/JTC/Pages/LNGasFerryFuel.aspx>

In examining the matter, the consultants looked to Norway, a world leader in the LNG fueled passenger vessel market. Some of the findings included:

- **Capital cost.** The cost of building the LNG ferries is 15-20 percent higher than diesel ferries. Norwegian ferry operators are eligible for a subsidy of up to 80 percent of the cost for projects that reduce NOx emissions from the NOx Foundation.
- **Carbon tax credits.** Norwegian ferry operators are able to avoid carbon taxes on natural gas that is used in lieu of diesel, which lowers the operations cost for LNG fueled vessels.
- **Maintenance and operation cost.** Maintenance costs were initially higher on the first LNG vessel, but now are now comparable.
- **Crew size and training.** Crew size is the same as on the diesel-powered ferries. Crew training includes a gas course including risk aspects, emergency shutdown (ESD) philosophy, gas plant and demonstration of gas explosions.
- **Cost of LNG.** The cost of natural gas in Norway has been close to, or slightly above, diesel and the energy cost of the LNG ferries has been slightly higher than diesel ferries. The cost of natural gas and diesel rise and fall together in Norway, which has not been the case in the United States.

An LNG Powered ULCC

building & Marine Engineering, liner major CMA-CGM and Bureau Veritas. "The market will determine when these ships can be ordered and built, but this is a real milestone as for the first time we have a fully worked and approved design for a main line ultra-large containership running on LNG," said Jean-Francois Segretain, deputy technical director, BV. "After an in depth HAZID analysis we can say with confidence that there are no technical or safety barriers to introducing LNG as a fuel for long-haul large containerships. Major operational savings are deliverable, combined with very much lower air emissions. And the key feature of this design is that the vessel can also run on HFO if required, increasing flexibility in the period before LNG bunkering is widely available."

The 14,000 teu vessel will be powered by an ME-GI (MAN Electronic – Gas

Injection) two-stroke dual fuel engine made by **MAN Diesel**. This delivers the highest efficiency among existing propulsion systems and works by simultaneous dual burning of HFO and LNG. In minimum fuel and maximum gas mode around 10 percent of the fuel is oil, providing overall CO2 emission reductions in the order of 23 percent and SOX reductions of 92 percent.

The basic design is for a 365.5 m vessel with a design draft of 14 m and a design speed of 24 knots. In the dual fuel configuration a 22,490 cu m LNG prismatic tank would be installed under the forward accommodation, and there would be a bunker tank for heavy fuel oil aft of 4,430 cu m capacity. The LNG tank would be a Daewoo patent ACT-IB Aluminium Cargo Tank – IMO type B independent LNG tank with PUF (Poly-Urethane Foam) panel type insulation.

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The main engine would be rated at MCR 72,285 kW and the vessel would have a range of 25,000 miles if fully bunkered.

Kawasaki Heavy Industries completed the development of a large, 9 000 TEU container ship fueled by LNG and obtained Approval in Principle from DNV. The ship is designed with a new type of LNG tank that provides more space for container cargo. The LNG is stored in prismatic low pressure insulated tanks (Type B) and this is the first time that such tanks have been proposed for a large container ship. They are different from cylindrical pressure tanks (Type C) as they use the available space much better due to their prismatic, rectangular shape. KHI has also adopted a unique technology, the Kawasaki Panel System, for heat insulation in order to reduce the rate of evaporation of LNG.

The LNG fuel tank and diesel oil tanks are located under the forward superstructure minimizing the loss of cargo space. The design criteria for ships using LNG as fuel are currently being studied by IMO (BLG). The new container ship design features:

- A twin island design maximizing cargo space available for loading containers.
- A two stroke dual-fuel main engine which is electronically controlled with a



The Reality

Harvey Gulf International Marine is a true pioneer in the adoption of LNG-powered vessels in the U.S., signing a contracts to build four ABS-classed, STX Marine-designed dual fuel Offshore Support Vessels to be built by Trinity Offshore.

high combustion efficiency coupled with a hull form optimized for safety and fuel efficiency.

- The engine may be equipped with an exhaust gas recirculation system (EGR) which satisfies IMO Tier-3 requirements for voyages in North American and European Emission Control Areas (ECAs).

The OSV

Harvey Gulf International Marine is a true pioneer in the adoption of LNG-powered vessels in the U.S., signing a

new contract recently to build an additional two **STX Marine SV310DF** dual fuel Offshore Support Vessels in the Gulf of Mexico to be constructed by **Trinity Offshore**. The new order brings the total number of LNG-powered vessels on order from Harvey Gulf to four, all powered by a dual-fuel solution provided by **Wärtsilä**.

The four OSVs will be the first U.S. flagged dual fuel vessels that will have the **American Bureau of Shipping's** ENVIRO+ certification.

The 302 X 64-ft., Dual Fuel Offshore Supply Vessels, will be built by Trinity in its Gulfport, MS shipyard where the first Harvey Gulf LNG Powered Vessel hull fabrication was recently started. In addition to being powered by natural gas, the vessels will achieve "ENVIRO+, Green Passport" Certification by the American Bureau of Shipping. The requirements for this certification include, among others, that the vessels be continuously manned with a certified Environmental Officer, be completely constructed with

Innovation High-Pressure Gas Supply System for Marine Engines

Mitsubishi Heavy Industries, Ltd. (MHI) developed Japan's first system for supplying high-pressure gas that will enable use of natural gas as fuel for marine engines.

The company agreed with Mitsui Engineering & Shipbuilding Co., Ltd. (MES) for delivery of the first unit. The use of liquefied natural gas (LNG) as fuel achievable with the new system will enable reduction of carbon dioxide (CO₂) emissions compared with use of heavy oil fuel, thus contributing to reduced environmental burdens.

Going forward MHI will focus on marketing activities to attract orders for high-value-added ships equipped with the new system as well as external marketing of the system itself in a quest to expand its engineering business.

MHI's new high-pressure gas supply system delivers LNG at 30 megapascals (MPa) gas by liquid pumping. A Hydraulic driver is adopted for the



liquid pump without speed reduction mechanism, which facilitates variable speed adjustment and flexibility of lay-

out. The system consists mainly of a unit to transfer LNG at high pressure according to fluctuations in the demand of

the engine, a hydraulic unit as power source, a unit to produce a compressed natural gas (CNG) by heating LNG to normal temperature, a CNG bottle unit to buffer the CNG pressure variation and gas combustion unit to safely dispose low pressure off-gas and to use its exhaust heat as heat source.

In combination of the system with two-stroke, low-speed marine diesel engines, the engine will be a high efficiency propulsion system. By using LNG as its fuel, an engine integrated with the new system also has the potential to realize reductions in emissions of sulfur oxides (SO_x) and nitrogen oxides (NO_x).

Delivery of the first unit to MES is scheduled in early 2013. After installation at MES's Tamano Works in Tamano, Okayama Prefecture, the system will be employed for verification demonstration using marine diesels, which are manufactured by MES.

certified environmentally friendly materials, and have advanced alarms for fuel tanks and containment systems.

This order is unique, and perhaps a greater indication of the expectation of the oil majors going forward in regards to their selection of vessels to service its growing web of offshore structures and vessels, not only in the ecological sensitive U.S., but worldwide.

“Harvey Gulf’s decision to become the leader in “Clean” Gulf of Mexico operations has been enthusiastically accepted by oil company executives and was the impetus for adding two additional LNG Dual Fuel vessels to the fleet,” said Shane J. Guidry, Harvey Gulf CEO. “These vessels, like their two sisterships, will meet the highest emissions standards that exist today and even higher standards that haven’t been created yet. We recognize the strong stance on environmental protection by the administration in the wake of the oil spill and are doing our part to respond to it and provide our customers support for their environmental commitments.”

The Ferry

ABB recently won an order to provide an energy management system for one a new **Viking Line** cruise ferry, being built at **STX Turku** in Finland and due for delivery in 2013. The new ship measures 214m long and has a top speed of 22 knots, able to carry 2,800 passengers on the route connecting Turku, Finland and Stockholm, Sweden. The ship will use liquefied natural gas (LNG) as its fuel, which will be a first for a passenger vessel of this size. Courtesy of its LNG fuel, the ship will have extremely low emissions and virtually zero marine emissions. “One of the top priorities at Viking Line is to lower the emissions and fuel consumption on our fleet,” said Kari Granberg, Project Manager at Viking Line Abp. “We were looking for a good monitoring tool that automatically regulated power consumption and was as easy to operate as a traffic light as a result ABB’s EMMA became our first choice.” EMMA is based on ABB’s process automation software for energy management.

100 Years Later ...

The Diesel Successor is Ready

MAN Diesel & Turbo recently celebrated the 100th anniversary of the Danish ship *Selandia* — an original pioneer within CO2 reduction as it ushered in a new era of diesel powered ships — in conjunction with its latest offering, what it dubs the successor to the diesel engine, the introduction of its ME-GI gas engine. “In my opinion, the future is liquefied natural gas,” said Thomas Knudsen, Head of Business Unit Low Speed, MAN Diesel & Turbo.

The most distinctive feature of the M/S *Selandia* was the fact that it had no funnel emitting black smoke. M/S *Selandia* marked the beginning of the end of steamships. As the first ocean-going ship, she sailed on diesel instead of coal. A technological revolution built at the B&W shipyard. Some interesting statistics when looking back on a century of diesel power in the maritime sector:

- In 1912, when the ships’ steam engines were replaced by diesel engines, CO2 emissions per produced kW-hour were reduced dramatically. As early as in 1920, CO2 emissions were reduced by more than 50 percent. Throughout the next 50 years, diesel engines and steam engines competed to become the most efficient to reduce CO2 emissions. “The diesel engine won,” says Hans Otto Kristensen, senior researcher at the Institute for Mechanical Technology at The Technical University of Denmark.
- Over the past years, natural gas has turned out to be an attractive fuel for marine engines, as a gas engine has an approximately 25 percent lower CO2 emission level than a corresponding diesel engine. At the same time, a change from diesel to natural gas will solve the problems with sulfur pollution, so that the strict requirements on sulfur emissions coming into force in 2015 can be easily met, says Hans Otto Kristensen, senior researcher at the Institute for Mechanical Technology at The Technical University of Denmark.

The centenary of *Selandia* was celebrated on Feb. 17, 2012 with a special exhibition at DieselHouse in Copenhagen and the premiere of the documentary “The Ship that Changed the World - M/S *Selandia*” from Chroma Film.

www.selandia100.dk



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Shipbuilding has always been close to his heart, but Vijay Kumar's greatest desire is to see his country, India, exploit the benefits of shipbuilding for the greater good of India's economy as a whole. To date, the shipbuilding business in India has come with more promise than production, with its market share at a mere one percent of global shipbuilding activity, Kumar, Managing Director of Bharati Shipyard Ltd., is determined to help grow the shipbuilding industry not just for the good of his company, but for the good of the country as a whole. He envisions, with government support, a dynamic growth in India's shipbuilding market, projecting its output to soar to a global market share of between 5 to 7.5 percent in the next 10 years.

– by Joseph Fonseca, Mumbai

“From today's order book position we can grow even 100 times,” said Kumar in a recent interview with Maritime Reporter & Engineering News. “We will be in a position to compete with China, Korea, Japan and Vietnam. This industry is labor intensive and has the highest investment multiplier. The reason why shipbuilding flourished in all of the so-called “low wage” countries such as Japan in the 60s and 70s; Korea in the 70s and 80s; and China from 80s to the turn of the century, is that they had governmental support for generating employment and creating a lot of down-stream industries.”

“Downstream industry investment would be around \$40 billion by which the government would net \$4 billion each year over and above what it gets today,”

Kumar said. “It is a win-win situation for the government too. Within two or three years, shipbuilders can help generate 10 million additional jobs only if governmental support is made available to the industry.”

A Career Devoted to Shipbuilding

Kumar's career has been devoted to shipbuilding, as he graduated as a Naval Architect from the Indian Institute of Technology (IIT) Kharagpur, in West Bengal. He served with Mazagaon Docks for seven years and in 1973 established Bharati Shipyard. Beginning as a partnership company, it was soon converted into a private limited company, and in 2004 the company went public, making it the first Indian shipyard to do so. The IPO was over-subscribed 78 times, which





“Last year we also acquired Techma Shipyard which has three construction sites, one each at Chennai, Cochin and Malpe. As a result we now have nine shipyards both on the East coast and West coast of India placing us in a strong position to offer ship repair services and an ‘immediate response’ facility especially for Naval and Coast Guard vessels. As far as quality is concerned our customers accept the fact that we are better than China, equal to Singapore and very close to Korea.”

Vijay Kumar, Managing Director of Bharati Shipyard

was a record on the Bombay Stock Exchange until it was only recently been broken.

What had been a two-shipyard company - one each at Ratnagiri and Ghodbunder - both on the West coast of India, Bharati Shipyard moved onto a higher growth trajectory on adopting a major expansion strategy. In 2004 it added four more shipyards, one at Calcutta, another at Goa and two Greenfield shipyards one at Mangalore and the other at Dhabol. The Dhabol shipyard is the largest yard spread over 300 acres with Mangalore shipyard being a close second in size.

“Dhabol is designed by First Marine International of the UK,” said Kumar. “The yard has a capacity to build among other vessels: Jack-up Drill Rigs, Off-

shore Structures, and ships of up to 100,000 DWT. The yard is now being geared to achieve self-sufficiency, with facilities for shipbuilding incorporating the most modern machinery and equipment. Presently, in Dhabol we are building a very sophisticated jack up drilling rig cantilever for the first time in the country, and it will be ready by the middle next year. This is about a \$200 million project for Great Offshore. The rig will be able to drill up to 30,000 feet even where water depths exceed 350 ft.”

Building a Shipbuilding & Repair Stronghold

Kumar explains that each shipyard is designed to build different types of vessels. For example, the Ratnagiri and the

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Intuitive and advanced user interface

Clear and ergonomic on-screen information

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Ghodbunder shipyards are meant for building sophisticated offshore vessels, dredgers, and similar vessels. The Calcutta and Goa shipyards are suited to build cargo vessels of 130 to 150 m, whereas the Mangalore shipyard builds vessels up to 175 to 200 m and the Dhabol yard manufactures vessels of 225 to 250 m long.

In April 2007 Bharati Shipyard Limited, acquired all the shipyard machinery and

Equipment of Swan Hunter (Typeside) Shipyard Ltd. Through this acquisition it acquired fully automated panel lines, quayside traveling gantry cranes of capacity up to 180T, 30 overhead traveling cranes of capacity up to 60T, Plate bending rolls of 2000 ton capacity, bending presses, robotic profiling machines, and CNC plasma burning equipment, to name the major additions.

“We acquired Swan Hunter, the naval ship yard in U.K. which had to close down because of high labor costs, since we could utilize the machinery and equipment to boost our production,” said Kumar. “Last year we also acquired Techma Shipyard which has three construction sites, one each at Chennai, Cochin and Malpe. As a result we now have nine shipyards both on the East coast and West coast of India placing us in a strong position to offer ship repair services and an ‘immediate response’ facility especially for Naval and Coast Guard vessels. As far as quality is concerned our customers accept the fact that we are better than China, equal to Singapore and very close to Korea.”

Kumar counts the company’s flexibility, being responsive to market needs and fluctuations, as a key to its long-term success. “Our strength is in the fact that we are a totally professional organization. Both the promoters are from IIT and we have a host of professionals who are experts in various aspects related to ship building. We have an in-house strong design department. Besides, we have a scheme for on-the-job training. At Techma which we recently acquired, we have started a college for conducting diploma courses for training in shipbuilding. These include three different courses: of one-year, two-year and three-year duration each. Hence, it is professionalism and quality that gives us the edge over others.

“We have made significant contribution in various directions by integrating frontier technology to help make dramatic advancement in shipping. We have embarked in a big way to promote environment-friendly ships by designing and building clean ships. We are building the first LNG propelled cargo vessel with an intrinsically ‘safe’ engine room. Two of these have been ordered by Sea Cargo of Norway and will be ready for delivery early next year. This first-ever environment-friendly ship is being built as per Rolls Royce technology. Other shipyards have now taken to building such vessels but will take time to deliver them however we are the first.”

Diversification for Success

Today, the company employs approximately 5,000, and after having acquired the leading offshore company, Great Offshore Ltd., in a friendly takeover in 2009, its total turnover has been slightly under \$600 million. The deal for Great Offshore has helped to create synergy across the BSL brand, and in fact the takeover was a melding of partners as BSL had been the India shipbuilding partner of choice for Great Eastern (as Great Offshore was previously known) since 1996.

BSL has a robust order position, with 70 percent of its orderbook for export, the majority (90%) of which is for clientele in European countries, including Surf Bourbon, Ultra Petro in Argentina, M K Shipping of Holland and Sea Cargo from Norway. While business has been good and expanding, BSL is not immune from issues that trouble shipyards world round, including the shortage of labor and trained professionals. In addition, it is beset with excessive government regulations, as well as a number of infrastructure hurdles, including roads, power, and the timely dredging of areas where ships are built. As an example, BSL has two shipyards on rivers in Goa and Mangalore, and all dredging is undertaken in and around the shipyards by themselves. But the dredging of the whole channel, all the way up to the sea is left to the government, and is a laborious process that is habitually long overdue and only following repeated requests.

Kumar laments not only the lack of government support in the form of subsidies, he cites his government’s policy of imposing zero custom duty for importing ships by Indian shipowners, putting India’s shipbuilders in direct competition with the lower cost-structure of other shipbuilding nations – as particularly harmful to the ultimate goal of building a stronger shipbuilding base in India.

A KPMG study from 2006-2007 reasoned that an investment of about \$3.64 billion in existing or new “green” shipbuilding facilities would create an additional investment of \$44.4 billion in downstream industries by 2020, and generate employment for nearly 2.5 million. But as Kumar realizes, sound business reason and political reality do not always mesh well, and the fight in India is similar to that of other maritime nations, earning respect and funding for maritime projects in balance with road, rail and air transport funding. With his career dedicated to the craft of shipbuilding, and spearheading the activities of the Shipyards Association of India and the Institute of Naval Architects, India, Kumar has greatly helped to raise the profile of the industry attaining for it the recognition, and as of this interview it appears that a light may be at the end of the tunnel. “The government is considering a comprehensive ship building policy to be announced shortly and this will help us in getting orders from domestic as well as foreign companies even in this downturn,” Kumar concluded.

After it acquired Great Offshore via a friendly takeover in 2009, the company's total turnover has been slightly under \$600m. The deal for Great Offshore helped to create synergy across the BSL brand, and in fact the takeover was a melding of partners as BSL had been the India shipbuilding partner of choice for Great Eastern (as Great Offshore was previously known) since 1996.



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Value of 3D CAD in Repair

By Ben Capuco, VP-
Platform Solutions
Group, Gibbs & Cox

The demand on naval and commercial fleet assets has never been greater than it is today. Owners and operators are looking to reduce their current year capital expenditures as much as possible, which in turn is pushing the currently operating vessels into longer than planned service lives. This industry trend is driving a greater number of complex repairs, overhauls and large service life extension programs. In order to support this effort, the industry has started to turn to 3-D Computer Aided Design (CAD) as a repair and overhaul tool.

Historically, 3-D CAD has been used by the maritime industry only as a new construction tool, and perceived as being too expensive and too complex to be used effectively for repair and overhaul. Over time, 3-D CAD has become a powerful and efficient tool for ship repair projects

as the technology of software and hardware has advanced and become more affordable. In addition, repair shipyards have become increasingly part of the design process and more reliant on computer aided planning, control and manufacturing processes.

Use of 3-D CAD for any project is a balance between the value of having a 3-D CAD design and its associated computer-aided manufacturing (CAM) support benefits versus the cost and effort required to develop a 3-D CAD model for the project. Alternative methods of developing design data, such as red lines to existing drawings, development of 2-D CAD drawings, or replacement in kind are all viable alternatives depending on the repair work under consideration. Each alternative needs to be considered in the context of its impact on:

- Design costs
- Shipyard industrial costs
- Schedule
- Risk mitigation
- Enhanced producibility
- Quality control
- Requirements management (e.g. weight control)
- Material management
- Manufacturing
- Impact to repair milestones (e.g. undocking)

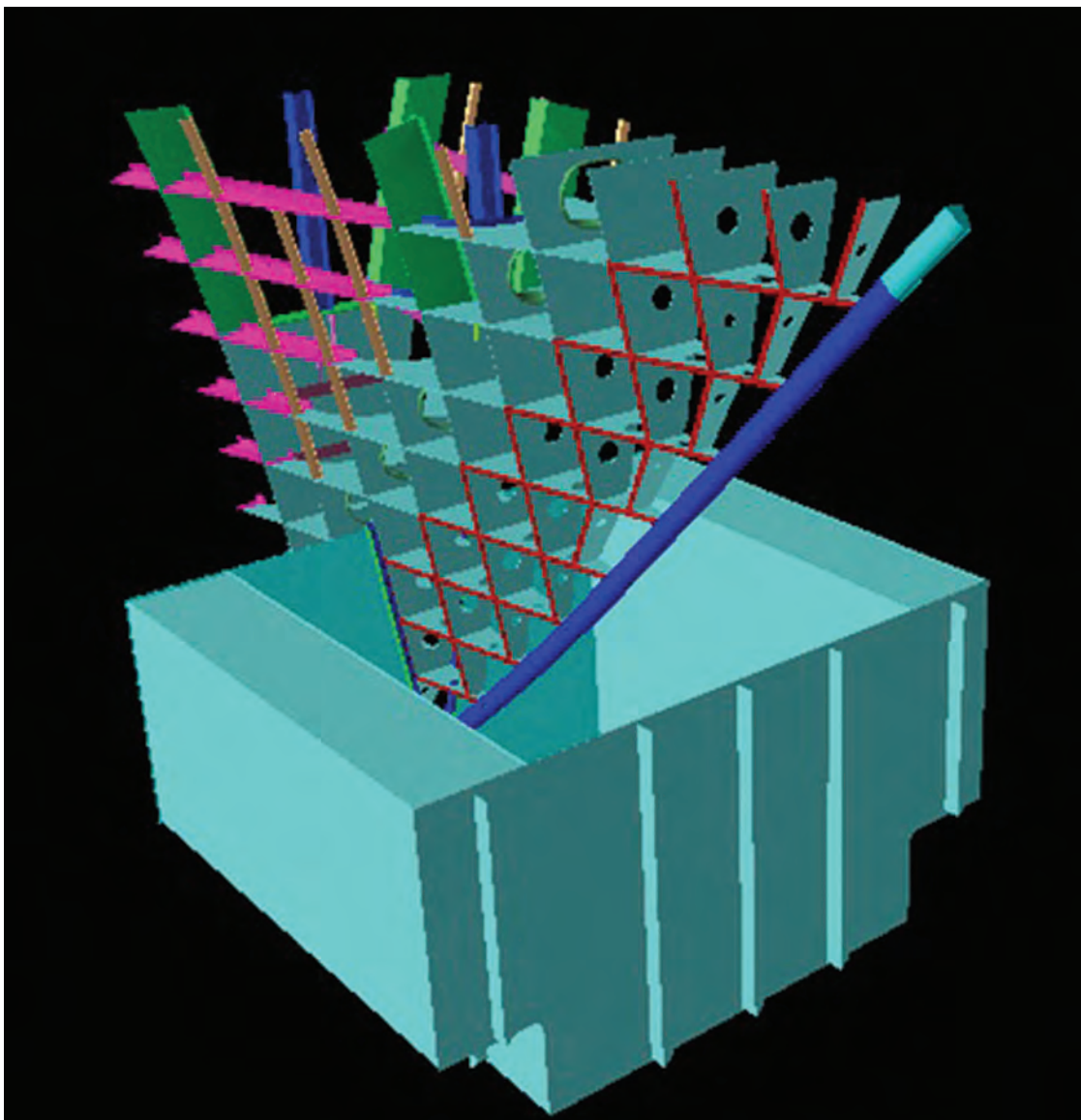
Other issues that are taken into consideration include the availability of design data (in particular already existing 3-D CAD new construction models), the complexity of the repair, the degree and accuracy of design data needed by the shipyard, and the potential for enhanced coordination between the different engineering and industrial team members

(e.g. use of CAD

model split and merge, web based virtual walkthroughs, automated Bill Of Materials, parts numbering and ordering control). In addition, consideration is given to the ability to limit the extents of the CAD model to the local area in the vicinity of the repair, and limit the fidelity of the model to suit the shipyard needs for the specific repair.

This assessment is performed in a collaborative environment that includes engineers, designers, shipyard production leads and management to determine the best design approach to apply. This often includes a combination of the design alternatives noted above, optimized to suit the total repair package needed by the shipyard. For example, for a complex repair with tight manufacturing tolerances, a tailored CAD model would be devel-

3D CAD model image and in-situ repair work being performed days later.



oped, while for a simple change out of equipment, a work order specifying replacement in kind would be issued. This initial assessment and agreement between the design agent and the production leads is crucial in any repair and especially in a complex repair where CAD is being considered.

A recent ship repair project where a ship had crashed into a pier and experienced bow damage above and below the waterline illustrates the value of 3-D CAD in repair operations. The shipyard was facing very tight schedule constraints and needed us to help them accelerate the assessment of the damage, and develop a cofferdam design that they could use to allow access to the damaged area without dry-docking the ship. The cofferdam needed to be designed to tight tolerances in a complex area of bow structure to assure proper fit-up.

We immediately sent a naval architect to the shipyard who, with shipyard personnel, assessed the situation, took digital pictures of the damage, and used a 3-D CAD surface program to model the damage and the nearby bow structure. This was sent electronically to engineers in our main office who analyzed the data

and developed the cofferdam design, which was then transferred to our design office to be detailed in 3-D CAD. The detailed CAD design was then electronically sent to our field engineer, who presented this model to the shipyard on his laptop within two days of his initial ship check instead of the 3-4 weeks it would have taken to loft the repair package by hand. In addition, a 3-D model of the damaged portion of the ship's bow was developed, using the structural scantling drawings for the ship. This model allowed us to check proper fit of the cofferdam. The net result was that the shipyard was able to cut and assemble steel parts for the cofferdam and hull repair using CAM data from the 3-D models and the ship repair was completed in weeks, not months, without tying up the shipyard's already booked dry-docks. In the end, the ship owner saved valuable time and costs with the aid of this technology.

In addition to providing CAM data for industrial cutting and shaping machines, 3-D CAD modeling can also be used to develop repair processes and procedures. Questions of producibility such as "Can a welder fit in the space to make the weld"

are difficult to answer in 2-D but can easily be checked in a 3-D model. 3-D models are often used as a tool in studies for special projects such as repowering, hull plugs and mission changes. It allows everyone to clearly visualize the final configuration and prevent issues such as interferences, auxiliary equipment issues and tear out and replacement accessibility while ensuring that the client's objective is still met.

As technology advances, CAD tools are becoming faster, more user friendly, more portable and cost effective. In addition, other advances, such as digital scanning, aid in the rapid development of 3-D models of existing spaces. These advances can allow rapid development of tailored 3-D CAD repair models, even during transit of the ship to the shipyard, allowing design and planning to proceed in advance of ship arrival, facilitating future repairs on schedule, within budget and technically correct.

The bottom line is that 3-D CAD can be extremely useful not only in new design/construction projects, but also in repair/sustainment projects where the complexity or desired level of integration between engineering, design, material

About the Author

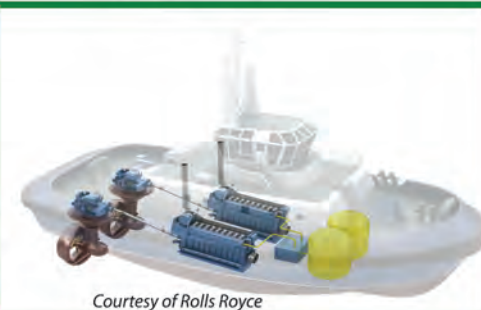
Ben Capuco is the Vice President of Platform Solutions and has been employed by Gibbs & Cox, Inc. since 1986. He has been involved in all phases of vessel design for new construction and repair of Naval, Coast Guard, Oceanographic and commercial vessels. He can be reached at bca-puco@gibbscox.com



management and manufacturing is high; whether or not there is accurate 3-D CAD information already available for the ship under repair. The cost of using 3-D CAD can be minimized by using available 3-D design data, limiting the scope of the model to the portion of the ship under repair, and tailoring the level of detail in the model to suit the needs of the repair project. As the trends of software capabilities increase and costs decrease the cost benefit analysis will continue to evolve and allow for the use of more and more 3-D CAD modeling for repair and sustainment projects.



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ASRY

Looking toward Diversification

Shaikh Daij bin Salman bin Daij Al Khalifa, Chairman of the Arab Shipbuilding & Repair Yard Co. (ASRY), is a man on a mission. Faced with a stagnate global shipping market, increased competition in the Gulf region and to a lesser degree political unrest in the region, he is on a mission to not only keep his 35-year-old ship repair yard modern and profitable, but to help build it as the cornerstone of Bahrain's effort to become a global maritime and logistics center by 2030. Maritime Reporter & Engineering News had the opportunity to spend five minutes with Shaikh Daij on its recent visit to Bahrain.

— by Greg Trauthwein,
Editor & Associate Publisher

What do you count as the leading challenges today in terms of Political, Legislation & World Events?

Of course a shipyard cannot influence or control political events, in the same way

that we can't control the weather! The same is true with the political situation, whether it be in Bahrain, the rest of the Arabian Gulf, or further afield. However, with regard to legislation, we have always been at the forefront of 'green' issues at ASRY. The yard was the first major shipyard in the Middle East to invest in a sludge treatment plant, and we are now investing heavily in a new sewage treatment plant, a new water desalination plant, and expanding our existing grit treatment plant. We are seeing the use of more and more hydroblasting on ships undergoing repair in the yard.

How about in terms of competition. We understand there has been quite a build-up of ship repair capacity in your region?

It is true that ASRY is facing increased competition, but this has always been the case since 1977 when the yard opened for business. Today, however, this competition is coming from new yards in the

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“We are now very much involved in the repair of naval vessels, from the U.S. Navy, the Royal Navy and Royal Fleet Auxiliary, as well as the Bahrain Navy ”

Shaikh Daij bin Salman Al Khalifa

Chairman, Arab Ship Repair Yard (ASRY) and the General Organization of Sea Ports, Kingdom of Bahrain

Shaikh Daij bin Salman Al Khalifa is Chairman of the ASRY and GOP Board and Undersecretary for Ports Affairs at the Ministry of Finance. He held the position of President of Customs from March 2006 until June 2008 and prior to that Shaikh Daij was Assistant Undersecretary for Foreign Trade at the Ministry of Industry and Commerce. Other positions presently held by him include: Chairman of Asry Marketing Services Ltd. (ASRYMAR) and Board Member, United Arab Shipping Company and Bahrain Convention and Exhibition Authority. Previous positions included: Chairman of Bahrain Airport Company and GCC Patent Office, Deputy Chairman, Bahrain Promotions & Marketing Board, and Board Member of Tender Board, Aluminium Bahrain (ALBA), Shaikha Hessa Girls School and King Fahd Causeway Authority. Shaikh Daij holds a BSBA in International Business from the American University, Washington, D.C. and a Leadership Management Diploma (Gulf Executive Program) from the University of Virginia, USA. Recipient of Seatrade’s Middle East and Indian Subcontinent ‘Personality of the Year’ Award 2010.



Middle East, notably in Oman and Qatar. But these are brand new yards, without a track record. ASRY is now in its 35th year of continuous operations. We have a fantastic track record, offer a very high quality service, have a loyal client base of owners and managers, both Arab and International; and a skilled workforce. We also offer exemplary service to all of our customers, with a fair pricing policy. I believe competition is a good thing. If you are afraid of competition then shut up shop!

As the world economy struggles to regain its footing, how has the shipyard fared?

Like all other major ship repair yards ASRY has been hit by the recent global economic crisis. We had exceptional years in 2007 and 2008, but were then hit by the global recession in 2009. There was a false dawn in 2010, when the market was supposed to improve, but this didn’t happen and we made a small loss. But this wasn’t the end of the world. We have hit bottom, the only way now is up. 2011 saw the yard make a small profit and I’m upbeat and positive that 2012 will be a stronger year for ASRY and I truly believe that the market will pick up in 2013. Ship repair is a cyclical industry – it is totally dependent on global and regional trade. When this slows down, owners don’t spend much money on repairing their ships. Previous recessions have been shorter, today’s one has been much longer, mainly due to two reasons: a global financial recession arriving at the same time as a shipping recession.

The shiprepair business is a cyclical one. How does ASRY balance investment in its

yard, equipment and people with the possibility of wide swings in revenue?


When I took over the helm of ASRY in January 2007, it was undoubtedly a challenge, but a challenge which has produced the new ASRY. We have a totally new management team, a very good success rate, a high level of service to our clients and we have diversified into the offshore oil and gas market, the naval repair sector and, most recently, into a joint venture to design and build floating electricity generating stations for use worldwide.

ASRY has invested in a new 1.38km Repair Quay Wall and Offshore Fabrication Area, presumably to meet the needs of a growing offshore energy business in your region. Why the investment at this time?


The investment of \$188m in a facilities expansion program during a major recession was a calculated risk. The time was right for ASRY to move forward into a new phase in its history. ASRY had to change. The yard needed more alongside repair space, as we were having to work on vessels double or even triple berthed. The new repair Quay Wall is designed for both ships, three 300,000dwt vessels simultaneously, and jack-up rigs. We also saw a niche in the offshore fabrication market – hence the establishment of our offshore division, ASRY Offshore Services (AOS) and the new fabrication area. I see great potential in the offshore oil and gas sector, with AOS contributing 40% of all sales in 2011, mostly for jack-up repairs and upgrades. I see this sector growing more and more. We also needed the new facilities to successfully face the competition from the new yards opening in Oman and Qatar.

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Changing Face of the VLCC Market

(Photo: Daewoo)

With so much discussion of the poor freight rates available to VLCC owners hiring their ships out for voyages from the Middle East to major consumers east and west, it is informative to see how much the spot market for VLCCs has changed in just a few years.

Since 2005, there has been a 25% reduction in reported AG/West spot VLCC voyages from 291 in 2005 to 216 in 2011. Just 11 AG/West fixtures were recorded in January 2012; if annualized the total would be 180, only 62% of the number recorded in just seven years earlier. The U.S. has diversified its supplies of energy with important effects for the VLCC market. According to the latest US Energy Information Agency (EIA), domestic crude oil production up reversed a long-term decline to grow from 5.18million barrels per day (m bpd) in 2005 to 5.47m bpd in 2010. Meanwhile, oil imports from Canada rose from 1.6m bpd in 2005 to 1.97m bpd in 2010.

More locally-produced oil will replace long-haul oil in a shrinking marketplace: the EIA 2012 Early Release Overview forecasts a 0.5% annual reduction in energy consumption per capita in the U.S. between 2010 and 2035.

Consequently, the VLCC spot market has swung eastwards; in 2005, 20% of VLCC spot fixtures discharged in China; in January 2012, that had increased to 40%. Chinese oil refiners have swept into leading positions in the VLCC charter market. Discharges east of Suez now account for 85% of VLCC voyages out of the AG compared to 71% in 2005.

Mark Williams, Braemar Seascope research director, believes this swing to the East is now firmly entrenched. He said, "As Chinese refiners will probably add over 6m bpd of domestic refinery capacity in the next five years, their presence in the VLCC spot market is likely to increase further as China makes efforts to secure its energy supplies."



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Gulf Copper Names Newest Drydock in Port Arthur

On January 18 Gulf Copper & Manufacturing Corp. completed the refurbishment and re-naming of its newest dry dock, the Mr. Morris.

"This dry dock gives us access to a market that has not been served recently in Port Arthur," said Steve Hale, CEO, Gulf Copper & Manufacturing. "At 9,000 tons of capacity, it lets us bring in much larger vessels than we previously could."

Now in service, the Mr. Morris adds a valuable asset to Gulf Copper's dry dock capabilities, enabling the ship repair yard to accommodate a range of larger vessels in its Port Arthur South Yard. After a recent naming ceremony, Gulf Copper completed its first successful dry docking on Martin Marine's Ocean Poseidon followed by its second dry docking, the Hornbeck MPSVHOS Strongline.

The Mr. Morris was originally built for the U.S. Navy as the AFDM-2. It has been fully restored, allowing Gulf Copper's South Yard to become a full-service marine repair and dry dock facility. The Mr. Morris dry dock measures 384 ft. long, 116 ft. wide with 90 ft. between the wing walls. The dock is capable of lifting vessels up to 9000 long tons with drafts up to 20 ft.

The yard will provide services to the U.S. deep draft coast-wise transport fleet, small foreign and domestic ships, larger new generation OSVs and Integrated Tug Barge units.



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Two Yards, No Waiting in NYC

The New York metropolitan area is known for many things, but cheap labor is not among them, and the labor-intensive ship repair industry generally flourishes in regions ripe with volumes of affordable help. This makes the story Mike Cranston and Alex Gomez – partners in Bayonne Dry Dock & Repair Corp. and GMD Shipyard Corp. – compelling, as the company's repair prowess has been a staple on the East Coast waterfront for more than 20 years.

By Greg Trauthwein

In the notoriously cyclical ship repair business, and as the world economy slowly crawls back from the abyss, ship repair yards such as Bayonne Dry Dock & Repair Corp. and GMD Shipyard Corp. keep the business intact with a strong focus on its customer service and

a diverse service offering, focused on servicing larger oceangoing ships in its Bayonne, NJ facility, and the smaller workboat and coastwise trade market in its Brooklyn facility.

"Business is good. We're getting a lot of inquiries, and our Bayonne operation is booked up until August 1, 2012, and our Brooklyn operation is booked up until almost the beginning of the summer," said Mike Cranston, president. "We see the economy turning a little bit, but we still are seeing a reluctance to do any modifications; I still see most of our customers committing only the regulatory requirement maintenance."

Building a Business

"I didn't wake up one day dreaming that this is what I would be doing ... it kind of evolved," said Cranston, in ex-

plaining his roots in the business. Cranston is the first in his family to make a career in the shipyard business, starting out in the early 1980s when he went to work for his current partner's father as a laborer and driver.

"In 1986 he acquired the lease to the Brooklyn Navy yard," Cranston said, and thus began a life dedicated to fixing ships. "We worked on a lot of government and commercial work – and I grew up in this business through a lot of the hands-on work on the ships, evolving to office work."

While the business was successful, the tandem realized that they were losing significant business due to the 127 ft. air draft restriction of the Brooklyn Bridge.

"We realized that there was a lot of work we were turning away because of the Brooklyn bridge height," Cranston

said. The year 1997 was a significant milestone for the company, as that was when the Bayonne facility was added. The early to mid-90s saw significant realignment and closure of U.S. military bases, and the city took over the Military Ocean Terminal, Bayonne. The drydock had not been used for 15 years, but the government had maintained the pump room.

"When the city took over, I went over and negotiated a lease with them. We started building that place up, and it took us almost two years to build it up to a point where we were able to take our first ship in there," said Cranston.

Today, in Bayonne the Bayonne Dry Dock & Repair Corp. operates a full service ship repair yard located in the Port Jersey area of New York/New Jersey harbor. Situated a few miles from the Ver-

In February, U.S. Shipping's 29-year-old chemical carrier M/V Charleston entered Bayonne Drydock for a regulatory dry docking, inspection and special survey.



(Photo: Greg Trauthwein)

razano Bridge, the Bayonne facility has no aerial draft restrictions and is suited for both commercial and government vessels. The facility's graving dock measures 1092 x 148 ft., with a dock floor load capacity of 99,000 tons. The focus is on larger ships, and the company counts, among others, the Military Sealift Command as a valuable customer.

In Brooklyn the GMD Shipyard Corp. is located within the Brooklyn Navy Yard and is the largest dry dock facility in New York City. GMD offers two 1090 x 150 ft. graving docks, in addition to 1100 ft. of wet berth, and provides 24-hour full service operational capabilities. The dockyard maintains and operates numerous cranes ranging from 15 tons mobile to 200 tons gantry. The facility is outfitted with all the equipment and services necessary to produce and perform any type of maintenance or repair, including grit blasting, ultra high-pressure water blasting, painting and steel fabrication.

The focus in Brooklyn is smaller vessels: ATB's, Utility workboats, & Ocean Going Barges, for example, with most of the business from commercial operators, coastal trade and vessels you see in and around New York City. **"We think the formula we have between the two yards works: they are separate work forces, but we utilize some of the same management people at both yards depending on the project going on at the time. Between the two yards we balance the workload out so that it stays busy,"** said Cranston.

In early February, U.S. Shipping's 29-year-old chemical carrier M/V Charleston entered Bayonne Drydock for a regulatory dry docking, inspection and special survey. "U.S. Shipping is a very good client; they run a good operation," said Cranston. "The Charleston is in for all routine maintenance, piping work, blasting and coating, all regulatory and rudder inspections, some steel replacement in the tanks, ballast tank coating repairs, as well as some davit work, as it was hit by one of its own lifeboats down in Houston." The 48,075 dwt M/V Charleston was built in 1983 by Avondale, and measures 635 x 106 ft., able to carry 57,029 cu. m. of cargo.

Challenges

Challenges found at his shipyards are not unlike those found anywhere around the country, or for that matter, the world: Labor. "Attracting and maintaining qualified people is and remains the biggest challenge," said Cranston. To keep the labor pipeline flowing, the company conducts several in-house training programs. "We have a training program, in house,

One Question

What Technology has had the greatest impact on the efficiency and profitability of your business?

"The proliferation of Computer Aided Drawings in ship repair and communications. Back in the 1980s, you basically had a fax machine and that was it. We could not start building out the dock until we had the docking plan, and after the ship showed up in the port, it had to wait around for two days in order for the dock to be built. Today, when the ship is coming, the ship can email to you the docking plan and you're ready for it, saving many days in preparation. If there's a grounding, we can receive underwater video, an invaluable tool that lets you do a lot, from building the dock to ordering material. Comparing the same repair from 15 years ago to today, you can easily save five or six days, if not more."

**Michael Cranston, President,
Bayonne Dry Dock & Repair & GMD Shipyard**

for crane operators, electricians, for riggers and mechanics ... basically all of the trades," said Cranston. "It's on the job training, as they come in as a helper and work their way up. Depending on the trade it takes two to five years for them to become a journeyman."

"The key to our success is basically as it is in any business: you bring in the right people, you treat them fairly, you expect a day's work for a day's pay; they have to understand the expectations; you give your managers responsibility and accountability; and you judge them on the results."

Simply operating a ship repair in the U.S. today is an inherent challenge in itself. "You know, it's a major undertaking

to operate a shipyard in the U.S. today. The environmental rules are continually changing, and that's a very big challenge, and you have to do it so that it is cost effective for your customer," said Cranston. "There are a lot of regulations on what you do and how you operate ... painting, blasting, disposal of material, training of personnel, and making sure they are trained and outfitted for the area of the ship they are working."

"We have full-time, on-site health, safety and environmental staff whose job is to ensure that we stay safe, efficient and in compliance. We have also invested close to a million dollars in the ultra high pressure water washing system (instead of sand blasting), mobile equipment that

will be used for both Bayonne and Brooklyn. In a business which can be notoriously cut throat in terms of pricing, in times good and bad, Cranston maintains that above all good communications is key to thriving for the long haul. "If a competitor of mine has an open space, he can sometimes bid lower than I can. But you have to stay balanced between the two; you have to stay focused on your price point and what you can offer the customer, and sometimes you have to explain that sometimes pricing isn't everything. If I can give you your vessel back two or three days early, how much is that vessel worth to you, as opposed to saving a little money using someone else and taking a few extra days."

The Shipyards	Bayonne Dry Dock & Repair Corp.	GMD Shipyard Corp.
<p>Bayonne Dry Dock & Repair Corp. Military Ocean Terminal Dock Yard Bayonne, New Jersey Email: info@bayonnedrydock.com</p> <p>Bayonne Dry Dock & Repair Corp. operates a full service ship repair yard located in the Port Jersey area of New York/New Jersey harbor. Situated a few miles from the Verrazano Bridge, the Bayonne facility has no aerial draft restrictions and is suited for both commercial and government vessels. The facility's graving dock measures 1092 x 148 ft., with a dock floor load capacity of 99,000 tons.</p> <p>Bayonne Dry Dock Facilities: Graving Docks:(1) - 1092' x 148' x 35'(333m x 45m x 11m) Wet Berth 1600' x 35' (488m x 11m) Cranes (1) - 65 ton capacity gantry crane (1) - 40 ton capacity gantry crane (1) - 40 ton hydraulic mobile crane</p> <p>Bayonne Dry Dock Services: Electrical: 2,300 volt AC/440 60 cy 3 phase Fresh Water:125 psi Firemain: (1) - electrical pump--1,800 GPM at 150 PSI (1) - diesel pump-1,800 GPM at 150 PSI (1) - back-up diesel pump 1,800 GPM at 150 PSI Sewage: Hookup to city sewer</p>	<p>Full Service Shops:Carpenter Shop Electrical Shop Machine Shop Piping Shop Plate Shop Rigging Shop Sandblasting and Paint Shop Tailshaft Shop</p> <p>GMD Shipyard Corp. Brooklyn Navy Yard, Building 595 Brooklyn, New York 11205 Email: info@gmdshipyard.com</p> <p>GMD Shipyard Corp. is located within the Brooklyn Navy Yard and is the largest dry dock facility in New York City. GMD offers two 1090 x 150 ft. graving docks, in addition to 1100 ft. of wet berth, and provides 24-hour full service operational capabilities. The dockyard maintains and operates numerous cranes ranging from 15 tons mobile to 200 tons gantry. The facility is outfitted with all the equipment and services necessary to produce and perform any type of maintenance or repair, including grit blasting, ultra high-pressure water blasting, painting and steel fabrication.</p> <p>GMD Facilities: Graving Docks: (2) - 1092' x 150' x 36'</p>	<p>.....(333m x 46m x 11m)(1) - 280' X 66' (85m x 20m) Wet Berth: 1080' x 116' (330m x 35m) Cranes: (1) - 200 ton capacity gantry crane (2) - 75 ton capacity gantry crane (1) - 25 ton capacity gantry crane (1) - 40 ton hydraulic mobile crane (2) - 20 ton capacity gantry crane (1) - 15 ton capacity gantry crane</p> <p>GMD Services: Electrical: 2,300 volt AC/440 60 cy 3 phase Fresh Water: 125 psi Steam: (1) - portable boiler 200/100 Air: Compressor/house out-put 1,000 CFM Firemain: (1) - electrical pump-1,800 GPM at 150 PSI (1)- diesel pump-1,800 GPM at 150 PSI ... (1) - back-up diesel pump-1,800 GPM at 150 PSI</p> <p>Full Service Shops:Carpenter ShopElectrical ShopMachine ShopPiping ShopPlate ShopRigging ShopSandblasting and Paint ShopTailshaft Shop</p>

As the Shipbuilding and Offshore Industries escalate, so too does

Ship Repair & Conversion in Brazil

By Claudio Paschoa

The strong growth being experienced by the Brazilian shipbuilding industry is forcing the local ship repair industry to grow accordingly. Many of the older shipyards have been revamped in order to not only build new ships, rigs and support vessel to service the burgeoning offshore oil and gas business, but also to offer repair and renovation services.

Take a look at just about any of the shipyards in and around Rio de Janeiro and you will see that along with new-builds, there are a variety of ship repair jobs, big and small.

The Mauá Shipyard, for example, is nearly always packed. On one side there is a new tanker being built, with two additional newbuild tankers docked at the finishing quay. On the other side you will see scores of older PSV's being repaired,

along with at least one jack-up rig.

Petrobras recently acquired the old Ishikawajima shipyard, which was a facility basically rotting away near downtown Rio. The national operator christened the new acquisition as the Inhaúma shipyard, which is being renovated to serve as a repair station for many of its ships and support vessels and also to convert ships into FPSO for use in the pre-salt plays.

According to Renato Souza Duque, Services Director at the Inhaúma shipyard, the yard is preparing a 160 sq. m. dry dock to build FPSO's. "There have already been four FPSO construction tendered for the pre-salt and these will be converted at the Inhaúma shipyard, while the integration of modules for the FPSOs can be done anywhere in the country".

While much press is given to the large projects and the large ships, not only large shipyards are adapting to work on ship repair and conversions. Up and down the Brazilian coast smaller shipyards are re-inventing themselves and turning into specialized ship repair facilities, while others are specializing in building modules for FPSOs and Rigs. At the inland waterways there is also see an increase in shipyard renovations and new shipyards being built in order to service, tugboats and barges.

Brazilian President Dilma Rouseff launched a new shipyard at the Tietê river in September 2011. "We are interiorizing the maritime industry, which was only present in coastal regions. What we are doing here is revolutionary: we are placing the shipyards at the river margins,"

said President Dilma.

Although perhaps a bit of a political overstatement, particularly since there has been a vibrant small shipyard business located in Brazilian interior rivers for centuries, it is accurate that only now are these facilities seeing major investments in the ability to build larger shipyards on the rivers. Most inland shipyards in Brazil are located in the Amazon region, a practicality to service the extensive river systems.

In the bid to build the new shipyard, more than 30 Brazilian and international shipyards were invited to participate in the bid. The Bid Committee examined the technical proposals, which contemplated performance items such as speed, cargo and maneuvering capacity, in addition to the evaluation of the construction

Brasfels Shipyard in Angra dos Reis, on the south coast of Rio de Janeiro.



(Photo credit: Petrobras)



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New Shipyards in Brazil

(The majority of these shipyards, build and repair ships, rigs, FPSOs and PSVs).

Shipyards recently launched:

- Aliança Offshore
São Gonçalo (RJ)

Shipyards being built:

- Estaleiro Rio Tietê
Araçatuba (SP)
- EstaleiroJurong
Aracruz (ES)
- Estaleiro OSX
São João da Barra (RJ)
- EstaleiroInhauma
Rio de Janeiro (RJ)

Shipyards with approved building licences:

- Promar
Suape (PE)
- EBR – Estaleiros do Brasil
São José do Norte (RS)

Shipyards with approved priority financing by the FMM:

(FMM stands for Maritime Industry Fund and is offered by Brazilian development bank BNDES)

- Construcap
Suape (PE)
- EstaleiroPromar
Suape (PE)
- EisaAlagoas
Coruripe (AL)
- EstaleiroEnseadadoParaguaçu
Margogipe (BA)
- EstaleiroCorema
SimõesFilho (BA)
- P2 Estaleiro – Itajaí (SC)
- Estaleiros do Brasil – EBR
São José do Norte (RS)
- EstaleirosAmazônia EASA
Belém (PA) –Shipyard Expansion
- EstaleiroAliança
Niterói (RJ)

Shipyard Expansion

- CQG Construções Offshore
Rio Grande RS

Source: Sinaval (Ship Construction, Repair and Offshore National Union)

methods and timelines proposed. The technical analysis took 40 days and was followed by the opening of the commercial proposals.

The Rio Tietê shipyard won an impressive contract to build barges and barge pushers in order to form 20 convoys capable of transporting two million gallons each for Petrobras's ship division, Transpetro. Each convoy is made up of four barges and one pusher, so the order is for a total of 80 barges and 20 push boats, an investment of around \$200m. The plans also call for the new shipyard to make extensive repair in existing river barges and tug boats. With an investment of around \$20m the new inland waterway shipyard is expected to create 500 direct and 1,000 indirect jobs in the city of Araçatuba, in the state of São Paulo. The shipyard will be controlled by Rio Maguari S.A. and EstrePetróleo.

Ship Repair Industry

Huge order lists are now the norm for the new Brazilian shipbuilding industry, with dozens of new tankers, rigs, and drill ships; and hundreds of support vessels and multi-purpose vessels currently under contract for construction across the country.

At the same time there already are

many older PSVs, rigs, tankers, FPSOs and drillships working the various offshore plays or transporting goods. The rigors of working in increasingly deep, hostile waters mean that the need for this quickly growing fleet of vessels big and small to be serviced, repaired and/or converted will grow in kind. The key concern now in the country in existing shipyards is balancing the demands of newbuild contracts with the coming boom in repair.

The solution: building new yards specialized in ship and rig repair and conversion along with more intelligent use and modernization of existing facilities.

The local maritime equipment industry is trying to cope with the demand, but local taxes still strangle them and much of the equipment being used by the maritime repair industry is being imported, most coming from China. It will still take at least another decade for the local maritime equipment industry to get up to speed and become internationally competitive. While a political decision for the maritime equipment and services industry is discussed, foreign suppliers will gain increasing strength and importance, and local content law will flex in order that the shipbuilding and ship repair industries do to stagnate.

Particularly, as local yards struggle to attract, train and maintain qualified workers for certain repair and conversion jobs and also in order to make repair deadlines when shipyards are overbooked.

While many companies from around the globe are flocking to Brazil to take part in the growing energy and maritime business', enthusiasm can be tempered with political moves, such as the Brazilian government's recently declared a new "currency war" on the US, Europe and Asia by extending taxes on foreign borrowings and threatening more control over capital to try and protect local manufacturing industries. The maritime equipment industry is one of the most affected by foreign monetary policies. "When the real appreciates, it reduces our competitiveness. Exports are more expensive, imports are cheaper and it creates unfair competition for businesses in Brazil," said Brazilian finance minister Guido Mantega after announcing changes to the local IOF tax.

Through a presidential decree, the Brazilian government extended the existing 6% financial transactions tax on overseas loans maturing in up to three years. Previously, the levy was applied only to loans with maturities of under

P-53 undergoing repairs and conversion.



(Photo: Petrobras)

two years. Brazilian President Dilma Rousseff later promised to defend Brazilian industry and stop developed countries' policies from causing the "cannibalization" of emerging markets. The move comes as Brazil's central bank also steps up direct intervention in the market, selling dollars and offering derivatives called reverse currency swaps to curb the real's near 9 percent surge against the US dollar this year.

There are no dependable statistics for the ship repair industry in Brazil, but the level of employment in Brazilian shipyards has reached 59,000 workers and this figure is increasing monthly as new yards go online. In order for the maritime industry to continue growing in Brazil it will be vital for a greater number of shipyards to work on efficient and high quality ship repairs and also for more of the specialized ship repair and conversion yards to be launched in the near future or Brazil may face another bottleneck with ship repairs as it already faces with local content policies.

According to Sinaval's President, Ariovaldo Rocha, "Brazilian shipyards are prepared for the challenge of building drill-ships, production rigs, support vessels, tankers and all the necessary equipment for this new Brazilian phase of petroleum production in the deep layers of the seabed, known as the pre-salt."



With hundreds of rigs operating offshore, specialized repair facilities are vital to the long-term viability of the current maritime and offshore energy run in Brazil.

The new Petrobras repair shipyard will convert at least four FPSOs.



(Photo: Claudio Paschoa)

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Vigor Acquires Alaska Ship & Drydock

Vigor last month announced its plan to acquire Alaska Ship and Drydock Inc. (ASD), further consolidating West Coast U.S. ship repair under the Vigor banner. ASD would operate the Ketchikan Shipyard (KSY) as the Alaska Ship & Drydock LLC subsidiary, in continuation of its 30-year AIDEA operating agreements. ASD employees and customers will notice little change in day-to-day operations, said ASD owner Randy Johnson, a Ketchikan resident who has directed operations at KSY since 1994. Johnson will continue with the company, becoming ASD Vice Chairman.

“The purchase of ASD by Vigor will increase the capacity and competitiveness of the Ketchikan Shipyard in many ways, positioning Ketchikan and the State of Alaska to not only continue our high level of service to existing customers, but to significantly participate in exciting new markets emerging in the North Pacific and Arctic Oceans,” Johnson said.

Vigor Industrial currently owns and operates leading maritime services in the Pacific Northwest at facilities from Portland through Puget Sound.

“We see a tremendous opportunity here to work with Alaska residents to grow maritime jobs and industry from Oregon to the Arctic,” said Frank Foti, Vigor Industrial owner and CEO.

Vigor owns the 60-acre Swan Island shipyard in Portland, the historic Harbor Island yard in Seattle as well as operations in Tacoma, Everett, Bremerton and Port Angeles. Vigor customers include commercial fishing and cargo fleets, barge and workboat owners, oil transportation companies, Washington State Ferries, the Alaska Marine Highway System and alternative energy developers. Vigor, which purchased the Todd Pacific Shipyards in February 2011, also maintains and renovates U.S. Navy aircraft carriers and other vessels and U.S. Coast Guard assets including the icebreakers USCGC Healy, Polar Star and Polar Sea.

The combined companies offer a full range of ship building, repair and modernization services in seven facilities in Alaska, Washington and Oregon with 10 drydocks, more than 17,000 ft. of pier space as well as large-scale fabrication facilities, specialty coatings and other industrial services. Upon approval, the companies will employ close to 2,000 workers across the Pacific Northwest.

Adam Beck, currently general manager of the Vigor Marine subsidiary’s regional operations, will take on added duties as ASD’s President. Beck worked at the Ketchikan yard for five years prior to joining Vigor Industrial in Portland.

Signal Wins Bid to Repair USACE Hopper Dredge Wheeler

Signal Ship Repair (SSR), a division of Signal International, Inc., won a contract by the U.S. Army Corps of Engineers to repair and repower the Hopper Dredge Wheeler. SSR will provide engineering and marine services to perform engine replacement, auxiliary systems modifications, repair work, and testing of the Dredge Wheeler for the Corps of Engineers, New Orleans District.

The eleven-month project commenced in February with phase one pre-planning, engineering, and scheduling portion. The second phase begins in July with the Dredge Wheeler on the SSR drydock for capital improvements, maintenance and repair work comprising of renovations to the propulsion system, the dredge generator system, and the ship service generators. Modifications to the fresh water cooling system, repowering fuel systems, walkways, electrical systems, Integrated Control and Monitoring system, as well as, the navigation and controls system will also receive upgrades. Wheeler, which is the largest and most powerful hopper dredge in the Corps of Engineers’ fleet, is 408 feet in overall length and displaces 10,614.47 long tons. Wheeler maintains waterway channels from Key West, Fla., to Brownsville, Texas. The dredge is maintained in a state of readiness for worldwide operations, with the majority of its time operating in the Southwest Pass of the Mississippi River, dealing with shoaling problems that occur during high and low water.



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Gibdock Makes Waves with Back-to-Back Cruise Dockings

Gibdock has been busy of late, notably with back-to-back cruise ship dockings that included the return of the 37,584gt, 1,575-passenger capacity Thomson Destiny (pictured), in for its fourth visit since a first refit in Gibraltar in 2006.

Thomson Destiny arrived at the yard in November 2011 to undertake works afloat and then docked on November 21 one day after the Pullmantur Zenith had left the 260m x 38m x 10m dock after a 12-day stay.

"In many ways this was a routine dry docking, but with two large cruise ships docking one after the other we had to make doubly sure we managed the time pressures very carefully," said Gibdock Commercial Director, Richard Beards.

Both ships had to be completed by very specific dates in order to be able to maintain their cruise schedules."

The 214m long, 1982-built Thomson Destiny is owned by Louis Cruises and is on long term charter with Thomson Cruises. During the two week stay at Gibdock the yard carried out a variety of tasks including high pressure washing and painting of the vessel's hull, refurbishment of the anchor chain, sea valves and bow thruster, pipe work and steel repairs in the tanks.



(Photo: Gibdock)

Gibdock's long-time Greek agent, Hellenic Industrial and Marine Agencies, was closely involved in this project, liaising with the owner to ensure the yard fully met its requirements.

"Gibdock has an excellent reputation among local owners, due to a combination of reliability, on-time delivery and high quality," says Alkis Koukis, managing director. "This latest docking of Thomson Destiny went very well and Louis Cruises was extremely pleased with the outcome.

Louis Cruises' superintendent, Chrysanthos Chrysanthou adds: "Gibdock's project management has been very successful as the yard was able to handle multiple activities, and adapt to changes and additional requirements, and still complete all works ahead of time.



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Genoa-based Logmarin Advisors, part of the RINA Group, has enabled Brazil's Vale SA to convert the Ore Fabrica (the former VLCC Front Duchess) into the world's largest transshipment vessel. It will shortly come into operation at a site in Subic Bay, the Philippines, where it will operate as a platform for the transshipment of iron ore cargoes from Vale's 400,000 dwt valemax ore carriers into capesize vessels for on carriage to markets in Asia.

Logmarin assisted Vale by devising and supervising the detailed design of the conversion and by procurement assistance, selection of the Ore Fabrica terminal management, and developing operation and safety procedures, Hazard and Operability analysis, transshipment site identification and permits. Support includes assistance during commissioning and personnel training.

The new cargo handling plant, the only one of its kind, consists of five Liebherr MPG cranes and a sophisticated conveyor belt/loading system designed and built by Bedeschi of Padova. The cargo handling facility is certified by RINA.

The conversion was carried out at the Jiangsu Xinrong Shipyard in China. A total of 4,643 tonnes of new plant and structure went into the conversion. The installation of 9,680 KW of power gives the vessel a 5,000 tonnes-per-hour capacity – sufficient to load a capesize vessel in 36 hours. From design to delivery, the entire conversion took 333 days to complete.



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Modern Software Solutions help keep ships & crew

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Modern software solutions are arguably one of the most cost effective means to optimize and make efficient marine operations, from tugboats to tankers. Traditionally maritime operators are a conservative lot, with vessel owners delaying the modernization process, opting for the 'business-as-usual' mantra. But this is changing, MR found when discussing recent trends with some of the industry's leading providers of advanced software solutions.

– by Greg Trauthwein, Editor & Associate Publisher

The Participants

Egil O. Aarstad - Managing Director and General Manager at Jeppesen Norway AS • **Morten Bjoern** - CEO & Founder of Intellocorp
Ron deBruyne - CEO and Founder, Edoc Systems Group Ltd. • **Al Carbone** - ShipDecision • **Joe Galatas** - Marine CFO
Murray Goldberg - Founder and CEO, Marine Learning Systems Inc. • **Steven K. Hartsaw** - Project Manager, Engineered Solutions, W&O
Karen Hughey - President and COO, ABS Nautical Systems • **Giampiero Soncini** - CEO, SpecTec Group

Software is constantly evolving. Please discuss what you consider to be the biggest product/system development for your company in the previous 12 months?
Hughey, ABS Nautical Systems

In 2011 we released the next generation version of our software, NS5 Enterprise. We made a commitment to our customers to enhance the quality of our products. The result was a complete redesign of the application based on direct feedback from users of the software. NS5 Enterprise offers advanced usability, speed and overall performance that meet the business needs of owners and operators. By providing increased value, advanced in-

telligence and improved communication for users, our goal is to establish NS5 Enterprise as the must-have tool for the global maritime industry.

Soncini, SpecTec We will complete the AMOS2 Suite, including full Crewing software with payroll, Appraisal, Crew rest time, and so on. And we will complete all the tools to upgrade existing AMOS customers to the new AMOS2 Suite.

Aarstad, Jeppesen One to be mentioned would be our move onto mobile platforms. This is the latest step in Jeppe-

sen's 78-year quest to provide marine and aviation users with digital navigation data that complies with current regulations.

Galatas, MarineCFO MarineCFO has a completely new module for managing the Health, Safety and Environmental compliance functions for our clients. This area of marine businesses has received increased scrutiny over the last few years. From crew certification training and drug testing to vessel certification and inspection management, this module covers it all. Reporting on incidents and vessel audits are made easy within the H,S and E module of MarineCFO. With the new in-

spection regimes for inland towing vessels we fully expect the need for this type of software to increase significantly in the future.

Goldberg, MLS Four months ago we brought our primary product, MarineLMS to market. MarineLMS is the first Learning Management System built specifically for vessel operators to deliver training to their officers and crew in the maritime industry. Used in combination with existing training, it improves effectiveness and provides access to training analytics so results can be measured and continually improved. Al-

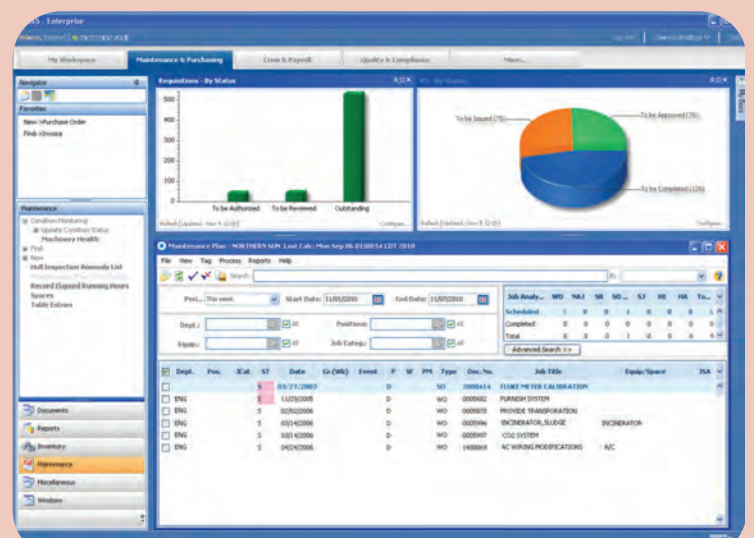


Karen Hughey, ABS Nautical Systems

"The growing demand to remain in compliance has impacted our offerings significantly. We are currently entering testing phases on a new software module that directly aligns with the impending Ship Energy Efficiency Management Plan (SEEMP)."

impending Ship Energy Efficiency Management Plan (SEEMP)."

(Image: ABS Nautical Systems)



though the product is new to the market in general, it has been in use by one of the world's largest ferry operators, British Columbia Ferry Services Inc., for over two years now.

deBruyne, Edoc Safety. Like many others in the industry we saw the increased scrutiny from governing bodies with regards to safety and compliance coming and we wanted to be ready for it. Safety was also something our existing customers were asking us for because they have our other modules and they saw the potential of integrating them with our safety module. The challenge for a safety manager today is that safety and compliance touches every aspect of an organization. Basically, one non-conformity could have several corrective actions attached to it that affect multiple departments, and trying to keep track of everything that's going on in all different aspects of the organization from the crew to the vessels, to maintenance to purchasing, is a big job

Hartsaw, W&O Fuel costs and efficiency have become an increasing concern in maritime operations, so last year W&O introduced the FuelProof Fuel management systems to help vessel owners and operators create greater fuel efficiencies. The FuelProof system consists of accurate flow meters along with a software suite to visualize and record real-time fuel consumption and engine/vessel performance data. This industrial, off-the-shelf software comes with more than 450 available interfaces designed for communicating with devices, control systems, third-party applications and business systems such as corporate ERP. W&O has designed a marine measurement application based on this software infrastructure. It allows multiple data streams into the visualization screens for quick analysis and reaction to fuel and efficiency issues. The FuelProof software brings situational awareness to the operators and to the home office for review and comment. This information is used by vessel crew and office staff to analyze and identify areas where efficiencies reside and can be implemented. The systems can be used for both diesel and heavy fuel applications. The meters also employ the latest technologies available and are approved for custody transfer operations. FuelProof Bunker operates with the latest coriolis meter technology provided by Emerson Micromotion. W&O's new FuelProof Fusion system is designed for diesel application on workboats and tugs. This system shows real-time fuel consumption along with speed and posi-

tion from the GPS interface, along with other pertinent equipment data to give the vessel operator the information he or she needs to make informed decisions on throttle position and efficiency. Fusion includes a weather resistant, self-contained computer and touch screen, turbine me-

ters with all required electronics, junction boxes and cabling. This makes system design, installation or retrofit a very simple process. The Fusion software is a Microsoft Windows-based system that allows the user to easily customize the look of data screens, making the display

simple to use and comprehend. The data is relayed to the home office using cell, e-mail or satellite communication links on a customizable time frame, offering office personnel historical operational information for efficiency, voyage planning and customer billing of fuel charges.



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Egil Aarstad, Jeppesen

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Joe Galatas, Marine CFO

“We focus entirely on the workboat market and that is where our growth will come from. Whether oil supply vessels, inland or offshore towing vessels, bulk or liquid cargo

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Steve Hartsaw W&O

“iShip is a unique information management platform based on the same software infrastructure as the FuelProof system. iShip offers operational and event data on a real-time and historical basis.”

(Image: W&O)

Carbone, ShipDecision This past year has been very exciting for ShipDecision. In conjunction with CanforNav, we have developed a “Green-Marine” emissions reporting module used in concert with ShipDecision’s off-line reporting module. This system permits vessels to capture data on-board, without the need to install any software, and automatically send it to the ShipDecision servers for up-to-the-minute compilation of emissions statistics suitable for reporting to various organizations. This is a huge time-saver for all parties involved in managing emissions reporting. Another major benefit is that a company can see their emissions posture for their entire fleet, as well as for a given vessel, or voyage, on a daily basis. And because the system does not require any software installation on-board the vessels, it can even be used for spot or time-chartered vessels.

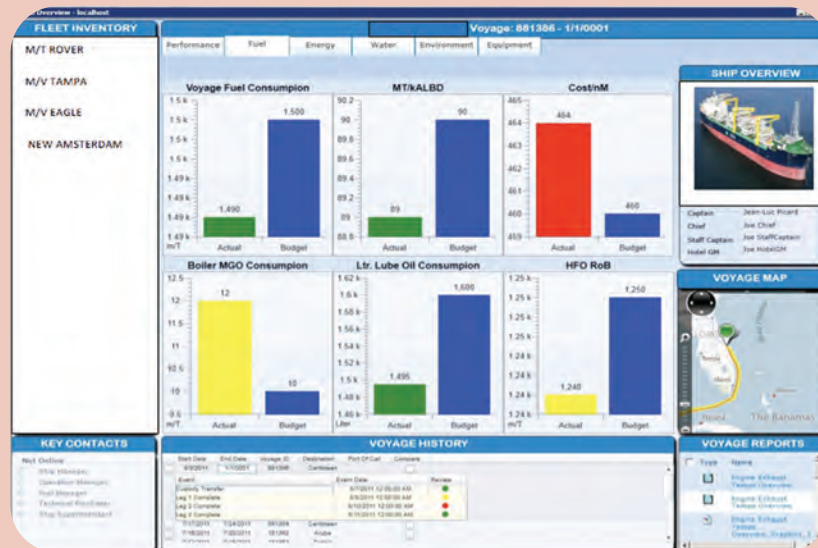
What can our readers expect from you in the coming year?

Hartsaw, W&O This year W&O will introduce our new iShip data management and reporting system. iShip is a unique information management platform based on the same software infrastructure as the FuelProof system. iShip offers operational and event data on a real-time and historical basis, so vessel operators and engineers can visualize, analyze, distribute, collaborate and act on information delivered by the software. Vessel automation, control and information systems tend to be very disparate. iShip was developed to specifically address this information issue. By using the off-the-shelf interfaces, the software

brings multiple data streams into one system for visualization, reporting and analysis. iShip transforms this data into real information that can be easily digested and acted upon. iShip uses our standard software infrastructure and data interfaces including OPC, to connect to, and acquire operating data from, new and existing machinery, control, instrumentation, emission and bridge systems.

Goldberg, MLS The maritime training context offers some unique challenges for the use of advanced learning technologies. Given our singular focus on the maritime industry, our upcoming development is focused on continuing to break down the barriers that remain to the use of these technologies in this industry. One of the primary developments which will be available shortly is the ability to install “slave” LMS training servers on vessels where internet connectivity can be expensive, slow, unreliable or even non-existent. These servers will synchronize with the central authoritative server to ensure that all vessels have current training materials and assessments, and to deliver training analytics and audit logs from each vessel back to the central server for oversight and continuous improvement by training administration.

Aarstad, Jeppesen Our work to support the evolution and transformation of global transportation will continue. Jeppesen’s activities span many market segments and technologies, but two important new additions to the navigation information data chain are particularly relevant for commercial vessels. To support the work of Hydrographic Offices,



we are adding a bathymetry database function to our acclaimed dKart Office ENC and chart production tools. On the bridge side, we are enabling the captain to select the most suitable ENC delivery and updating methods for the vessel, including dynamic licensing, and pay-as-you-sail services. These two extensions, from opposite ends of the navigation data chain, allow Jeppesen to continue supporting the work of Hydrographic Office authorities to improve chart data quality and speed up its delivery and updating onboard vessels.

Galatas, MarineCFO MarineCFO is focusing on mobile extension of our Enterprise product for use on smart phones and tablets. This is a requirement now for software solutions given the prevalence of mobile devices and how readily they fit into the marine business model. The new mobile MarineCFO will enable many of the functions within the software to be utilized while employees are on the move.

Soncini, SpecTec More and more service commitment. SpecTec has now a network of 25 offices in 19 countries, and more than 300 staff. We have the software and all relevant documentation and support in eight languages, including Russia, Arab and Chinese. We link AMOS with any Automation plant, and any Condition Based Maintenance software. The evolution of Shipdex, and its acceptance by the largest marine equipment manufacturers, means that we can now create, for these manufacturers, perfect Maintenance and Spares Databases in minutes. While most of our competitors provide software and little service and support, we will continue to improve in these areas.

Carbone, ShipDecision As of January 2012, ShipDecision is being trialed by an important P&I Club, and more than 50 surveyors, for management of Vessel Condition Surveys. A number of P&I Clubs are closely watching this trial with great interest. We are actively promoting the ShipDecision Surveying module among the P&I Clubs, as we feel that it would bring great benefit to all the Clubs – the least not being the ability to maintain both standardized and bespoke surveys on a per-Club basis.

The maritime industry, specifically the owners of commercial vessels, are hesitant to integrate new software technologies onboard their vessels because ...
Aarstad, Jeppesen ... of the cost/benefit correlation. New technologies are

sometimes wrongfully associated with increased costs, rather than savings. Training is another reason for hesitancy. Implementing new technologies requires training in both system operation and maintenance.

Soncini, SpecTec... Many still do not understand the benefits. It is rather amazing to see how, in the last four years, notwithstanding the terrible economic crisis in shipping, and the many related bankruptcies, not one of our shipping

customers has gone bankrupt. And the reasons are simple: AMOS allows a strict control on all costs. Companies equipped with AMOS since many years have a tremendous advantages: they know all their costs, and they know how to keep

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Giampiero Soncini, SpecTec

"It is rather amazing to see how, in the last four years, notwithstanding the terrible economic crisis in shipping, and the many related bankruptcies, not one of our ship-

ping customers has gone bankrupt. And the reasons are simple: AMOS allows a strict control on all costs."



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"In conjunction with Canfornav, we have developed a "Green-Marine" emissions reporting module used in concert with ShipDecision's off-line reporting module.

This system permits vessels to capture data on-board, without the need to install any software."



Murray Goldberg, Marine Learning Systems Inc.

"Most of the impediments to the integration of technology are the same in the maritime industry as they are in other industries: cost, culture, change management and so on. However, there is one impediment to the adoption of learning technologies in the maritime industry which sets the industry apart. That is the lack of reliable bandwidth on board."

them under control. We have complete evidence that identical large CT vessels with AMOS on board, on identical routes, save up to \$1m each year when compared with ships without AMOS. After 26 years in the industry, we can now see that companies which invested heavily in IT, and specifically in AMOS, are much more capable to go through the crisis. It is a matter of mindset: applying IT means applying methodology, order, procedures and control to all activities. And the results are worth all the efforts.

Carbone, ShipDecision ... They've been "burned" in the past with promises of IT nirvana, only to be saddled with IT hell. And that is a lesson that is not soon forgotten.

Bjoern, Intellocorp They don't have an overview of the functionalities and capabilities a software can provide and these types of software solutions is new to the maritime industry, which is by far, one of the most conservative industries, a lot of the people still run the business by the old school philosophy "if it is not broken, don't touch it". Another thing is that there is a lack of understanding for business intelligence and what they will gain from an investment into a new software (Will it just be another fancy solution that doesn't bring anything but expenses) They all want value added solutions, but no one wants to take the first step and invest into a large sum of money into a new solution.

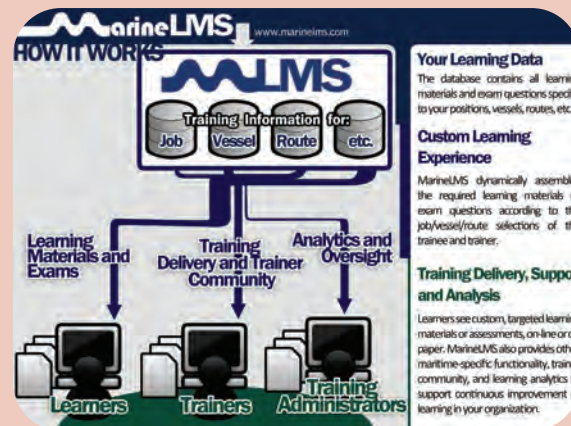
The maritime industry, specifically the owners of commercial vessels, EM-

BRACE the integration of new software technologies onboard their vessels because ...

Hughey, ABS Nautical Systems

... The maritime industry, specifically the owners of commercial vessels, embrace the integration of new software technologies onboard their vessels because it is simply becoming a necessity. The demand for software solutions has increased, as owners and operators are realizing that technology is a key component to operating their fleets. Efficiencies and advanced productivity brought about by these solutions will continue to drive the demand for integrated software solutions and new product development. In 2011, contracts were signed to add our asset management software to more than 700 vessels; many of which will be utilizing our newest version NS5 Enterprise. This is a testament as to how far the maritime industry has come in adopting new technologies.

Goldberg, MLS ... One driver for the adoption of learning technologies is the growing awareness among vessel operators of new opportunities to provide more effective job training and familiarization for their officers and crew. Utilization of new learning technologies, combined with existing face-to-face training, has been demonstrated to produce training outcomes superior to face-to-face training alone. These technologies also enable training measurement and oversight which allow for continuous improvement. An additional driver is the continually increasing complexity of vessel systems and the result-



ing increase in knowledge required by modern mariners. Learning technologies provide the higher level of training sophistication required to teach this knowledge and assess whether it has been correctly learned. Finally, a third driver is the series of recent high profile accidents in the industry and the recognition that learning technologies can play a major role in improving safety and performance.

In your estimation, what has been the biggest driving force for the utilization of IT solutions onboard ships?

deBruyne, Edoc As I see it there are two major driving forces. One is broadband communication. The cost of data transmission has come down significantly. Prior to this decrease in costs, data transmission was prohibitive and the office was more focused on collecting only mission critical data from vessels. Today, more data can be transmitted from vessels for analysis and trending, which can make the entire operation much more efficient. The other contributing factor has been the advent of the smart phone. Prior to the smart phone there was a large segment of the population that was technology adverse. Things like the iPhone have made people from this segment much more accepting of technology, and it gives us an opportunity to put software in front of them onboard their vessels. The improvements in user interfaces are significant in terms of simplicity too, and that has been a major contributing factor for us because we have concentrated on the simplicity of the user interface and the end user. We try to make their job as easy as possible, so they can focus on running their vessel.

Hughey, ABS Nautical Systems

I believe there are two driving forces when it comes to the utilization of IT solutions onboard ships. The first is compliance. Companies need systems in place to manage information in order to demonstrate compliance that is related to the performance and safety of their vessels, as well as the growing number of new regulatory requirements that are coming into effect. Efficiency is also a key factor. In a time where companies need to remain competitive, owners and operators are looking for ways to improve efficiency and reduce costs. An integrated software solution such as NS5 Enterprise provides Senior Management, as well as crew members' access to real-time business data that is specific to their job functions, allowing for improved planning and decision making.

Bjoern, Intellocorp Economy is by far the biggest driver for utilizing software solutions onboard ships. The shipping industry is lacking when it comes to implement business intelligence software that helps control and monitor specific cost areas and the executives are realizing that they need more advanced software solutions to be a market leader.

In your estimation, what has been the biggest driving force which has served to stall the integration of IT solutions onboard ships.

Galatas, MarineCFO We still see a ton of skepticism about software and its place in the marine environment. Companies still are operating "the way they always have" and do not yet fully appreciate the benefits of a properly constructed and implemented software solution. The solutions available for marine companies

these days are as good as for any industry and offer the ability for dramatic efficiency gains if used appropriately.

Goldberg, MLS Most of the impediments to the integration of technology are the same in the maritime industry as they are in other industries: cost, culture, change management and so on. However, there is one impediment to the adoption of learning technologies in the maritime industry which sets the industry apart. That is the lack of reliable bandwidth on board. This has meant that the learning technologies which have improved learning effectiveness and measurement in pretty much every other industry world-wide, are slow to take hold in the maritime industry by vessel operators. Fortunately the tide is turning. First, our friends in the satellite communication industry are making huge progressive strides in cost, bandwidth and reliability. Second, companies such as ours are working hard to make these learning technologies available to the maritime industry even now, while on-board internet remains an issue for many.

Bjoern, Intellocorp I think the reason why companies are not implementing a state-of-the-art software solution is that they are not 100% sure of the benefit they will gain or simply doesn't understand how to utilize this technology another thing is the initial investment that for most enterprise software is extremely costly and it is difficult to find budget for investments that size when

the economy is struggling as it is, that is one of the reasons to why we at Intellocorp decided to make our solutions subscription based the eliminates the high initial investment.

How are you investing today in your products?

Soncini, SpecTec We continue to develop AMOS Web Interfaces, and our AMOS-IS (Integrity Solution), with large modules dedicated to Business Intelligence, KPIs and Remote Monitoring. Being by far the largest IT company in shipping, we get many requests from our customers to develop more and more Management tools, which allow total control on all vessels performances. This is the area where we will put a lot of efforts in the next two years.

Carbone, ShipDecision We are expanding our off-line reporting module system to bring new functionality both on-board the vessels and for the vessel operators ashore. And, all the while, without requiring the installation of any software on-board the vessels. We believe that this "simplification" to the on-board IT footprint is a positive element for those tasked with managing the IT resources of vessels.

DeBruyne, Edoc The key thing we are investing in now is the move towards tablet technology. What we see is a new wave of hardware technology coming that is going to make life onboard the vessels that much easier.

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We can envision a world where a crew member comes onboard a vessel, signs on to the vessel via a tablet (there could be multiple tablets onboard all communicating with a central server, which is the communication platform back to shore). But within the local area network, you could have a tablet in the engine room, one in the galley, one up in the wheelhouse and one as a floater that could be used by crew to review their policies and procedures, and conducting safety meetings.

Tablets will make data management so much easier and will eventually create the paperless vessel.

What market sectors do you see as the most promising for your business in the coming year and why?

Galatas, MarineCFO We focus entirely on the workboat market and that is where our growth will come from. Whether oil supply vessels, inland or offshore towing vessels, bulk or liquid cargo

MarineCFO has a good solution.

Hartsaw, W&O W&O serves a number of sectors in the marine industry—cruise, commercial, military, offshore, inland barge, and others. The iShip system is truly designed for an international and global market, and is applicable to virtually every sector—making it what W&O believes to be the most promising opportunity in the coming year. Information is power, and iShip provides the intelligence and power to make operational and business decisions that bring increased profitability to the organization.

Vessel owners of all size are stretched thin to ensure that their vessels, crew and company remain in compliance with a growing web of rules and regulations.

How has this development impacted the products and services that you provide?

Aarstad, Jeppesen It is Jeppesen's view that we have a responsibility to maintain close working relationships with govern-

ment authorities and industry groups around the world. Our active participation in technical working groups and contribution to relevant standards is vital for ensuring two things: that legislation incorporates private sector needs and expertise, and that the latest navigation technologies and standards are embedded in our products and services.

deBruyne, Edoc It has had a huge impact on us. From our perspective, any time there is an industry that has heavy regulation and a great deal of paperwork, that's an opportunity for a software company to optimize that process. And we certainly don't see the amount of paperwork going away.

If anything, it's going to continue to get worse. We see companies that have entire departments focused on managing all of this safety and compliance data. To do that in a paper-based environment with disconnected systems like Access or Excel is unsustainable. But if you can

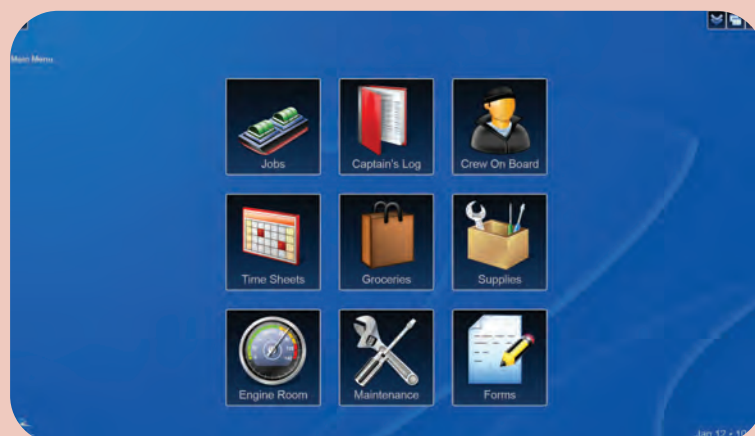
pull of this information into one system like ours, it makes everyone's life a whole lot easier.

Hartsaw, W&O iShip was developed to simplify the lives of vessel owners and operators as they navigate through a number of new regulatory demands placed on them. These demands have burdened owners, operators and crewmembers with an increasing amount of data gathering and reporting, which takes valuable time away from more cost-effective duties. iShip's monitoring and reporting of fuel consumption, equipment status, operational efficiency, emission monitoring, fuel bunkering, internal corporate reporting, and eventually carbon trading, streamlines the information-gathering process and creates intelligence that is immediately usable. iShip data is time stamped and has an auditable trail for indisputable reporting, greatly helping ensure compliance with the latest regulatory requirements. The system



Ron deBruyne, Edoc

"The key thing we are investing in now is the move towards tablet technology. What we see is a new wave of hardware technology coming that is going to make life onboard the vessels that much easier. We can envision a world where a crew member comes onboard a vessel, signs on to the vessel via a tablet."



SIS Sets up in Brazil

Star Information Systems (SIS) established a new base in Rio de Janeiro to serve Brazil's offshore sector. SIS sent **Hans-Kristian Fjaerem** (pictured right) to lead the operation, recruit a local team, and service SIS' growing portfolio of customers in the region. SIS has been servicing clients in the region for the past five years, but is now investing in a permanent office to ensure that its customers there – such as Norsul, Teekay Petrojarl, Farstad Shipping, Solstad Offshore, Ocean Rig, BW Offshore, and Siem Offshore – get the best possible service, from a dedicated, local team of professionals. Fjaerem, a key figure at SIS over his 12 years with the business, envisions massive potential for the market, and for SIS itself: **"We have had activities in Brazil for some time, but we felt the exceptional growth of the market, particularly with regard to the oil and gas sectors, meant that the time was right to commit to a permanent base.** We're looking to build a full-service company there providing all the services that we currently provide from Norway – that's advisory services, project management, support, implementation, training and sales across all of our software modules.

"These cover CMMS and asset management, QHSE, fleet supply management, project management, document management, KPIs dashboards, and more. Having a local team on the ground, with local industry and language abilities will give our Brazilian and international customers a valuable point of access to SIS and our product range, while helping us to take advantage of an exciting and fast developing marketplace."

SIS' existing clients in the region are in agreement with Fjaerem, with Knut Olsen, CMMS Manager at Siem Offshore, and Roar Bye, Operations Strategy and Support Manager Teekay Petrojarl, throwing their support behind the development of the permanent base. Siem Offshore currently has five vessels operating in Brazilian waters and Olsen welcomes SIS' arrival.



gathers data from all types of automated systems as well as manual data that can be collected via a preprogrammed handheld collector (PDA). This collected data then automatically populates fields in corporate and vessel reports, decreasing time spent collecting and inputting data,

which can instead be spent on evaluating more profitable operational and maintenance duties.

Hughey, ABS Nautical Systems The growing demand to remain in compliance has impacted our offerings significantly.

We are currently entering testing phases on a new software module that directly aligns with the impending Ship Energy Efficiency Management Plan (SEEMP). The primary function of this module is to collect, analyze and report data on a vessel's performance, efficiency, emissions

and discharges to assist in the verification of compliance with SEEMP's mandatory procedures. ABS took a holistic approach to this initiative and engaged multiple departments to make sure we could assist organizations on all aspects of this regulation.

DNV Navigator

Wallem Installs on 190 Ships



Captain Deepak Honawar, Wallem's director of safety and quality and Kaveh Mansoorian, DNV Senior Customer Service Manager signed the contract in Hong Kong this week.

Wallem Ship Management in Hong Kong has ordered DNV Navigator for its managed fleet of more than 190 ships. The contract also includes the Work and Rest Hours module allowing for compliance with international legislation on rest hours for seafarers.

DNV Navigator is a dedicated decisions support tool for assisting the Master in handling the administrative and regulatory complexity of port operations.

The new contract is the largest ever signed for DNV Navigator.

DNV Navigator facilitates compliance with requirements from charterers and port authorities and is often referred to as the "Captain's best friend". More than 1200 port clearance forms are automatically filled in with ship data so that the required paper work can be prepared in a few minutes. The system includes a database of information about all world ports and terminals including publications and data from UKHO, and other sources. Arrival and departure procedures for all major ports are available as well as a comprehensive nautical library providing up-to date maritime-specific information.

The system is arranged for easy creation of Master's Notes which are used for sharing port specific knowledge within the fleet and information can be shared with other systems such as gangway control systems and ECDIS. "Wallem is striving continuously to manage their fleet in safer and more cost effective ways", says Captain Deepak Honawar, Wallem's director of safety and quality, and the company tested the system thoroughly before taking this next strategic step. "We were impressed by how quickly DNV responded to our demands and added new elements in the system. We have great expectations for the use of DNV Navigator and believe the product will play a key role in our portfolio of on-board applications," he said.

Wallem will make use of the Work and Rest Hours module as part of their DNV Navigator implementation. This module demonstrates compliance with the Maritime Labour Convention 2006 and the Standard of Training, Certification and Watchkeeping for Seafarers. Any violation of regulations is clearly identified and the system allows user-defined reports to be generated. Crew timesheets can be generated in MS Excel and the power of the system can be increased by adding company-specific forms and by sharing data with other company-specific or third party systems.

DNV Navigator was introduced in 2002 and is already in use on over 2,000 ships worldwide. "Industry feedback indicates that the on board paperwork burden is reduced by as much as 90 per cent," says Odd Arne Haueng, head of DNV Maritime Partner. "This enables ships' officers to focus on what should be their primary responsibility, that is operating the ship in a sound and safe way both at sea and in port."

Wallem will commence roll-out of DNV Navigator across its fleet in March 2012.



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Titanium Ship

Examining the Business Case for a

Participants at a workshop exploring the use of titanium structure for ships found that it is not only possible to construct a ship hull from titanium—or Ti, it could be cost effective.

By Edward Lundquist

The workshop was sponsored by the Office of Naval Research and hosted by the University of New Orleans, where an ONR research program on titanium ship structures is being conducted. Representatives of the shipbuilding industry, titanium suppliers, Navy, Coast Guard and Air Force labs, and academia discussed and examined materials, processes and applications.

Most ships today are primarily made from steel. Alternative materials include aluminum and composites. But the consensus of the workshop attendees was that titanium—while more expensive than other materials on a pound for pound basis—has many positive properties that contribute to lower total ownership costs (TOC) throughout the life of

the ship. Because titanium has more strength for its weight than steel—Ti offers a 40% weight savings compared to steel—lightweight designs can be achieved that offer increased payload capacity, reduced fuel consumption and reduced carbon emissions. It has a low magnetic signature, which means you can reduce heavy and power-consuming degaussing coils to protect against magnetic influence mines. It has temperature resistance, so it's safer for structures like gas turbine exhaust systems. And Ti is virtually corrosion-free in seawater, so it can be cost effective for sea water piping systems such as cooling water and fire-main.

However, more research is needed to develop high-productivity Ti welding

processes for ship construction. Although well established, the existing titanium welding processes are too slow for ship hull construction which typically requires miles of welds, according to Dr. Pingsha Dong, a professor at University of New Orleans School of Naval Architecture and Marine Engineering, and director of UNO's Welded Structures Laboratory. Through the UNO investigation, advanced metal inert gas (MIG) welding and friction stir welding showed their potential.

Chris Conrardy, chief technology officer at the Edison Welding Institute (EWI), says there are different techniques for welding titanium, including gas tungsten arc welding, electron beam welding, high-power laser welding, friction stir

and hybrids of the different methods. "The optimum approach depends on the structure's configuration, joint design, performance requirements, and economic considerations."

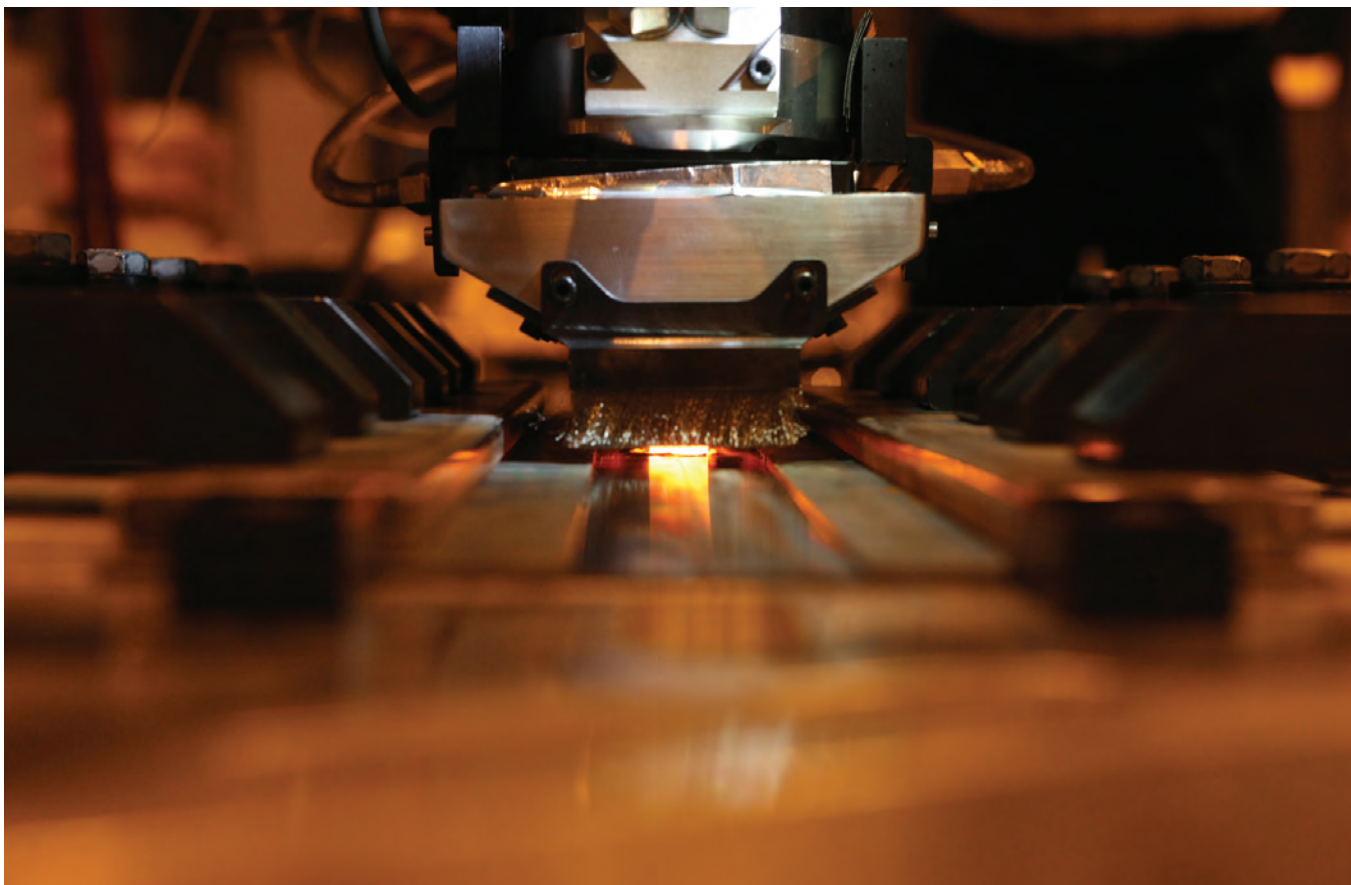
But in each case, quality control is paramount, and inert gas shielding is required to avoid contamination. "Avoidance of contamination is a primary concern with all titanium fusion welding processes," Conrardy says.

"Titanium is highly reactive at elevated temperatures and requires shielding of the molten metal during welding and cooling," says Jennifer Wolk, a materials engineer with Naval Surface Warfare Center (NSWC), Carderock Division specializing in welding and friction stir welding of non-ferrous materials.

"Most steel ships are scrapped because of corrosion of the hull, not problems with the machinery," says Rob Moore at Textron Marine & Land Systems (TM&LS). "TOC is reduced by using a titanium hull."

Aerospace grade titanium used in aircraft is about nine times more expensive than steel. But industry experts predict that "fit-for-purpose" ship hull or marine grades of titanium, as proposed by UNO, could be made less costly—perhaps only three times as expensive as steel—by changing the processing and finishing requirements. When weighed against its positive attributes, titanium may become even more cost effective.

Moore says Ti production is energy dependent and the cost of energy is not going to go down. But, he says, marine grade Ti will likely cost much less than



(UNO-NCAM photo by Dr. Greg Dobson)

Friction stir titanium welding is conducted at the National Center for Advanced Manufacturing at Michoud, Louisiana.

commercially available aerospace grade Ti.

Marine specific Ti grades have been developed and used for some high strength naval applications, such as piping, but not for general structural applications. The cost of marine grade Ti would depend on the end use and properties needed for the application.

Colen Kennell of the Center for Innovation in Ship Design at NSWC Carderock says Ti offers a potentially ship-scale cost effective alternative to steel structures. "For faster ships, lightweight hulls are a critical enabling technology."

As a further benefit, when a vessel reaches the end of its service life, its scrap value is much higher than a steel ship.

"Old ships are a problem," says Kennell. "Ti scrap retains substantial value even at the end of a 30 or 40 -plus year ship life."

There are other alternatives to steel, such as aluminum and composites for ship structures. "If you want an all-composite ship, then you would need an all-composite shipyard. But Ti could be introduced in a steel yard," says Kennell.

Wolk adds that Ti fabrication currently exists in shipyards, but does require strict controls for fabrication.

There is also the possibility that building ships from titanium would create a demand that would drive the cost up for the metal. There is precedent, when there was an unexpected demand for Ti when Callaway introduced the Big Bertha golf club at about the same time that Boeing announced the start of construction of a new airplane. A spike in the titanium market could also disrupt the aerospace sector.

But suppliers at the conference said that even if the Navy decided to build three or four Ti ships a year, US Titanium capacity is not a constraint. The US has sufficient projected capacity looking at current demand signals, and steps can be taken to mitigate demand spikes.

Such a fabrication facility would require a significant investment, Kennell says, and without additional demand it might be unsustainable. "But there aren't any show-stopper industrial or management issues."

Raymond M. Walker of Keystone Synergistic Enterprises in Port St. Lucie, Fla., says the workshop demonstrated that there are no engineering barriers or obstacles that prevent design or construction of a titanium naval ship. "Challenges, yes; but no barriers."

Walker, an expert in welding and joining of titanium and vessel fabrication,

says it was valuable to have representation from many of the key players in the effort to manufacture with titanium: the titanium material providers, titanium processing and joining experts, ship designers, ship fabricators, as well as commercial interests. "It was helpful to

get a consensus from this group as to the realities and methods needed for fabricating a titanium vessel."

Vessel life, fuel efficiency, reduced maintenance, and increased range/load will drive the argument, Walker says. "No new technologies are required,

only adaptation of existing titanium practices (primarily from aerospace) to the specifics of vessel design and fabrication."

"The Navy is challenging industry to produce an affordable solution and we all have to take that as an action item to de-



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liver this package as soon as we can back up the numbers and corresponding data,” says Booty Cancienne, production superintendent for Textron Marine and Land Systems (TM&LS) in Slidell, La.

Cancienne is production supervisor for the TM&LS shipyard with four decades of experience. He’s worked at TM&LS for 35 years, and five more at other yards. He is responsible for all marine construction at TM&LS, including development of all processes, materials and metals used, training of employees and schedule and cost for all programs. He has overseen the construction—and later the refurbishment—of dozens of Navy LCACs (landing craft air cushion). In his job, he makes recommendations for engineering changes to reduce cost and to improve construction fabrication. At the workshop, when it came to welding, his

hurdles that we faced 10 to 20 years ago. “It all boils down to material and fabrication costs. Until the program offices can overlook the acquisition costs associated with using titanium components and see that the long term benefits outweigh the acquisition costs, there will still be hurdles to using titanium,” says Kim Tran, a materials engineer at NSWC Carderock where she is the non-ferrous welding lead.

Tran says an all titanium ship is not realistic until industry can reduce the cost of material to a more affordable price. “In the past, \$4 /lb was the target price for the DARPA low cost titanium initiatives,” she says. “With regard to titanium applications, if industry can reduce the current material prices, there may be more opportunities for titanium components on Navy ships. Reduced fabrica-

tion costs are also important. Traditional processes for fabricating titanium components are expensive because of the cleanliness requirements for the handling of titanium and complete shielding requirements for arc welding. Technological advances to reduce fabrication costs yet still enable the fabrication (casting, welding, forging) of quality products that meet design and material properties requirements will also enable more opportunities for titanium applications on Navy ships.”

To reduce fabrication costs, Tran says more research is needed to reduce the current arc welding shielding requirements. “Complete inert shielding during arc welding is the biggest cost driver associated with welding titanium. In the past, NSWCCD has investigated flux cored arc welding wire and using a flux

paste to eliminate the requirement for backside shielding. These were limited studies that should be revisited. Higher productivity welding techniques such as gas metal arc welding (GMAW) and hot wire gas tungsten arc welding (GTAW) should also be researched. GTAW is the primary welding process for welding titanium because it is much cleaner; however it is also a low deposition process requiring more weld passes to complete a joint than GMAW. Using GTAW results in increased fabrication time and cost.”

Walker agrees that more study is needed to make the business case for a titanium ship, “A credible business case study would be a significant accomplishment to solidify the benefits of titanium vessel fabrication and drive titanium into consideration for new vessel designs.”

As an example, Walker points to the

an aggressively lean environment of a ‘small shipyard of the future,’ where material handling, welding practices and environments, material flow, and modular construction methods are optimized to titanium to drive down costs and are biased to light metal fabrication (aluminum and titanium). “

Cancienne says the Navy will save a tremendous amount of money with titanium ships just in upkeep of the hulls alone. It’s an issue of cost versus longevity.

“This is the bottom line,” he says. “If a hull lasts 50% longer, say 60 years instead of 40, you get the same service life as three conventional hulls for price of two titanium ships. Upgrades in electronics, machinery and propulsion are a lot cheaper than building a new ship.”

“Titanium is a common metal, it is eas-



was the voice of experience.

Most recently, he has been involved in the TM&LS proposal for the T-Craft innovative naval prototype being investigated by ONR. TMLS has fabricated a T-Craft side-hull section of aluminum, and will build the same structure from titanium to provide comparison data.

Cancienne says a titanium hull is possible. “We in industry must make the fear of high cost go away. We have to develop some processes to reduce cost and turn everyone’s attention to the customers’ needs and how to meet commercial and Navy requirements.”

The business case

While a number advances have been made in processing, design, and fabrication, the hurdles that the Navy faces regarding the use of titanium are the same

tion costs are also important. Traditional processes for fabricating titanium components are expensive because of the cleanliness requirements for the handling of titanium and complete shielding requirements for arc welding. Technological advances to reduce fabrication costs yet still enable the fabrication (casting, welding, forging) of quality products that meet design and material properties requirements will also enable more opportunities for titanium applications on Navy ships.”

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aerospace industry, which he says understands lifecycle ownership cost and has justified gas turbine engine investments to achieve thrust and fuel efficiency improvements. “Increased thrust relates to increased payload or passenger capacity. Fuel efficiency benefits rapidly multiply into very large life-cycle cost savings for both military and commercial aircraft. A similar case exists for a titanium vessel in terms of maintenance, corrosion management, reduced painting and coating requirements, lower vessel weight, fewer shipyard visits, longer service life, and so on.”

Existing shipyards view titanium as a specialized process that is a cost burden over the state of fabrication for steel, Walker says. “A business case could also be supported by the fact that titanium vessel fabrication should be performed in

ily formable, very weldable, has excellent strength, and is corrosion resistant,” Walker says. “A titanium vessel is absolutely possible. There are plenty of pockets of titanium design and fabrication expertise in industry that are producing titanium structures every day. Very little of this expertise resides in traditional shipyards.”

BoldMar, Inc. plans to build megayachts and commercial vessels at NASA once fabricated shuttle fuel tanks, and the Aries capsule is being built today using state-of-the-art welding techniques. The Michoud facility is also home to the National Center for Advanced Manufacturing, which is leading the way in new materials and welding methods, including friction-stir welding. Friction-stir welding welds mated metal pieces without melting them, causes less damage to

the materials, and can be automated with precision results.

BoldMar has embraced friction-stir welding and is able to use one of NCAM's three \$20 million friction stir welding machines. "This process will reduce fabrication time by 40% and eliminate a majority of the harmful flash and fumes associated with fusion welding for a cleaner work environment," Bolderson says.

More importantly, friction stir welding could be very advantageous over fusion welding processes for joining thin titanium plates and structural forms from both weld quality and distortion control point of view.

Bold-Mar production of vessels is primarily of aluminum, but has its sights on building vessels from titanium, including offshore patrol and service vessels.

assessment techniques and advanced metal fabrication technologies.

"To my best knowledge, this summit is perhaps the first of its kind," says Dong. "The workshop provided a terrific forum for experts of all related disciplines to exchange experiences and ideas on how to make titanium a viable and cost-effective material for ship structure applications. I think we came out of the meeting with a much more optimistic feeling that titanium ship structures will become a reality, sooner than we expected before the meeting. At this Summit, we got to know who is who in all relevant technological areas and major research and development initiatives in industry and academia. More specifically, as the Principal Investigator of the ONR titanium mid-ship program, I'm very much encouraged that our approach and major findings reported

math-based design-for-fabrication methodologies; creating a database for supporting welding process development and structural performance evaluations; development of fit-for-purpose-based definitions of "ship hull" grade titanium or alloys and weld quality acceptance criteria through a test article construction. In addition to UNO, the team includes TM&LS, Keystone Synergistic Enterprises, and MiNO Marine.

"We are using some of the most advanced modeling tools to save time and material costs in researching enabling technologies for building titanium ship structures," Dong says.

Chris McKesson, a naval engineer with over 20 years of high-speed craft design experiences (currently working on his Ph.D. thesis at UNO) says the ONR-sponsored research at UNO is developing

making large flat plates that can be used in ship construction.

"Everybody talks about total ownership costs, but the thing that always gets in the way is initial acquisition cost," Williams says. From a capacity standpoint, Williams says his company is ready to take orders. "We don't see capacity as an issue today."

"We've got to get Ti down to a more affordable basis," Williams says. "We need standards, specifications and inspection techniques to be quick to market and keep costs in line."

Mys-ti-que

According to Bolderson, there is a mystique surrounding titanium vessels and this scares potential buyers. "The established shipyards are the biggest skeptics and this hurts potential development. I



Moving forward with titanium may be what America's shipbuilding industry needs, Bolderson says. "America today is an uncompetitive, third-rate shipbuilding nation, unlike what we were 70 years ago. Building in titanium will leap-frog us ahead of other nations in utilization of Ti as a superior material for shipbuilding; and using automated production technologies will help re-establish America as a competitive and premier shipbuilding nation."

At UNO, Dr. Dong and Larry DeCan are leading an ONR-funded program on "Manufacturability and Structural Performance of a Titanium Mid-Ship Section." This program will advance the science and design/fabrication technologies by constructing a full scale titanium mid-ship hull section. Dong and his team are investigating structural performance

at the meeting were validated by leading experts from various technical fields. Furthermore, insights provided by experts on various unresolved technical issues will help us at UNO to devise research plans to attack some of the areas immediately."

Dong agrees there are challenges, including the lack of experience in building large-scale Ti structures and the lack of high-productivity Ti welding processes. He says Ti is also prone to buckling and distortion. But the biggest obstacle is cost. "The key is reasonably priced titanium for ship hull applications. Aerospace grade Ti is not what we need," he says.

The ONR mid-ship section project will focus on advanced fabrication and joining processes, such as high productivity MIG and friction stir welding processes;

mathematical models for practical problems like welding. "Dr. Pingsha Dong's math-based approach gives designers insights that had not been explicitly available previously; and provides it early enough and clearly enough to be taken into account early in the design process. It's not surprising that we are driven to this type of modeling when using an exotic material like titanium, but I look forward to these same design techniques becoming ubiquitous, even in steel and aluminum shipbuilding."

Attendees noted that developing specifications for marine grade titanium was starting with a "blank sheet of paper."

Ron Williams of Allegheny Technologies Incorporated (ATI), a company that supplies mission-critical metallics, says ATI's relatively new ATI 425@ Alloy is cold-rollable, a less costly method of

can only speak from my own experience in trying to bring a Ti project to reality. The shipbuilding industry is conservative and is reluctant to try new designs or materials," he says.

Bolderson says the Navy has a preference for "parent" designs. "In most cases, a foreign vessel design is chosen because it represents newer design features than anything available in the USA. In 2007, BoldMar approached Textron Land & Marine Systems to consider a Ti joint venture bid on the new USCG cutter that was eventually awarded to Bollinger Shipyards. BoldMar and Textron both realized prior to the RFP submission that the "parent vessel" issue would negate a Ti vessel being considered.

The economics of inflation also is a factor. Moore's calculations suggest that the benefit in TOC is reduced, but by no



means eliminated, by the effects of inflation. “You pay up front,” Textron’s Moore says. “The value of the money you spend today will not be worth the same as the money you save later.”

According to Wolk, the workshop provided an opportunity to get key people within the Navy and titanium communities to discuss the potential for constructing a demonstration titanium T-craft mid-hull section. “It allowed us to take a

look at the current state of the technology and assess limitations hindering the advancement and use of Ti for ship structures. There are still challenges in using Ti for ship structures, primarily in the area of cost and large scale ship yard implementation. Reducing the acquisition cost and total ownership cost is critical for future use of Ti on naval craft.”

Wolk thinks there is much to investigate. “We need to conduct more research

in the areas of joining, such as the use of flux for contamination reduction; advancement of friction stir welding for Ti applications; certification of new technologies; large scale quality control within a shipyard to prevent contamination, mishandling, etc.; and taking advantage of Ti properties to reduce the amount of welding/joining necessary for different structures.”

“While we are making progress, there is still a great deal of advancement that we can do and that ONR is currently investing in,” she says.

Wolk points to the technical advancements in new Ti grades and technologies from the supplier side that help bring down the cost. “One of the big questions a reader might have is, ‘Why haven’t we looked at this before and why are we looking at this now?’ How has the environment changed? I think a lot of it has to do with a higher level shift in priorities that have moved us to a more mobile, more total ownership cost-conscious Navy. There are existing (and well documented) problems for other materials that lead us to explore Ti.”

T-Craft

The Navy has been investing in research on titanium ship structures as part of the Transformable Craft—or T-Craft—Sea Base Enablers - Innovative Naval Prototype (SBE-INP) program.

Because the T-Craft is such a novel ship design, new design models and analytical tools must be developed. New techniques must be explored involving materials such as aluminum, titanium,

and composites to be able to make ship components that are lighter, stronger, longer-lasting, and not prohibitively expensive. New power systems need to be tested, such as high-speed generators and permanent magnet motors, to make possible lighter, more efficient drive assemblies for lift fans, air screws, and main propulsion.

Three T-Craft mid-hull sections are being built from different materials—aluminum, composite and titanium—for comparison. “This research can also benefit other classes of Navy ships and systems. The goal is to share this technology to increase capability while simultaneously reducing life-cycle cost,” said Capt. Chuck Gunzel, a naval engineer who has been involved in the T-Craft INP. “For example, if it can be shown that a T-Craft can be built economically using titanium, imagine how the costly maintenance packages on other classes of ships could be reduced using similar material choices up front. The goal is to work closely with academia, industry, and the Navy to achieve the art-of-the-possible.”

Bolderson found the workshop valuable. “It brought together capable people with the common purpose of examining Ti as a material choice for shipbuilding.”

“The capability to construct a Ti vessel is at hand,” Bolderson says.

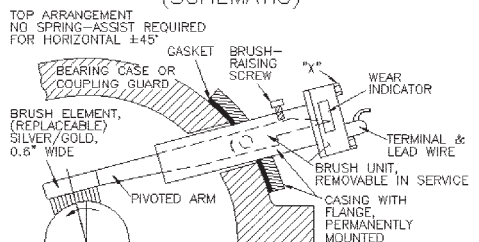
About the Author

Captain Edward Lundquist, USN (Ret.) is a principal science writer with MCR Federal LLC in Arlington, Virginia.

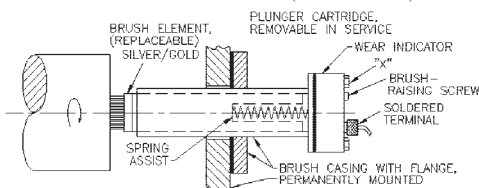
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Far Left: Edward Lundquist, U.S. Navy (Retired) and Jason Story, U.S. Coast Guard, examine a weld sample as John Alt, UNO-NCAM, explains the weld technique.

At the Universal Weld System #1 (UWS1), visitors watch video samples of the weld system in action.

UNO-NCAM hosted a tour of NCAM for attendees of the Titanium Ship Structure Summit held in New Orleans Nov. 7-9. On the UWS1, L to R: Greg Dobson, Bruce Brailsford, UNO-NCAM; Edward Lundquist, U.S. Navy (Retired) & Contributing Editor of MarineLink.com; Captain Charles Gunzel, U.S. Navy; Lawrence DeCan, UNO; Nicholas Weinhold, U.S. Navy Carderock Division; Erasto Fernandez, UNO; John Pyle, Jeff Bernath, RTI International Metals; Jason Story, U.S. Coast Guard.



Titanium Welding & Fabrication Facility

Titanium is not new, even for naval ship structures. Aircraft components have been made from Ti for many years because it is stronger and lighter. Several Soviet submarines were built largely of titanium.

The U.S. Navy continues to gain experience with Ti, as well. The Puget Sound Naval Shipyard and Intermediate Maintenance Facility's (PSNS & IMF) in Bremerton, Wash., established a titanium welding and fabrication facility in 2011.

While the Puget Sound yard has more than 400 qualified welders, only 10 are qualified as titanium welders. The new titanium welding facility will help to maintain quality on every job by controlling the temperature and humidity in the work area, and segregating those tools used only on titanium.

"Welding and fabricating titanium requires additional controls, but is not much more difficult than working with other materials," says PSNS & IMF welding engineer Chris Melvin, PSNS & IMF.

Working with titanium requires strict attention to temperature and a clean work area and employment of an "auxiliary" inert gas to prevent contamination by air while welding. The air we breathe contains elements such as carbon, nitrogen, hydrogen and oxygen, all of which can cause the material to lose its desired properties.

"The value to the Navy by using titanium piping systems over copper nickel or other materials is that the titanium systems are designed to last for the life of the ship or submarine instead of being replaced two or three times," says Melvin. "The initial cost of using titanium is higher, but the value is the material's strength and high resistance to cracking and seawater corrosion."

"One way the new facility helps us prevent impurities is by purging the part of pipe to be welded with weld gas, internally and externally," said Melvin. "Specialized equipment of the facility maintains weld quality by using a purge containment glove box that controls and maintains an atmosphere of inert gas to prevent impurity entrapment during welding."

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RCCL Resolved to Raise the Simulation Training Bar

Joe Farrell, founder and owner of Ft. Lauderdale-based Resolve Marine, has steadily built his company from a one tug operation to a diverse, global organization with a ubiquitous presence in everything from marine salvage to shipboard firefighting training and education. The latest feather in Resolve's cap: the opening this month of world-class simulation center and new corporate HQ in Fort Lauderdale, a facility built closely with but not exclusively for Royal Caribbean Cruise Ltd.

By Greg Trauthwein, Editor & Associate Publisher

The crash and presumed loss of 32 lives from the Costa Concordia casualty in January 2012 serves as a stark reminder that there is no amount of advanced technologies that will ever serve to prevent high-profile, costly maritime accidents. Estimates vary, but generally between 80 and 90% of all maritime casualties across all sectors are due to human error. Even with the latest technology available, it is still possible for an ultra-modern, \$600m ship with more than 4,000 souls onboard to go astray in a very bad way. But incidents such as Concordia and the hundreds of additional incidents, large and small, serve to make more valuable the recent endeavors of Joe Farrell and his Resolve crew, which this month will open in Fort Lauderdale a \$6.5m, 7,000 sq. ft. simulation training center that will serve as the exclusive simulation training ground for Royal Caribbean Cruise Lines for the

next five years, as well as other members of the global maritime community. While the cruise industry as a whole suffered mightily and in unison with the Concordia crash, Captain Bill Wright, Senior Vice President of Marine Operations, Royal Caribbean Cruises Ltd., maintains that the cruise industry, as a whole, has an enviable safety culture.

"I think most cruise lines are on the same page, in that we follow the practices of BRM (Bridge Resource Management), which was a direct result of what the airline industry did back in the early 1970s, which was CRM, or Cockpit Resource Management," said Captain Wright. "It was the result of a number of tragic airliner accidents where the investigation showed it was a healthy aircraft being flown into the ground because the left seat and the right seat in the cockpit weren't really working well together."

While the notion of BRM has gained



Captain Bill Wright, Senior VP of Marine Operations, Royal Caribbean Cruises Ltd. is responsible for 24 ships, including the world's largest and second largest cruise ships, the Oasis of the Seas and Allure of the Seas, as well as the Freedom class.

momentum in the previous decade as a measure to help mariners learn, understand, and more importantly, properly use the plethora of emerging bridge technologies at their disposal, it was Captain Wright's push for the maritime equivalent of the "cockpit" – taking bridge equipment that was stretched from port to starboard and placing it centered in a cockpit layout, with all systems in reach of a central seat– and developing a similar bridge look and feel across the Royal Caribbean fleet. It was this philosophy taken in the creation of its simulation center nearly 12 years ago, and a driving force in working with Resolve to develop a modern simulation center of its future.

In 2011, Royal Caribbean Cruises Ltd. (RCL) selected Resolve to be its exclusive provider of all simulator-based training courses, and formalized arrangements to jointly develop the new programs. Beginning the second quarter of 2012, the training will be offered to personnel at three of RCL's cruise brands – Azamara Club Cruises, Celebrity Cruises and Royal Caribbean International

The Simulation Solution

Captain Wright is responsible for 24 ships, including the world's largest and second largest cruise ships, the Oasis of the Seas and Allure of the Seas, as well as the Freedom class. Previous to its new deal with Resolve, Royal Caribbean had

conducted simulation training for its crew at Star Center since 1999.

"(When we worked with Resolve to create the new simulation center) it really wasn't a blank slate, as in many ways we replicated what we did back in 1999 with Star Center," said Captain Wright. In 1999 Royal Caribbean was introducing the Voyager class, which at the time was the world's largest cruise ship. In addition to the sheer size, it offered a number of new technologies, such as the Azipod propulsion system. "We figured that the ship was so different; it was so much larger than anything that had been built before and the fact that Azipods had never been used on a cruise ships, that we needed to build a simulator that was replicating the ship."

"We wanted to replicate the airline model of simulation, in that it is model based, meaning when you're in that simulator, it's exactly like the bridge of that ship," said Captain Wright. "We actually built a ship-specific simulator. We introduced with the Voyager Class the first cockpit type of formation where we actually had pilot chairs. The old bridges went port to starboard, and the equipment was stretched out. So we built the simulator at STAR Center together with the help of not only STAR Center, but with the help of Sperry who is one of our main navigation providers, with the help of Kongsberg who provided out DP sys-

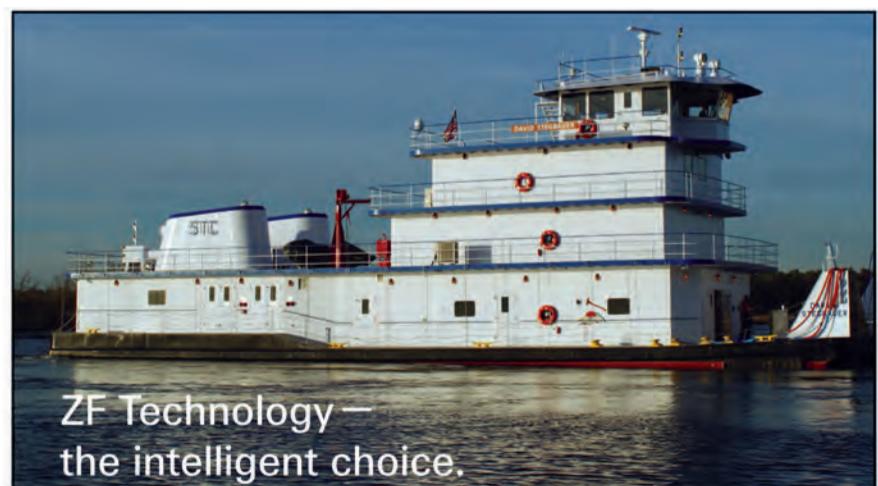
tems, and we literally built a replica of the Voyager bridge. We tried to keep that same philosophy with Resolve."

Captain Wright called Star Center "a world class facility," but the relationship was ultimately cancelled by the training facility, as Star Center is a union funded and run system, and the membership opted against accepting further commercial business.

Enter Resolve and the ubiquitous Joe Farrell, who had long envisioned an ultra-modern simulation center as a centerpiece of his growing company's new headquarters. "Joe Farrell had in the back of his mind to build a simulation training center long before Royal Caribbean crossed our path," said Denise Johnston, Resolve Maritime Academy Director, who has more than 30 years experience in the maritime industry, with 23 years as a government contractor involved in man-



"Joe Farrell had in the back of his mind to build a simulation training center long before Royal Caribbean crossed our path," said Denise Johnston, Resolve Maritime Academy Director.



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When Royal Caribbean selected the Resolve Maritime Academy for its simulation training, Denise Johnston, Resolve Maritime Academy Director, believes that it was far more than the latest and greatest hardware and software that attracted the cruise shipping company.

"What makes us unique is the fact that we are both an emergency responder as well as a trainer. We also have one of the best "live burn", hands-on ship mock-up facilities in the world where we have trained more than 18,000 professional mariners and port firefighters. Another thing that we do which is unique

is our focus on the assessment portion of the training. We are not a "Certificate Mill", said Johnston. "We are putting a great focus on assessment, and providing feedback to the client so that they have valuable insight into the competencies of the people they are sending to us for training. Each course delivers an assessment of the attendees to help the client understand not only the aptitudes of their people but also their attitude and team skills while training with us."

"Our new Simulation Training Center greatly expands the training opportunities for shipboard personnel worldwide. In addition to standard bridge and engine room simulation courses, we will also offer training programs incorporating the use of bridge and engine room simulators with our Gray Manatee shipboard fire fighting training vessel/facility as well as Fast Rescue Boat and Hazwoper courses," Johnston said. "The plan, not too far into the future, is to create a situation where we can run interactive training scenarios where we integrate the use of the bridge simulators in our building on 17th St. with a client's bridge team operating the simulators. To that we would add a scenario where a live burn shipboard fire would be fought at our shipboard firefighting vessel at our training facility. The bridge team would interact with the fire fighting team via radio to assess, plan and execute appropriate fire fighting tactics. We could also integrate our rescue boat training and have one of our fast rescue boats offshore with a Man Overboard situation. The team would have to communicate back and forth with the bridge on a search and rescue operation, while dealing with a shipboard fire emergency and / or other created vessel casualty events."

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Resolve has its own DNV-approved firefighting training school, a popular educational stop for the local cruise industry, the port and Resolve's own employees.



Simulation at Resolve's new state-of-the-art training center is provided by TransasUSA.

RIGHT
Royal is a very forward thinking company," said Greg Wood, Technical Manager of Resolve's Simulation Training Center. "Even before Concordia, they were training their personnel above and beyond mandated training requirements.



aging the operation and maintenance of research vessels and facilities for the Navy.

She joined Resolve Marine Group, Inc. nine years ago as Director of Administration, and two years ago assumed the role of Director of the Maritime Academy. "We offered them the best option. We gave them everything they wanted and custom-built the facility to meet their needs. Resolve's proposal exceeded Royal's RFP requirements in a number of areas. We added an assessment component to the training programs," said Johnston. Captain Wright concurs: "Joe has done exactly what he has promised he would do, he's put his full effort of his team into action and he has created what is truly a world class facility."

Enter Resolve's New Simulation Center

"Royal is a very forward thinking company," said Greg Wood, Technical Manager of the Simulation Training Center. "Even before Concordia, they were training their personnel above and beyond mandated training requirements. I don't believe they would need to change their approach to training in the wake of Concordia, because they were already proactive in their safety training program. The cruise industry, in general, has always been ahead of the curve in safety training."

"We build on developing a bridge team that is in sync, and regardless of how many stripes anyone has on their shoulders," said Captain Wright. "Everybody has a responsibility and the expectation is that they will speak up and react if they feel that something is amiss."

Resolve Maritime Academy's new \$6.5m, 7,000-sq. ft. simulation training center includes a 240 degree HFOV Full-Mission Det Norsk Veritas (DNV) Class "A" simulator equipped with Sperry Vi-

sionMaster and NACOS Platinum integrated bridge systems.

The bridge controls allow for training on both conventional and podded "virtual" propulsion vessels. Integrated with the full-mission simulator is a fully functional Bridge Wing with a 205 degree HFOV video wall. The bridge wing allows for the realistic transfer of control between the main bridge and bridge wing as well as the realistic docking and undocking of vessels. The Academy's simulation inventory includes more than 100 global ports/areas and more than 50 ship models for use on the system.

The Academy also features four Mini-Bridges, each with three 42-in. visual displays and integrated controls, Electronic Chart Display and Information System (ECDIS), RADAR/Automatic Radar Planning Aids (ARPA) and full instrumentation available on a Conning display.

These bridges can operate independently or interactively in any combination including interactivity with the Main Bridge.

The ECDIS classroom comprises eight student desktop navigation stations with ECDIS, RADAR/ARPA and Conning display. Each station uses the same software and capabilities as the bridge simulators. The Sperry VisionMaster ECDIS and Transas ECDIS are both integrated into the ECDIS classroom and mini-bridges.

All simulation areas include a fully functioning instructor station that allows an instructor to interact with the vessels as well as the environment of the training area including a variety of factors such as weather, wind, current, visibility, target vessels, day/night, ship board communication and radio communication. Simulation is provided by TransasUSA.

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Dams, locks and the ferries and ships that traverse through our nation's inland waterways, share one thing in common: ongoing repairs, upgrades and maintenance work are required to keep them in top shape. In today's economic climate when building business and job creation is on everyone's agenda, shipyards and service companies face another challenge as well – there's a shortage of highly-skilled machinists and welders to do the work, and their current workforce must be kept up-to-date on the newest equipment and techniques in order to optimize their performance and keep project schedules on track.

To solve this problem, these organizations are increasingly turning to equipment suppliers and vendors for training programs to assist them in keeping their machinists and welders current on the new skills and equipment they need to know in order to satisfy their customers' most demanding requirements.

Supplier-Led Training

One of the early examples of supplier-led training is with Climax Portable Machine Tools, which invents, designs and manufactures portable machining and welding systems used globally for repair and maintenance in the shipbuilding industry, among others. Ten years ago as the skilled worker shortage became apparent, Climax developed a full training curriculum and program for machinists, after consulting with shipbuilding and ship repair customers to ensure the pro-

gram mapped exactly to the skill sets most urgently required on the job.

Today, the Climax Global Learning Center offers a full complement of regularly scheduled machining courses in basic and advanced tool operation for all machinists' skill levels. Located near Portland, Ore., the Global Learning Center is open to any machinist, especially those in the shipbuilding, infrastructure and marine sectors, to learn safe operation of today's state-of-the-art portable machining equipment.

Curriculum: Productivity, Machining Techniques, Safety – and More

The Global Learning Center at Climax offers a variety of courses ranging from efficient machining techniques, product- and application-specific usages and safety. Through a combination of hands-on and classroom assignments, students learn techniques on portable machines, including milling machines, boring machines, flange facers and AutoBoreWelding machines. The newest course covers how to use a first-of-its-kind linear mill that can be reconfigured to perform both linear and gantry milling, as well as drilling and tapping. The portable flange facer course teaches machinists how to repair worn flanges on pipes and seals or that may have been damaged due to corrosion. The AutoBoreWelding class demonstrates the process for a one-setup operation for both boring and automated welding equipment such as used in repairs of corroded pipelines and turbine

housings.

Machinists in the marine industry can take a one-day class on a specific tool, or a special three-day course designed to teach how to use innovative on-site machining and welding solutions to complete complex new builds, retrofits and maintenance projects.

Safety training addresses the unexpected jobsite hazards such as loose clothing, poor lighting, improper ventilation and inadequate eye and ear protection that pose potential dangers. Courses stress enhanced productivity, including new, time-saving techniques as well as innovative machine tool applications and maintenance recommendations to extend tool lifetime.

All training programs are taught by experienced engineers and machinists employed by Climax. Students are strongly encouraged to bring specific application needs to the class for discussions with staff instructors, who all have experience with a wide variety of on-site machining challenges that can occur during shipbuilding and repair operations.

Train-the-Trainer and Custom Classes

In addition to the standard curriculum, "Train the Trainer" programs are also available. In this program, a select group of workers can be trained first on the latest machining and welding techniques, and then instructed on how to train other, less-skilled workers. When companies have a specific training need, the Climax Global Learning Center can create a custom training program tailored to the kinds of projects they handle. These custom training programs can be held at a company's location, minimizing travel expenses and maximizing the number of attendees. On-site training has taken place throughout North America, Europe and Asia, including a series of seminars in China for machinists from ten of that nation's largest shipyards. Here in the United States, Climax head trainer, Jim Miller, conducted training for three veteran machinists at Alaska Ship & Drydock (ASD) in Ketchikan when the shipyard purchased a Climax BB7100

About the Author

Andy Becker is Vice President of Business Development and Marketing at Climax Portable Machine Tools. He has more than 30 years of experience in international business development including the development of strategic alliances within the shipbuilding industry. Reach him at abecker@cpmt.com



portable boring machine. The shipyard had a smaller boring machine, but required a larger, heavy-duty precision machine when it was contracted to build the MV Susitna, the prototype catamaran ferry for the U.S. Navy. The machine was needed for the boring out and refacing of the transom. The shipyard is also using the BB7100 to upgrade the propulsion system on the Malaspina for the Alaska Marine Highway. Both projects require the machining to be done to very tight tolerances so all components in the systems will line up properly when assembled. According to Norm Skan, machinist foreman at Alaska Ship & Drydock, the training was well worth it. During the training course, ASD's expert machinists were taught the proper set-up of the spider mounting system and operation of the boring machine as well as how to use its various accessories so that they could get it to maximum capacity.

"Our customers are drawn to us because of our team's exceptional commitment to quality construction and ship repair," said Skan. "The machine exceeded our expectations, was easy to set up and operate, and enabled us to meet the tolerance specs set by the customers. The training enabled our machinists to get these jobs done efficiently and on schedule."

Attracting New Business

Beyond remedying the shortage in skilled machinists, many companies have found that these training programs and machines help them attain a higher level of productivity, which gives their organizations a competitive edge when seeking out new business.

"Because we now have the larger boring machine, ASD is able to take on larger machining projects that, until now, we've had to decline," said Skan. "We're proud to say that through ongoing improvements to our skills and capabilities, we're able to offer our customers a myriad of services in support of their ship repair, new construction and large fabrication needs."

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Videotel , MTS to Simplify US Port State Control



Alisha Beckham, Supervisory Agriculture Specialist for USA Customs and Border Protection, examines a vessel for Asian Gypsy Moth during the filming of the new US Port State Control training video.

Despite the crucial importance of Port State Control to the wellbeing of the seafarer, vessel and the environment, it is often viewed as a necessary evil by many seafarers. Yet a knowledge of policies and procedures, and a properly prepared ship and crew, can ensure a satisfactory outcome for all parties.

To address this issue Videotel, a producer of maritime safety training software and Maritime Training Services (MTS) have combined to produce a new training program on US Port State Control.

The concept for the creation of the new program was inspired by personal experience. Matt Gasparich, Managing Director at Maritime Training Services says, "Recently our film crew rode from Vancouver to Seattle on board a containership and personally experienced the US Port State process. We

compared it with our original program produced in 1996 and instantly knew this was the time to update it." At the same time in London, Videotel's CEO, Nigel Cleave, was thinking along similar lines. "We were delighted to have the opportunity to combine expertise and resources with MTS," he said. "This partnership enables us to offer a new and updated approach to US Port State Control that will benefit ship owners, ship managers and seafarers the world over."

The joint team worked together to produce a program which covers all the very latest US Port State Control procedures. In particular, the US Department of Homeland Security's Customs and Border Protection (CBP) immigration and agricultural inspections were a primary focus and MTS was given the opportunity to follow CBP officers on a real agricultural inspection and immigration procedure. "CBP was a fantastic partner for us in producing this new program," adds Matt Gasparich. "They are committed to educating seafarers about new policies and procedures and were very open with the way crews could prepare for the examinations."

The program covers the US Coast Guard inspection process, following a team of inspectors through a typical boarding with Coast Guard commentary on the best way to prepare ships and crews for inspection. The programme is available on Videotel's VOD system and for purchase world-wide from MTS.

Email: matt@maritimetraining.com



Screenshot from new US Port State Control Training program from Maritime Training Services and Videotel

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MMA Debuts New Transas Simulator



Massachusetts Maritime Academy (MMA) recently opened its start-of-the-art, American Bureau of Shipping Information Commons Building, which houses the Academy's new Full Mission Ship Simulator, supplied by Transas USA Inc. The 42,000 sq. ft. academic building combines maritime tradition with the latest technology in maritime training, including the campus library, museum, archives, model ship collection, plus hi-tech simulation facilities, multimedia 'smart' classroom, and resource centers.

The new simulator and its support areas represent the showcase facility for the Marine Transportation program offered at MMA. The simulation facilities include a full mission, 360 degree bridge simulator meeting the highest international training and certification standards, debriefing room, instructors control room and an ante room.

MSG, Safebridge, Videotel Join on ECDIS Training

MSG Marine Serve GmbH, its sister company Safebridge GmbH and Videotel recently joined forces to offer a pathway to ECDIS compliance. "Our research shows that, conservatively, there are 250,000 officers worldwide requiring type-specific training, which will need to be repeated three times over a 5-year period to deal with different equipment/software," said Björn Röhlich, Managing Director of MSG MarineServe and initiator of ETC (the ECDIS Training Consortium). "This gives some 750,000 type-specific training events, in addition to the 250,000 generic sessions, in comparison with a reported worldwide annual training capacity of 20,000 - 25,000 courses."

Videotel will provide the initial generic training. They are updating their original ECDIS course to follow the new STCW Manila amendments and the proposed new IMO Model Course 1.27, latest edition - the foundation course for all ECDIS training. This training, in the form of distance learning using a generic ECDIS model, will provide a sound understanding of the principles of the ECDIS system and how it should be

used. It will be available on VOD and the newly launched VOD Online, so that study can take place seamlessly at sea or on shore. MSG will then continue the process. Deck officers, who have obtained interim certification of successful

foundation training from Videotel, can then progress to type-specific training and final certification by attending one of the training centers located around the world that form part of the MSG controlled ECDIS Training Consortium

(ETC), thus gaining the hands-on familiarization training required. The type-specific training and final testing will use simulation of the actual ECDIS equipment installed on the planned assignment.

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2012 Update
GHS Version 13.00

GHS keeps getting better in response to feedback from the large user base. Well over 170 improvements during the last year have gone in to further the performance and reliability of this mature software. New features include vessel profiles drawn on Longitudinal Strength plots; a weight distribution report and graph; enhanced international character set support; multiple threads on multiple-processor machines; enhanced GROUP report including maximum FSM and permeability columns.

GHS Load Monitor (GLM), the onboard configuration of GHS, allows GHS users to configure onboard systems and provide their clients the best combination of features.

GHS

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Paint That Ship!

Quality coatings are critical to controlling costs, both for life-cycle maintenance as well as fuel consumption and emissions.



Modern coatings systems traditionally have served as guardians of the vessel, the first line of defense in keeping lifecycle maintenance costs in check versus the highly corrosive marine environment. While ship owners still count on new, ever-better formulations designed to go on faster and easier, last longer, and protect the vessel and environment, manufacturers today are increasingly proving coatings systems value to help reduce fuel consumption and emissions. In addition, new regulation, specifically the new IMO Performance Standard for Protective Coatings (PSPC) rules for cargo oil tanks set to go into force in January 2013, has all majors busy proving product performance. On the mission to discover recent innovations from coatings makers, MR reports.

ClassNK recently awarded type approval for the world's first alternative coating system under PSPC (Performance Standard for Protective Coatings) for ballast tanks to a single coating system manufactured by Nippon Paint Marine Coatings Co., Ltd., which was the first to be issued by any classification society anywhere in the world.

Under PSPC, conventional epoxy coating systems are required to comprise two coatings. The standard does however include a provision which allows for alternative systems, such as the one approved by ClassNK, with only a single coating. A key function of the system developed by Nippon Paint Marine Coatings is the "SI (Self-Indicating)" feature whereby the color of the coating changes depending on its thickness. The application of this coating system to ships will begin upon confirmation from relevant administrations by ClassNK.

The PSPC standard provides technical requirements for protective coatings in dedicated seawater ballast tanks of all type of ships of not less than 500 gross tonnage and double-side skin spaces arranged in bulk carriers of 150 m in length and upwards for which the building contract is placed, the keels of which are laid or which are delivered on or after the dates referred to in SOLAS regulation •-1/3-2 as adopted by resolution MSC216(82).

Jotun reports that it completed testing of coating systems consistent with the new IMO PSPC rules for cargo oil tanks (COT), scheduled to come into force next year. The new IMO PSPC rules for cargo oil tanks (COT) will go into effect January 2013. Focused on maintaining the long-term integrity of tanks, the new standard requires that all coatings used in the tanks must provide long-term protection

against the corrosive effects of crude oil. Jotun has successfully completed testing for coating systems at one of the IMO-approved test institutes (COT in the Netherlands), passing with several tank coating systems. Two test methods are used. The first test simulates the composition of the vapor phase in crude oil tanks both in ballast and in fully loaded condition. The second test simulates immersion in a crude oil tank with a model liquid developed to replicate some of the most corrosive crude oils.

According to Jorunn Holdhus Skovly, Jotun's Product Manager for tank coatings, Jotun coating systems performed well in these rigorous test. "Jotun welcomes the IMO regulations as they ensure a given standard for the whole coating process, from steel preparation to control measures," she says. "Type approval for coating systems ensures that our customers can trust they are selecting appropriate and high-performance coating systems, fit for purpose."

While new innovation is central to International Paint's market leadership, reflection on the track record of a proven product is instructive as well, as is the case with its Intershield 300. The company reports that Intershield 300 continues to prove its durability in service, remaining in excellent condition after 15 years in the cargo oil tanks of the Samco

Raven.

The 301,653 dwt crude oil tanker had the upper and lower areas of her cargo oil tanks coated with the abrasion resistant, aluminium pure epoxy coating Intershield 300 immediately after delivery in June 1996. At its third special survey and planned maintenance at Yiu Lian Dockyard (Shekou), China in 2011, nine of its 15 cargo oil tanks were assessed and the coating condition was rated as excellent throughout. In addition, very little breakdown was observed on edges, weld seams, cut-outs and scallops throughout the tanks with only a small number of minor, isolated spots of corrosion present. No breakdown was visible directly above, at or below the cargo load lines and the coating was in excellent condition in areas surrounding bellmouths and on sharp edges around cargo wells.

"After 15 years in service the coating is in very good condition; in fact, better than good," said François Rasclé, Superintendent, V. Ships France SAS, who supervised the drydocking. "The tanktops are in excellent condition with very few areas of breakdown."

"The condition of the cargo oil tanks was astonishing after 15 years in service. With the IMO PSPC for Cargo Oil Tanks being introduced in 2013, this outstanding performance can give vessel owners confidence that when they select Inter-

shield 300 as the anticorrosive protection system for their cargo oil tanks, they are investing in a coating that is proven to meet and exceed legislative requirements. With only minimal repairs, the coating is set to continue protecting the cargo oil tanks for many years to come," said Andrew Cass, International Paint Business Development Manager.

In January 2012, Intershield 300 passed the demanding IMO PSPC Cargo Oil Tank laboratory tests in accordance with IMO MSC.288 (87) SOLAS regulations for cargo oil tankers.

Fuel & Emission Savings

The push from coatings manufacturers in the past few years has been a focus on the correlation between coatings and savings on fuel use and emissions. Fuel prices have risen and maintained an elevated level, even in the face of global economic stagnation; and the global shipping industry is faced with increasing mandates to reduce emissions.

PPG Protective & Marine Coatings (PPG), for example, touts its SigmaGlide biocide-free system with guarantees on fuel savings. According to the manufacturer, the SIGMAGLIDE system is proven to deliver cost reductions for new-build or dry docking and, with the launch of SIGMAGLIDE 990, offers guaranteed fuel savings of 5%. (PPG does note that



Jotun Passes IMO PSPC for Cargo Oil Tank (COT) Tests.

final savings percentage achieved is subject to the average speed and operational activity of the vessel, but it offers tailored cost saving specifications on request).

Since the launch of the first generation SIGMAGLIDE in 1995, PPG has continued a course of investment and develop-

ment in the range, up to and including the latest system, SIGMAGLIDE 990. This is a third-generation, pure silicone-based fouling release system that offers enhanced slime release properties and high volume solids.

As with other coatings system suppli-

ers, PPG is driven to help reduce fuel consumption through the reduction of frictional resistance of the underwater hull. PPG claims that SIGMAGLIDE 990 reduces frictional resistance to the point where fuel savings can be realized.

The system is based on two coats of

epoxy: the first being the primer and the second being an anti-abrasive coating; this is then followed by a tiecoat, SIGMAGLIDE 790, and then a topcoat of SIGMAGLIDE 990. A key advantage is that this two-component system, with the volume solids content of the tiecoat at

Proving Coatings Performance

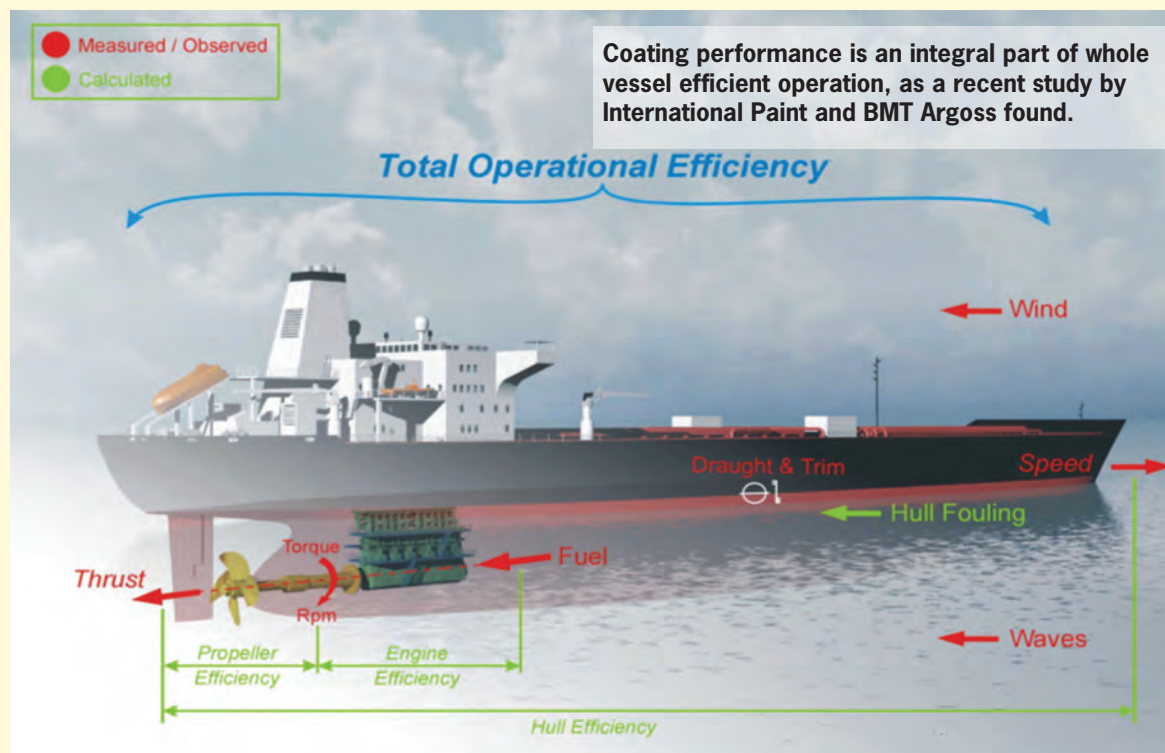
You've seen the claims from providers of marine coatings time and again—3% ... 5% ... 10% fuel & emission savings. With the number of variables that conspire to impact fuel economy of moving a ship from "point A to point B" – the weather, traffic, machinery performance and quality of fuel to name but a few – how can you be sure that Coating company claims are valid? International Paint, a leader in the market, set out to set the record straight.

Specifically, International Paint, in conjunction with BMT Argoss, sought to tie strong academic research and ship operating evidence of the correlation between applying specific fouling control coatings and reducing fuel consumption and CO2 emissions finds further backing, to prove the value of coatings to the ever increasing need to reduce ship fuel consumption and emissions.

The pair came together and will use the new BMT SMARTSERVICES system to verify, through independent monitoring and software analysis, the contribution to vessel performance, fuel savings and reduced emissions made by International Paint's highest performance fouling control coatings, Intersmooth SPC (self polishing copolymer) antifouling and Intersleek foul release coating.

International Paint claims fuel and emissions savings for its Intersmooth SPC coating, citing evidence gathered from over 5,000 vessel drydock and inspections for fouling rating, combined with AHR (average hull roughness) measurements.

Behind this specific argument, the International Paint 'Dataplan' system has coating details of over 1.7 billion DWT, representing almost 200,000 drydockings that allow antifouling performance to be predicted and assessed. Results are derived from analyzing the in-docking condition of a vessel, its coating performance and assessing the type, severity and extent of any fouling, if present. In conjunction with the vessel's trading pattern, operational profile and drydocking in-

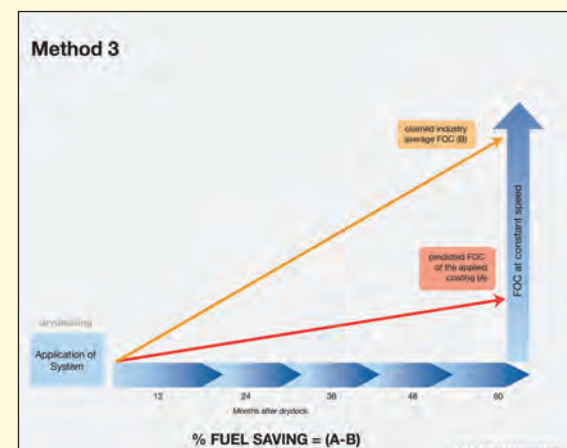
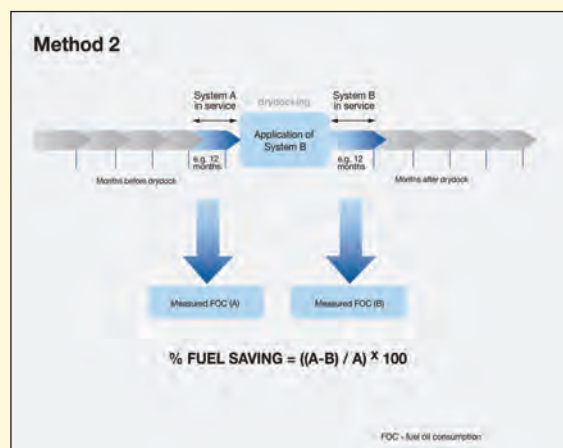
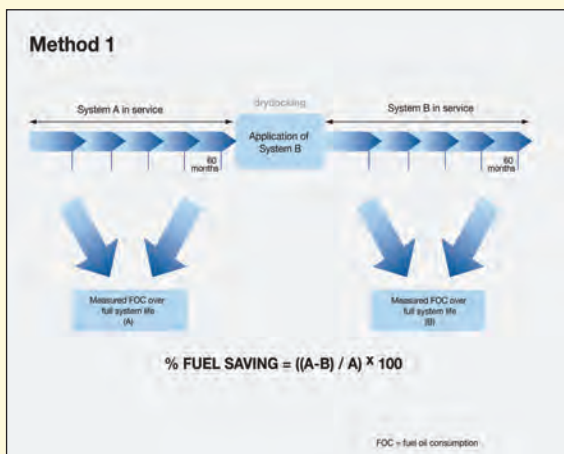


terval, an antifouling performance rating can be calculated. Dataplan also records the vessel's coating condition, including the type, severity and extent of any corrosion, cracking, blistering, detachment and mechanical damage, all of which contribute to and are included in, hull roughness measurement.

International Paint also cites the report, "Energy and GHG Emissions Savings Analysis of Fluoropolymer Foul Release Hull Coating," dated December 10, 2010, by Professor James Corbett's Energy & Environmental Research Associates. The report analyzed the latest fuel consumption data of three vessel types coated with Intersleek900: Prem Divya, a single engine 21,126 HP tanker; Ikuna, a twin engine 3,400 HP bulk carrier; and five identical post panamax container vessels, three of which were coated with SPC antifoulings and two with Intersleek 900.

The results are remarkable for the correlation they show between the coating applied and the fuel consumed. The report showed that fuel consumption was reduced by 10% on the Prem Divya, 22% on the Ikuna and by 5% in five container vessels (based on all five ships carrying a comparable load). The report stated that if similar fuel efficiency results were realized by all tanker and bulk cargo vessels within the commercial fleet that: "annual fuel oil consumption could be reduced by roughly 16 million metric tons (MMT) per year, fuel expenditures could be reduced by \$4.4 to \$8.8b per year, and nearly 49 million tons of CO2 emissions could be avoided annually".

At a more detailed level, the report stated that the latest generation fluoropolymer foul release coating could offer average fuel and emissions savings of up to 9%.



79% and the topcoat at 80%, considerably reduces packaging waste costs and reduced solvent emission at application.

Hempel is another global coatings company that has worked hard to prove the value of its product in helping shipowners save money. While it also offers volumes of technical detail and specification, perhaps its greatest proof came last year when United Arab Shipping Company (UASC sailed nine newbuild containerships directly from the new-building yard – Samsung Shipyard in Korea – to drydock for recoating with its Hempasil X3 immediately after delivery.

With bunker fuel costs rising to record triple-digit highs and drydocking intervals now up to 90 months, ship owners and operators are realizing the value of new generation of fouling release systems. Guaranteed fuel savings, lower CO2 emissions, less time in drydock and more time in the water – these are just some of the benefits offered by HEMPASIL X3 system.

The HEMPASIL X3 system, particularly on vessels that typically use \$90,000 of bunker fuel per day for example, can save at least two percent of fuel per day, making the payback period on the coating system less than five years. In addition the contract includes the one-coat NEXUS X-SEAL tie coat solution, the Sea Trend fuel consumption data monitoring software and the HEMPASIL HELIX propeller coating, maximizing fuel saving efficiencies and constantly monitoring them.

“Umm Salal” was the first of the nine UASC A13 newbuilds to drydock in Shanghai in April 2011. First a conventional antifouling coating is applied to the nine 13,000-TEU capacity container ships at the Samsung shipyard before proceeding for a sea trial. The newbuilds then sailed to Shanghai, where they are hosed with high-pressure fresh water in preparation for the HEMPEL NEXUS X-SEAL tie coat, which seals the existing antifouling coating and ensures that HEMPASIL X3 adheres perfectly to the anti-fouling coating applied in Korea.

Ecospeed Non-Toxic Fouling Control

Ecospeed is a hard, inert, specially-formulated glassflake vinylester resin surface treated coating system that includes routine underwater cleaning without the risk of chemical pollution to the environment or of damage to the coating. Ecospeed can be cleaned aggressively and rapidly and will only improve in smoothness with each cleaning.

One of the unique factors of this underwater hull coating system is that with March 2012

repeated underwater hull cleaning, the coating’s surface aspect does not degrade but gradually improves. This procedure is made easy by the coating’s technical properties. Cleaning can be carried out whenever needed, at any point in its lifespan, without causing damage.

Regular underwater cleaning of the coating results in improved hull smoothness each and every time the hull is cleaned. Tests have shown that a very large number (+500) of repeated underwater hull cleanings improves its surface texture without any adverse effects.

In addition, and particularly relevant in today’s market, Ecospeed is suited for ships which have a stationary period because an impermeable barrier is created during application. This gives the coating its excellent and durable anti-corrosive properties and protects the underwater hull against mechanical damage.

In 2008, stringent tests were carried out within the framework of an EU LIFE demonstration project to provide scientific data and to authenticate the non-toxicity of the Ecospeed hull performance technology. This research proved that the coating is 100% toxin-free and that there is no negative effect on the water quality or the marine environment at any point of its application or use. Moreover, the massive amounts of VOC and zinc anode emission associated with conventional hull coating systems are reduced to almost zero.

Hull Cleaning Machine OK'd for Use in Vancouver Port



The global shipping industry remains stuck between international and regional regulatory requirements and efficient cost effective ship operations.

Environmentalists continue to keep ships in the spotlight by focusing their attacks on the air pollution produced by ships. Regional and local port authorities remain focused on keeping their waters free of invasive species and metals like copper, nickel and other harmful chemicals potentially released during routine hull maintenance cleaning and propeller polishing. Considering that more and more local port authorities are closing the door on hull cleaning and propeller polishing, the Subsea Solutions Alliance has been focused on finding methods of performing these maintenance items in an environmentally friendly way that keeps regulatory authorities happy and customer ops efficient. Investing more than two years of time and resources and almost a \$1m into the R&D program for an innovative method of Hull Cleaning, the Subsea Solutions Alliance announced that its environmentally friendly cleaning machine has been approved for use in the port of Vancouver, Canada. With the port of Vancouver, Canada being closed to hull cleaning for several years now, the Subsea Solutions Alliance saw a market need, strengthened by the fact that customer inquiries for this service continued to pour in to All-Sea Enterprises LTD, the Subsea Solutions Alliance member company in Vancouver. With many customers making trans-pacific transits once they leave Vancouver, the owners were interested to have proper hull maintenance performed in order to save fuel and flat line their operational costs. As such, the method of hull cleaning has been established to capture the spoils produced during the hull cleaning process and properly disposed of through a process approved by the regulatory bodies of Vancouver, Canada, which has been employed on several vessels already in Vancouver with successful results.

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Inland Crisis:

in the Water, at the Locks and – in Washington, too...

WCI Meetings in Washington highlight shortfalls in waterways infrastructure funding while red tape prevents critical industry input through Inland Waterways User Board.

Washington, DC: Yesterday's Waterways Council (WCI) 2012 Washington Seminar shed new light on the challenges faced by inland waterways users and their customers, especially as new transportation funding legislation inches forward on Capitol Hill. Attendee frustration was evident on many issues but the proposed U.S. Army Corps of Engineer's budget and roadblocks that prevent the Inland Waterways User Board – the federal advisory committee established back in 1986 – from operating as usual, were among the key issues discussed at length on Tuesday.

SITREP: USACE

Maj. General Michael Walsh, Deputy Commanding General for Civil and Emergency Operations, U.S. Army Corps of Engineers (USACE) first addressed the gathered members by giving a short overview of USACE efforts, funding and plans for the future. The good news included the completion of USACE efforts in New Orleans to protect the city against what he characterized as "the 100 year flood." This and other successes were tempered against the news that the Corps continues to operate on a continuing resolution, with funding at just 9 percent of 2010 levels. Beyond this, the proposed \$4.7 billion federal budget specifies a 5 percent reduction in the USACE budget from the previous fiscal year.

Walsh also touched upon the controversial \$800 million cost over-run on the Olmsted Lock and Dam project. Originally authorized under the Water Resources Development Act (WRDA) in 1988 at a cost of \$775 million, with a 7-year construction period, the project has seen multiple, significant cost over-runs. This week, when it was clear that Olmsted's price tag had ballooned to a whopping \$2.9 billion, WCI officials said in reaction, "Today's re-statement may be low; it apparently does not contain an escalator for inflation, which all other Corps' project estimates do contain."

For his part, Walsh promised the

gather WCI board members that the Corps would (a.) improve management oversight on this and other projects, (b.) perform additional cost reviews and (c.) change construction methods as necessary in order to achieve better efficiencies. Unspoken was the fact that the newest price tag increase represents \$800 million that cannot be spent elsewhere on critical locks and dam renewals. With regard to the current budget proposal on the table in Washington, Walsh said, "We operate in a time of constrained resources in challenging times."

Walsh outlined a USACE plan to expedite feasibility studies for prospective infrastructure projects and to discontinue the practice of "trying to fund too many individual projects," while identifying locations where commercial traffic did not warrant continuous 24/7 service, something he said would save money that could be better spent elsewhere. At the working luncheon that followed, Rep. Bob Gibbs (OH) instead focused on the unresolved ballast water technology mess that threatens commerce in his state and many others. Perhaps underscoring the abject neglect of the U.S. waterfront within recent ARRA distributions, he also called for the movement of infrastructure funds to waterways from other modes. And, he bemoaned transportation legislation that was top heavy on environmental spending but not so much on infrastructure.

Obama Administration: 2 + 2 = 5?

Following Gibbs was Seth Harris, Deputy Secretary at the U.S. Department of Labor, who gave a largely political speech outlining how the President had increased funding for waterways infrastructure projects. Painting a rosier view of the picture and administration policy, he portrayed a 2 percent increase in proposed transportation expenditures. But the numbers didn't add up, especially based upon the looming 5 percent cut that the USACE is facing amidst a growing list of critical replacement projects of locks and dams that are rapidly approaching or have surpassed their intended 50-year working life. During the break, at least two seminar attendees explained to this reporter the real inequities facing inland waterways.

HMTF – the money is there

The Harbor Maintenance Trust Fund was a hot topic this week. With industry fully aware that it pockets \$1.5 billion in receipts from users every year and yet only gives back \$850 million to infrastructure, inland waterways stakeholders want the full value of that fund disbursed for its original purpose. Beyond this, however and more importantly is the largely unrecognized value that the USACE delivers to the U.S. Treasury, while receiving a poor return in mutual funding for its efforts. But, in an organization that once saw its leader fired for complaining about the paucity of dredging funds, USACE employees are loath to speak publicly about the inequities. And, the USACE budget has shrunk from about \$7.5 billion in 1970 to the newly proposed level of \$4.7 billion.

Privately, one USACE advocate told me, "About \$1.5 billion of the proposed budget goes towards paying 20,000 employees. \$3.0 billion is simply not enough to fund 1600 critical infrastructure projects. As the nation's locks and dams reach and exceed their intended working lifespan, a catastrophic failure is almost upon us." Another individual, speaking on background, went on to explain that the unrecognized \$1.5 billion being realized in the Treasury's coffers as a direct function of USACE efforts needs to be returned to the Corps so that the cycle can continue. Intangible benefits realized from USACE efforts go far beyond the obvious transportation metrics and extend to federal hydropower revenues and enhancement of recreational and environmental concerns. Predictably, there was no one at the Mandarin Oriental Hotel on Tuesday who disagreed.

Inland Waterways User Board: USACE Operates in 'Vacuum' without it

Exacerbating an already bad situation, said WCI Seminar attendees, was the discontinuation of the Inland Waterways User Board, which because of red tape and heightened membership nomination issues has been inactive since August. Effectively, this leaves the USACE operating in a vacuum as they go about the analysis that will eventually yield the in-

infrastructure projects that will go forward, as funding allows.

Originally organized to make recommendations to the Congress and the Secretary of the Army on the priorities and spending from the Inland Waterways Trust Fund for construction and rehabilitation projects on the fuel-taxed system, the board would typically meet three times annually and issue an annual report made to the Secretary of the Army and the Congress. The meetings are open to the public. The system, according to WCI seminar attendees, worked quite well for the past 24 years – but, not since August. As the nominal proponent for the board, USACE folks at the meeting were grilled by seminar attendees as to the prospect seeing its resurrection. They left on Tuesday evening largely unsatisfied by what they heard.

**The Bottom Line:
Impending Catastrophe**

The obvious take-away from Tuesday's seminar was that inland water transportation – the cleanest and most efficient mode for America's bulk cargoes – finds itself in a tenuous position in the face of continued underfunding of waterways infrastructure projects. That said; WCI this week also characterized the recent news of failures on the Olmsted Lock and Dam project as "disappointing." Underscoring that point, WCI President/CEO Michael Toohey said in a prepared statement on Monday, "Let us be clear about the implications of today's announcement to the national economy, to jobs and to exports. No other meaningful investment in modernization of our aging inland waterways infrastructure will be made for a decade, or more, if the Olmsted project continues down its current path. Nothing for the authorized projects on the Upper Mississippi River, no investment for the Illinois, the Ohio, the Tennessee, the Cumberland, the Monongahela, or any other construction on any other part of the system. And that means no new/additional jobs, no chance to grow exports, and no transportation cost-savings returned to consumers from these shelved projects."

What Toohey didn't need to say out loud was that much of the nation's inland waterways infrastructure has reached its expected working lifespan. Failures can and should be expected in the near future, without significant attention, care and funding of these efforts. Unlike this administration's fuzzy math on infrastructure spending in the proposed transportation budget, that's a fact.

**By Joseph Keefe Feb 15, 2012, on
MaritimeProfessional.com**

HSBC says Growth on the Backburner for now, then

Fireworks in 2014!

The bad news is that this year will not be a good one, and probably not next year, either. The good news is that the future is so bright HSBC's trade analysts have all flipped down their welding helmets.

It is difficult not to be gloomy when every TV network and business newspaper in the world is filled with despairing reports on the great Euro Sovereign Debt Meltdown Crash and the audacity of US consumers to pare down debt instead of spending recklessly. Then just as you prepare to flee the country and move in with a San community in the Kalahari, along comes HSBC with a day-saving global trade forecast. Sure, the Hong Kong bank says from the rarified atmosphere of its mist-shrouded tower that looms over Central, this year and the next will be hard, but from 2014 on it will be party time, especially here in Asia. Tasked with delivering this message of hope to Hong Kong's jaded but attractive press corps was HSBC's regional head of global trade and receivables finance Simon Constantinides. He reckons that from 2014 onwards, Asia Pacific trade will accelerate like a roadrunner, consistently outperforming the global average with the gap widening over the next 15 years. The respective growth in Asia and the world will be 120 percent and 86 percent, incredible numbers by any measure. And the happiness will not stop at 2026, either, said Constantinides. Or as he put it, "We are not putting a stake in the ground and saying that at 2026, that's it. The solid rebound will start in 2014 and continue."

The forecast had China's share of global trade in the next 15 years increasing from 9.82 percent in 2011 to 12.3 percent, and India's from 1.73 percent to 2.25 percent. Trade growth in China will substantially outpace global trade.

Interestingly, among Asia Pacific's top 10 import-export partners, eight are from the region. This supports the findings that intra-regional activity will develop further and be a driver of global trade in the next five years.

The bank also predicted that China would overtake US as the world's largest trading nation by 2016, although there are no real surprises there. In a second forecast that was released in Hong Kong yesterday, the outlook for transportation and logistics in Asia Pacific was equally rosy, according to market researcher Frost & Sullivan.

In its Asia Pacific Logistics Industry Outlook, vice-president and country head, Asia Pacific, R Gopal predicted the CAGR for the sector from 2011 to 2016 would be 7.6 percent. The transportation and logistics market in China would grow by 9.5 percent, India by eight percent and Indonesia by 14.7 percent. The findings of both forecasts reveal that the underlying fundamentals of the global economy are sound, and also that Asia Pacific will lead world trade in the future, driven by China and India and supported by the developing economies. Both reports were a refreshing deviation from the gloomy predictions that make following the news such a depressing exercise. There should be a moratorium on bad news in winter.

by Greg Knowler, Hong Kong, February 22, 2012, on MaritimeProfessional.com

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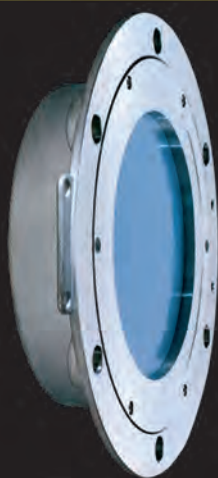
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US Trade Team

Explores India

A high-powered Ports & Maritime Technology Trade Mission from the USA that concluded its eight – day visit of India indicated that they see a lot of opportunities and could play a critical role in forging a lasting partnership in areas of shipping and ports in India. The delegations comprising 14 leading US companies visited different cities in India from February 17-24, 2012 and discussed prospective business opportunities and explored avenues for collaboration. Led by Francisco J Sanchez, Under Secretary of Commerce for International Trade, U.S. Department of Commerce the delegation explored the prospects in the areas of port security, maritime technology, port cleaning, refrigerated supply chain, port engineering, shipping agents, warehousing and stevedoring, port management and consulting, cargo-handling, bulk

cargo container movement, systems for cargo & container tracking, and others. They held interactive sessions in the cities of Kolkata, Chennai, Ahmedabad and Mumbai with various Indian stakeholders and in some cases were able to establish business relationship with players in the Indian port sector. Mr. Sanchez remarked, "India is emerged as economic leader. Its 1.3 billion people are among the most creative and innovative in the world. And our two countries share similar goals, expanded opportunity, greater prosperity and thriving economies. In 2011 bilateral trades in goods between India and US was nearly \$ 58 billion. India will grow faster than any other country in the world in the next 20-25 years, but with the excitement causes the challenges. So does its infrastructure need to develop. The current infrastructure network

Containershipping

Industry Suffering Good for Big Carriers

Unless there is a mass withdrawal of capacity, the container shipping business is going to have a very unhappy 2012.

That will never happen, of course. Lines are too preoccupied with market share, especially the larger carriers, and in the unlikely event of frenzied spending in the US and Europe, the excess capacity will keep pressure on rates.

Taking ships out will be good for the industry, but what is good for the industry may not good for those larger carriers. If there was a coordinated withdrawal of capacity on the major trades, freight rates would rise and everyone would start to see their balance sheets improve.

However, the top five carriers at least do not want to see smaller lines improve their profitability. They would rather see them go out of business.

Maersk said a couple of weeks ago it would withdraw nine percent of capacity on the Asia-Europe trade. After posting a \$600 million loss last year after a \$2.6 billion profit in 2010, the Danish giant announced that more capacity will have to take some gardening leave.

The other large carriers will follow suit. They have no other option but to take ships out of service with rates at below-cost levels. Slapping on hefty GRIs is one thing but having too much capacity in service will make it impossible to collect the increases from customers.

So capacity will be withdrawn, but we expect that the need to maintain market share will see too many ships kept online. Rates might improve slightly, but they are at such low levels that even if they doubled they would still be low. Tweaking capacity will not change that.

Maersk, MSC and CMA can withstand another shocking year. They have the financial resources and the staying power that comes with being the biggest in the business. We don't want to say "too big to fail", but they should be able to withstand another round of heavy losses.

It is down the list of carriers where the real impact will be felt. Remove the state-owned lines such as NOL, Cosco and CSCL and you have the Japanese carriers and the Korean lines, plus those in Taiwan and a host of smaller carriers. Some may be diversified around the various sectors, but they are still in shipping and nothing good is happening at the moment, regardless of whether the cargo is carried in boxes, on pallets or in liquid or gas form.

Ever since the global financial crisis put the brakes on trade, Maersk has been complaining that the container shipping business should be consolidated and too many carriers were being protected instead of being allowed to fail.

With the 2012 losses expected to mirror those of 2011, and reluctance by the big lines to withdraw enough capacity to make a sustained difference to rates, their wish for fewer companies in the sector may come true.

Posted by Greg Knowler February 28, 2012, on MaritimeProfessional.com

isn't strong enough to support India's emergence. India's businesses cannot be competitive in this environment. Investments are clearly needed that's why I was glad to see the announcement last year by the government of India, \$66b for the port sector and \$27b for shipping sector. This will reportedly increase India's port capacity from one billion tons to 3.2 billion tons by 2020. India is quickly becoming a home for the world's capital for talent, innovation. It is a remarkably story of progress."

The U. S. companies on this mission, many of which are new to Indian market, represented some of America's leading port technologies. Their interest was to look for Indian partners who could help them take part in the unprecedented growth that the Indian port sector will experience in the upcoming years. Some of the representatives stated that they were able to enter into business with the Indian companies. Rima Franklin, Director of Corporate Development, Great Lakes Dredge & Dock Company, America's premier dredging contractor said, "I was able to meet and talk business with a lot of

people and have come to the conclusion that the opportunities are good here. We need to follow up and take matters further."

"This is my second visit to India," pointed out Ron Popham, Principal, Trade Office, Port of San Diego. "Ours is the fourth largest container port in California. I see growing opportunities with India and our port is already supporting the National Export initiatives of President Obama and is promoting the export of automobiles, oil and gas turbines, project cargo and minerals to India, as well as the import of windmill turbine components, steel, automobiles, and project cargo from India."

Others too expressed fruitful matchmaking exchanges that could result in deals or long lasting relationship. These included delegates from Aecom, The Beckett Group, Container Trac, Rapiscan Systems Inc, Thermo Fisher Scientific, Inc, DSC Dredge, Ellicott Dredges, and the Port of Baltimore, among others.

by Joseph Fonseca, Mumbai, February 29, 2012, on MaritimeProfessional.com

Is Manpower Quality Destroying Us?

Training institutes play a greater role in enhancing quality, shipping companies need to do their bit and work closely with the institutes

When the situation is not all honky dory and near misses and incidents continue to set new records, it is time to review, retrospect, evaluate strategies, and to revamp the whole system with a view to put in place a new improved model before things get out of hand. The gnawing question that seems to haunt ship owners/manning companies and training institutes alike is "Is manpower quality destroying us?"

Under the banner of the Company of Master Mariners of India representatives of trade organizations for manning, ship management, maritime training, ship owners and others while deliberating on the issue decided at their annual Maritime Spectrum 2012 to take the bull by the horns and make a sincere effort to refurbish the system. They discussed threadbare the whole issue of manning, beginning with maritime training to the present quality of seafaring activity.

It is a fact that Indian seafarers command a salary which is generally higher than most other nationalities. This is because many ship owners prefer Indian officers. Also our industry is trying to market more seafarers without actually aiming at the proper objective. Besides, there is the tendency both among several training institutes and shipping companies to cut corners when it comes to providing training in order to raise the level of quality. Both want to cut the cake and eat it and both want to make a quick buck.


Mr. S. I. Nathan Chairman of a group of Institutes including Coimbatore Marine College averred that the number of training institutes that are needed and the level of quality standards the institutes are required to have is decided by the Director General of Shipping. In this regards the training institutes had little say in the matter. He maintained that contribution for enhancing quality cannot be only from the side of the seafarers, it also depends on the shipping companies. He supported campus interviews as they would bring about competition among institutes and help to shore up the quality. "Another way to raise the quality was to direct students looking for an opening in shipping company to approach their own training institutes to seek their recommendation," said Subodh Devgaonkar, Principal of MANET Training Institute. "If the companies also support this stand then institute will be able to present the student's realistic background which companies are not aware when they recruit directly. Describing the situation in which the present day seafarer finds himself in, Capt K. S. Paintal, Chairman of FOSMA (Foreign Owners Representatives and Ship Managers Association) and Managing Director of Elite Mariners Pvt. Ltd., and Elite Journeys Mgmt Pvt Ltd. put it very succinctly, "We don't have control over childhood but the management of training institutes can have control over the cadet and bring about rectification. But the main issue responsible for today's situation is the shortage of seafarers. Many seafarers get attracted to the fat salaries that come with the job. They join a company do the training and once they complete it they automatically find themselves in big demand with offers galore coming from other companies because of the seafarers' shortage. His professionalism goes for a toss. He becomes something akin to a mercenary." Capt Paintal feels that it is the duty of the training institute to cultivate the professionalism in seafarers.

Excerpted from a blog by Joseph Fonseca on MaritimeProfessional.com

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National SeaPerch Challenge Set for April

Building on the immediate success of the first-ever National SeaPerch Challenge held last year in Philadelphia, this year's greatly expanded National Challenge will be hosted by the Prince William County Schools on April 12-13, 2012 at the Manassas Park Community Center in Manassas, Virginia. Nearly 75 teams, consisting of four students and one adult leader each, from school districts and after school club/groups including 4-H, Boy Scouts and Girl Scouts will assemble for the national event.

They will assess how their SeaPerch underwater robots will fare in competition among their peers through a series of underwater challenges and a juried poster competition where their designs and adaptations will be presented.

For news and updates about the National Challenge, visit the SeaPerch website, www.seaperch.org and for questions please contact Phil Kimball, Program Director, at pkimball@seaperch.org

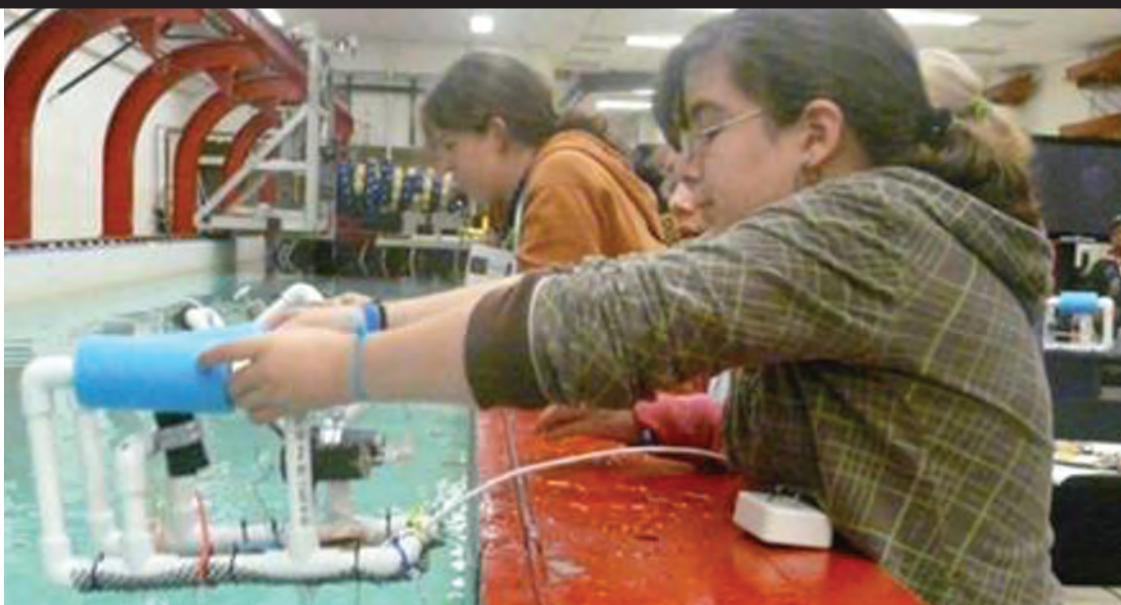
As Susan Nelson, Executive Director of SeaPerch, said, "We are pleased with the increase in the number of teams from 38 last year to nearly 75 teams this year. The growth in the program has been remarkable, and the fact that so many of the local teams are willing to hold regional competitions and send their top teams to the National Challenge is a true win." Including additional student and adult observers, parents, volunteers, judges,

VIP's, speakers and committee members, a total attendance of 450 is projected in Manassas Park.

The SeaPerch program was designed for students to learn important principles of science and engineering by assembling, troubleshooting, testing, operating and competing with their own Remotely Operated Vehicle (ROV). The program, now in its sixth year, is sponsored by the Office of Naval Research (ONR) and administered by the Association for Unmanned Vehicle Systems International Foundation (AUVSIF), with major support for the National Challenge from the Naval Engineering Education Consortium (NEEC). "The National Challenge was made possible both last year and this because of the grants provided by NEEC,

and in these difficult funding times, they came through to help defray the majority of the costs associated with the event and we are grateful for this continuing support," added Nelson. Because of ONR's commitment to SeaPerch, which introduces K-12 students to STEM (Science, Technology, Engineering and Mathematics) through underwater robotics, the program has grown exponentially, reaching over 40,000 students to date. With over





The SeaPerch program is geared towards attracting young people towards science and engineering.



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4000 trained teachers and mentors participating as well, students are learning through this hands-on activity by following an established academic curriculum to discover the excitement of STEM as a potential future career path. The program

reaches a diverse population, so participants in the Challenge will be students across the country, from inner city Baltimore to rural Mississippi to Native American reservations in Minnesota to the islands of Hawaii, all students who have

been introduced to STEM through SeaPerch.

On the evening of April 11, student teams will convene having traveled from all over the country to meet and greet their peers in a welcoming party held at

their hotel. Competition day, Thursday, April 12, will begin with an opening ceremony, immediately followed by the poster and pool competitions where photographers and videographers will record the events, local media will be in attendance and a Master of Ceremonies will keep the audience informed of the events and the teams competing. Through the day, poster presentations will be held for middle and high school teams to discuss their design philosophy and construction challenges and to answer questions posed by the judges. The SeaPerch ROV technical competition events in the pool will consist of an underwater obstacle course as well as a new salvage operations competition that is different from last year's event, a description of which may be found on the SeaPerch website under "Rules and Events" on the National Challenge page. Anyone interested in volunteering to judge an event may visit www.mysignup.com/seaperch to register. Following the day's competitions an awards dinner will be hosted at the Community Center where Aneesh Chopra, former First American Federal Chief Technology Officer of the United States, has been invited to speak about the importance of STEM education to our nation. Lastly, presentations of trophies to the winning teams, and naming of the middle and high school National SeaPerch Champions will be made.

On Friday, April 13, the students will be treated to a number of informative visits in the area including Lockheed Martin's Advanced Technology Robotic Lab and the FBI's Bomb Squad, where real-life applications of robotics will be demonstrated. An educational tour of the Manassas Battlefield is also planned since it will be the 150th anniversary year of the Second Battle of Manassas. Susan Nelson summed it up by saying, "None of the growth we have experienced would have been possible without the tremendous support of the Office of Naval Research that believed in our vision of what this program could become."

Next year, the National SeaPerch Challenge will be held on the campus of Indiana University-Perdue University Indianapolis (IUPUI), and because of the unprecedented growth of the SeaPerch program and rapidly forming regions around the country, the event is expected to draw up to 150 teams. For news and updates about the National Challenge, visit the SeaPerch website, www.seaperch.org, and for questions please contact Phil Kimball, Program Director, at pkimball@seaperch.org.

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Danaos Extends Piston Overhaul from 16K to 42K Hours

Engineers from Athens-based Danaos Shipping together with ExxonMobil, reportedly extended the overhaul interval required for a piston in a DOOSAN-MAN B&W 12-cylinder K98MC-C engine from 16,000 hours to 42,575 hours. A recent overhaul revealed that cylinder number 11 was in remarkably good condition, with a negligible liner wear rate. The achievement took place aboard the containership MV CSCL Europe, which is chartered to China Shipping Container Lines. Representatives from Danaos Shipping and ExxonMobil systematically monitored the condition of the engine throughout the overhauling process. The results were all the more significant because the containership has been slow steaming since 2009, averaging 15.6 knots with engine loads as low as 30 to 40 percent, and also operating with a reduced cylinder oil feed rate.

Since it was built in 2004, MV CSCL Europe has been lubricated with Mobilgard 570, a cylinder oil formulated by ExxonMobil to reduce piston wear and deposits, and to extend overhaul intervals in two-stroke diesel engines. The ship is equipped with MAN Diesel & Turbo's Alpha Adaptive Cylinder Oil Control (ACC), a system that controls the dosage of cylinder oil according to the amount of sulfur entering the cylinder with the fuel. Danaos Shipping also uses ExxonMobil's Cylinder Condition Monitoring (CCM) program to detect changes in cylinder condition so that vessel engineers can safely reduce Mobilgard 570 feed rates without increasing wear.

Ship engineers gradually extended the overhaul period on successive pistons in



MV CSCL Europe's 12-cylinder DOOSAN-MAN B&W K98MC-C engine is lubricated with Mobilgard 570, a cylinder oil formulated by ExxonMobil to reduce piston wear and deposits, and extend piston overhaul intervals in two-stroke marine diesel engines.

the 12-cylinder engine. Overhauling started at 16,000 hours and continued at extended intervals based on the good condition of the pistons, rings and liners. In cylinder number 11, the overhaul was done at 42,575 hours. Fuel sulfur level averaged approximately 2.62 percent throughout the period. Just before cylinder number 11 was overhauled, all monitoring parameters were within normal range, based on the results of scavenge air port inspections. A graph of liner wear rate over time shows that the rate in fact fell from a high of 0.02mm/1,000 hours to a rate at time of overhaul that was neg-

ligible. The overhaul revealed that even at 42,575 hours, cylinder number 11 was in remarkably good condition, suggesting that the interval could have been extended much further. Liner wear rate, piston ring wear and the ring groove clearance were all well below the thresholds identified by MAN Diesel & Turbo. No evidence of scuffing was found. Danaos Shipping used the Alpha ACC to reduce the amount of Mobilgard 570 cylinder oil from a factor of 0.34 g/k/Wh x S% to the current minimum factor of 0.2 g/k/Wh x S%, which equates to 0.6 g/KW hr (the minimum setting recom-

mended by MAN B&W) at normal loads. According to ExxonMobil, the benefits of using Mobilgard 570 often become even more pronounced at feed rates below 0.6 g/KW hr. "We operate a high-quality fleet of 56 container ships with a reputation for reliability and cost-efficiency," said Danaos Shipping's Technical Manager Dimitrios Vastarouchas. "We have seen that Mobilgard 570 can help significantly extend piston overhaul intervals and for us the benefits of this technical achievement are financial and environmental."

www.exxonmobilmarinelubes.com

Voith: First Voith Linear Jet Order

Voith announced its first Voith Linear Jet order with Turbine Transfers UK for a 19m BMT Nigel Gee designed Wind Support Vessel. The Voith Linear Jet provides for this application a higher bollard pull without a requirement for increased installed power, allowing the vessel to work in higher sea states.

Turbine Transfers - a wholly owned subsidiary of Holyhead Towing Company - operates a fleet of more than 20 fast catamarans that transport personnel and equipment to and from offshore wind turbines. Its long term customers include Siemens, RWE npower, Van Oord, Dong Energy, EnBW and Royal Boskalis Westminster. The Voith Linear Jet (VLJ), a new ship propulsor that, according to the manufacturer employs the simplicity and efficiency of a conventional propeller installation, yet delivers the possibility to design for 40 knot top speeds without the shake and rattle of an extreme power-dense propeller.

Typical VLJ applications will be any ship with a mixed operating profile between low speed cruising and sprint speeds like Navy and Coastguard vessels and Yachts. Ferries operating at sustained speeds around 30 knots employing high-speed or medium speed Diesel or LNG engines will also benefit of this new propulsion option.

Assisting the Naval Architect with making performance predictions, Voith developed a powerful "Numerical Towing Tank" in Computational Fluid Dynamics (CFD), optimized for the performance prediction of the Voith Linear Jet in any hull form. The VLJ Numerical Towing Tank is validated with several hull forms, with cavitation tunnel tests at tank test institutes and with VLJ self propelled hulls.



www.voithturbo.com

Havis Weatherproof Docking Station



On the exclusive island of Indian Creek Village in South Florida, wealthy residents rely on the Indian Creek Village Public Safety Department for their personal safety and the security of their multi-million dollar homes. The community's own State of Florida sworn police force provides 24/7 armed marine patrol around the island, which has recently been enhanced by the new Havis Weatherproof Docking Station for the Panasonic Toughbook 19. The Havis Weatherproof Docking Station received an Ingress Protection (IP) rating to determine its ability to protect from dust and water. The docking station earned the rating IP65, which means it is "dust tight" and able to protect against jets of water from every direction, a force similar to that of heavy seas. For mobile workspaces in rugged environments, protection from salt spray, humidity, dust and particulates is critical in preventing dam-

age or corrosion to expensive electronics. From desert to ocean, the Havis Weatherproof Docking Station protects and supports the Panasonic Toughbook 19 in a variety of applications, including marine patrol, mining, forestry, and weather research. For more information on the Havis Weatherproof Docking Station, visit

<http://weatherproof.havis.com>.

OMEGA Debuts DPGM409 Gauge

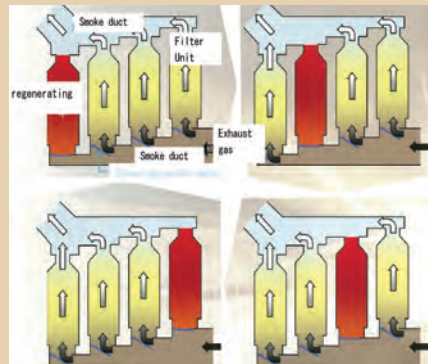
The DPGM409 covers the full spectrum in pressure measurement with Gage, Sealed Gage, Absolute, Compound Gage, Vacuum, and Barometric pressure ranges. Its core is a highly stable micro-machined silicon sensor with a very high 0.08% accuracy. Each unit is supplied with a 5-point NIST traceable calibration certificate and is tested to industrial CE standards. A user selectable analog output of either 0 to 5 Vdc, 0 to 10 Vdc or 4 to 20 mA is standard on all models and a built-in wireless transmitter option is also available.

The electronics are enclosed in a stainless steel and ABS housing that is wash-down rated and has a unique magnetic stylus system for programming that prevents accidental programming changes. The display has large 25.4 mm (1 in) digits plus a 0 to 100% bargraph. Price Starts at \$695

Email: nmiller@omega.com

MOL Demos Diesel Particulate Filter

Mitsui O.S.K. Lines started a demonstration test of the Diesel Particulate Filter (DPF) system installed on the diesel engine used for power generation on an MOL Group-operated ocean-going vessel. This is reported to be the world's first application of the self-cleaning DPF on an ocean-going ship. With research support from ClassNK, MOL and Akasaka Diesels Ltd. have jointly developed a DPF system for marine diesel engines, which run on C heavy oil. The initiative is part of ClassNK's program to support joint research and development with industry and academia. MOL conducted a DPF demonstration test in 2010 using the main engine of a ferry serving coastal areas in Japan. MOL is moving ahead with efforts to reduce air pollution as one of the environmental strategies in its midterm management plan GEAR UP! MOL.



ESAB



ESAB Cutting Systems introduces the Vision 51R Control for retrofit onto cutting gantries. Designed to replace older Vision series controls, the Vision 51R controller combines the reliability of a solid-state PC based control with the stability of the Windows CE operating system. This updated version of ESAB's Vision 51 CNC is re-packaged for quick and easy installation in place of existing Vision controls on ESAB cutting gantries. It is an easy-to-use, highly functional control which can be used to control up to four process tools carrying a variety of cutting and marking processes. The new Vision 51R is designed to replace single box controls from the Vision 4-Series, including the Vision 500, Vision 1000, Vision 2000, Vision 2000C, and Vision 3000. With simple field wiring and identical mounting configuration, hardware installation is a breeze. www.esab-cutting.com

Trompler Fluid Power

After 43 years as a machining center for hydraulics, Trompler Fluid Power will provide a standard line of its high-pressure components through a network of stocking distributors for a variety of applications. Building on their ability to produce high-quality products for major corporate accounts, Trompler Fluid Power will offer a wide range of cylinders from 5 tons to over 1,000 ton capacities. Depicted is the 1,000-ton capacity hollow-hole cylinder. Accessory components such as pumps, hoses, fittings valves, gages and spreaders complement the line.



www.tromplerfluidpower.com.

Konrad Upgrades Manufacturing Process

Exclusive Total Gear Cutting System

Konrad Marine has implemented its Total Gear Cutting System, a system which the manufacturer touts as a strategic advantage in the manufacture of its sterndrive systems. The framework for the system is the Gleason Phoenix(R) II, 600HC - a modern bevel gear cutting machine. Highly specialized, integrated programming makes it one of only three in the world with its unique capabilities.

Augmenting this framework and its programming with Konrad's experience in design, tooling, machining, and proprietary manufacturing processes creates the Total Gear Cutting System.

"Our primary objective is to have the toughest stern drive on the market," said owner Ken Konrad. "To achieve this, we need the strongest, most powerful and capable stern drive gears in the marine industry. We started with a phenomenal new gear cutting machine. By adding our proprietary processes, specialized programs, design and tooling based on decades of successful experience, we've created the Total Gear Cutting System. Konrad gears are a very significant contributor to fulfilling our objective of manufacturing the toughest stern drives."

Konrad Marine designs and manufactures stern drive propulsion solutions for commercial, military, and recreational marine applications. The company is headquartered and has their manufacturing facilities in Hudson, Wisconsin.

<http://www.konradmarine.com>



Jo Tanker: Making the Diesel Switch



Jo Tanker, a Norwegian ship owner, has reached changeover and blend fuel requirements by installing JOWA Technology Diesel Switch DS MKII. The switch is type-approved by Germanisches Lloyd and leads to meeting the sulfur emissions levels in CARB and SECA areas. The DS MKII Diesel Switch has been developed by Swedish-based Jowa Technology.

After the first on-board test, Jo Tankers was reportedly convinced by the positive results achieved by the JOWA Technology DS MKII Diesel Switch, leading to the installation of the DS MKII in nine more vessels, in addition to new building projects in Korea.

"Since we installed the DS MKII we have been experiencing very positive results onboard our vessels", says Fleet Manager Mr. Andrew Hills. The DS MKII provides a controlled, safe and reliable change-over from HFO to MDO/MGO and vice versa, as well as a safe blend fuel operation whenever required. The system can be used for both main engines, as well as for the auxiliary engines. The DS MKII has unique software developed by JOWA Technology, controlling a specially designed blend fuel valve and has an overall architecture that can be adapted to the available space on board, which sometimes can prove to be very limited in case of retrofits.

info@jowatechnology.se

PureSOx by Alfa Laval

Alfa Laval signed a contract with Spliethoff covering the retrofit of a multiple inlet PureSOx exhaust gas cleaning system on board one of Spliethoff's vessels which operates mainly in the North European ECA area. It is the first order received by Alfa Laval for such a multiple inlet system. Since the vessel's engines have a combined rated output of 28 MW, this will be the largest marine scrubbing system ever sold.

The system reportedly is the first to use just one scrubber to clean the exhaust gases for the main as well as the auxiliary engines. René Diks, Manager, Marketing

& Sales, Exhaust Gas Cleaning, Alfa Laval:

"For the retrofit market, where space and weight are critical issues, it is essential to be able to supply a single scrubber that handles exhaust gases from all the ship's engines. Other advantages include lower energy consumption, less piping and lower maintenance costs."

Alfa Laval already has another system in successful operation on DFDS Ficara Seaways. This system treats the exhaust gas of a 21 MW MAN main engine and is currently the largest scrubber in operation in the market. To date, the system has completed more than 4,000 operating hours.

Frank Louwers, Director of Spliethoff, explains that the investment in this technology ensures that Spliethoff will be well prepared to meet the upcoming sulfur legislation in 2015 (0.1% limit) in European and American ECA waters. It is expected that the scrubber installation will deliver significant environmental benefits.

"Financially, sailing on low sulfur marine gas oil is simply not an alternative for a company wishing to remain a dominant player in this market segment," said Louwers. "Already today the price dif-

Iridium Pilot aims at Affordable Maritime Broadband

Iridium Communications launched its second-generation maritime broadband platform, Iridium Pilot, which will use the Iridium OpenPort service. Iridium Pilot is engineered for enhanced durability, but packaged in a small, lightweight antenna. It features a fixed, electronically-steerable, phased-array antenna, designed to maintain connectivity in rough seas. Iridium Pilot offers broadband connectivity in addition to three independent phone lines, all of which work simultaneously, with data speeds up to 134 kbps.

The platform offers a suite of new capabilities, including a built-in firewall for traffic management and a bulk configuration capability to assist in efficiently managing large volumes of units.

"We currently see a rapid migration from legacy narrowband services to new generation broadband solutions in the maritime satellite communications market," said Richard Roithner, Senior Consultant at Euroconsult. "MSS broadband solutions, in particular those positioned in the lower price ranges, have seen significant growth over the last two years increasing at around 120 percent per year. Euroconsult projects growth to continue in the coming years as these systems provide an attractive value proposition for low- and medium-end markets, including fishing, shipping and leisure vessels, to provide safety communications, enhance ship operations, improve crew welfare as well as provide complementary services for VSAT. Our research has found that data rates of around 128kbps are sufficient for the majority of applications used onboard vessels today."

www.iridium.com

ference between heavy fuel oil and low-sulphur MGO with 0.1% sulphur is approximately \$300 per ton.

PureSOx, with a sulfur removal rate of

more than 98%, is a unique hybrid system that can operate on either sea water or fresh water.

www.alfalaval.com/marine

GE LM2500s Make Their Mark

GE Marine said performance of its LM500 aeroderivative gas turbines during sea trials on the eighth and ninth PK(X) patrol boats in the Republic of Korea (ROK) Navy's fleet was a success. Each of the PK(X) patrol boats use LM500 gas turbines, rated at approximately 5,600 shp, in a combined diesel and gas turbine arrangement, with diesel engines. The first PK(X) Yoon Young-ha was launched at Hanjin Heavy Industries' Busan, ROK shipyard. Samsung Techwin locally manufactures select parts of the LM500s, and assembles and tests the completed engines at its Changwon, Korea factory. GE provides ongoing support to Samsung Techwin, the shipyard, and the ROK Navy throughout installation, sea trials, and commissioning. The LM500 is derived from GE's TF34 turbofan aircraft engine, and has 90% commonality with the CF34 engine that powers the popular CRJ100/200 regional jet with more than 14 million hours of operation.

GE Marine also said its LM2500 gas turbine will be used in the Combined Diesel And Gas turbine (CODAG) propulsion system to power the United States Coast Guard's (USCG) fifth National Security Cutter. The fifth cutter will use one LM2500 combined with two MTU Series 1163 diesel engines provided by Tognum America that will be capable of propelling the ship at speeds up to 28 knots.

The USCG reports that the first two cutters – USCGC Bertholf and USCGC Waesche -- are fully operational and executing missions on the west coast of the United States. The homeport for both cutters is Coast Guard Island in Alameda, Ca. In September 2011, the third cutter Stratton was accepted by the USCG during an In-Commission Special ceremony at Huntington Ingalls Industries' shipyard in Pascagoula, Mississippi. The ceremony marked a major milestone in the ship's transition to full operational status in the Coast Guard's fleet. The fourth cutter, Hamilton (WMSL 754), also will be built by Ingalls Shipbuilding, and is scheduled for delivery in 2014. Each cutter measures 418 x 54-ft., with the CODAG propulsion system provided by Tognum America. The gas turbine for the fifth cutter will be manufactured at GE's Evendale, Ohio, facility, and delivered to Tognum America in May 2013 for assembly into the CODAG propulsion system.



LM500 Gas Turbine-Powered PK(X) Patrol Boats above, NSC below.



Second Annual
Don Sutherland Memorial

Maritime Photo Contest

See your image on the cover of the world's largest maritime magazine

Your photo could be on the cover or in the pages of the most widely read publication in the global maritime industry. Enter as many photos as you like, in each of the five categories. Entries can be submitted at:

www.maritimephotographs.com

All images must be entered by May 11, 2012. Winning photos will be published in the June 2012 Maritime Reporter and Engineering News, with the Grand Prize Winner featured on the front cover of the magazine.

This contest was established to honor the memory of the late Donald S. Sutherland, renowned maritime photographer and writer, who passed away suddenly in 2010.

Categories:

Ships and Boats
Offshore Structures
People
Maritime Scenes
Weather Systems

**Contest runs until
May 11, 2012**

Sponsored By:



Photo by Frank van Hoorn



Photo by Pim Van Hemmen



Photo by William Rigby

For complete contest rules go to <http://www.maritimephotographs.com/rules-and-terms.asp>

New System to Enhance Damage Stability of Ships

Mitsubishi Heavy Industries, Ltd. (MHI) developed a system it says is designed to enhance the damage stability of ships, a system which the company claims reduces capsizing risk, and a system which has now been ordered for installation on a Nippon Shipping, a group company of Nippon Express Co., Ltd., RoRo ship.

MHI proprietarily developed the system in response to the strengthening of regulations on ship stability during navigation in January 2009, based on revisions to the International Convention for the Safety of Life at Sea (SOLAS Convention) adopted at a meeting of the International Maritime Organization (IMO) in 1974.

Going forward MHI will focus on marketing activities to attract orders for high-end ships equipped with the new system. At the same time, the company will also boost external provision of its environment-related technologies for such ships in a quest to expand its engineering business.

MHI is targeting installation of its

newly patented righting moment recovery system on new ships to which the aforementioned regulations apply: namely, RoRo ships, pure car and truck carriers (PCTC) and ferries.

With such ships in mind, MHI developed the system with an emphasis on low cost. If the ship's hull is damaged during navigation, the new system enables prompt conveyance of any flooded seawater into void spaces in the ship's bottom, helping to reduce capsizing risk by quickly lowering the ship's center of gravity.

MHI's system is designed to secure the void spaces near the ship's bottom by making use of spaces that are normally allocated to other functions, such as the fin stabilizer rooms, duct keels and ballast water tanks.

Holes and watertight covers are provided to feed the seawater into the void spaces, and pipes are in place to serve as air vents. Together the system is designed to enable prompt water filling and lowering of the gravity center to cope with emergencies. The system is designed to

eliminate the need to divide the vehicle deck areas into small compartments, ultimately facilitating smoother vehicle maneuvering within the ship. Also, and important for the cost-effectiveness of the vessel, no vehicle carrying capacity is sacrificed as a result of the new regulations.

The 170-m RoRo on order is able to travel at a speed of 23 knots, carrying about 170 trailer chassis and 100 passenger cars. The ship consumes approximately 10% less fuel than existing RoRo ships in the same class, and will be built at MHI's Shimonoseki Shipyard & Machinery Works in Shimonoseki City, Yamaguchi Prefecture, scheduled for delivery in March 2013.

In part to battle the continued loss of market share to Korea and China, and particularly in today's tough global maritime market, the move by MHI is seen as a move to focus on specialized high-end products; and a strengthening of engineering business. In conjunction, effective January 1, 2012, MHI established a new "Engineering Business De-

partment" within its Shipbuilding & Ocean Development business headquarters.

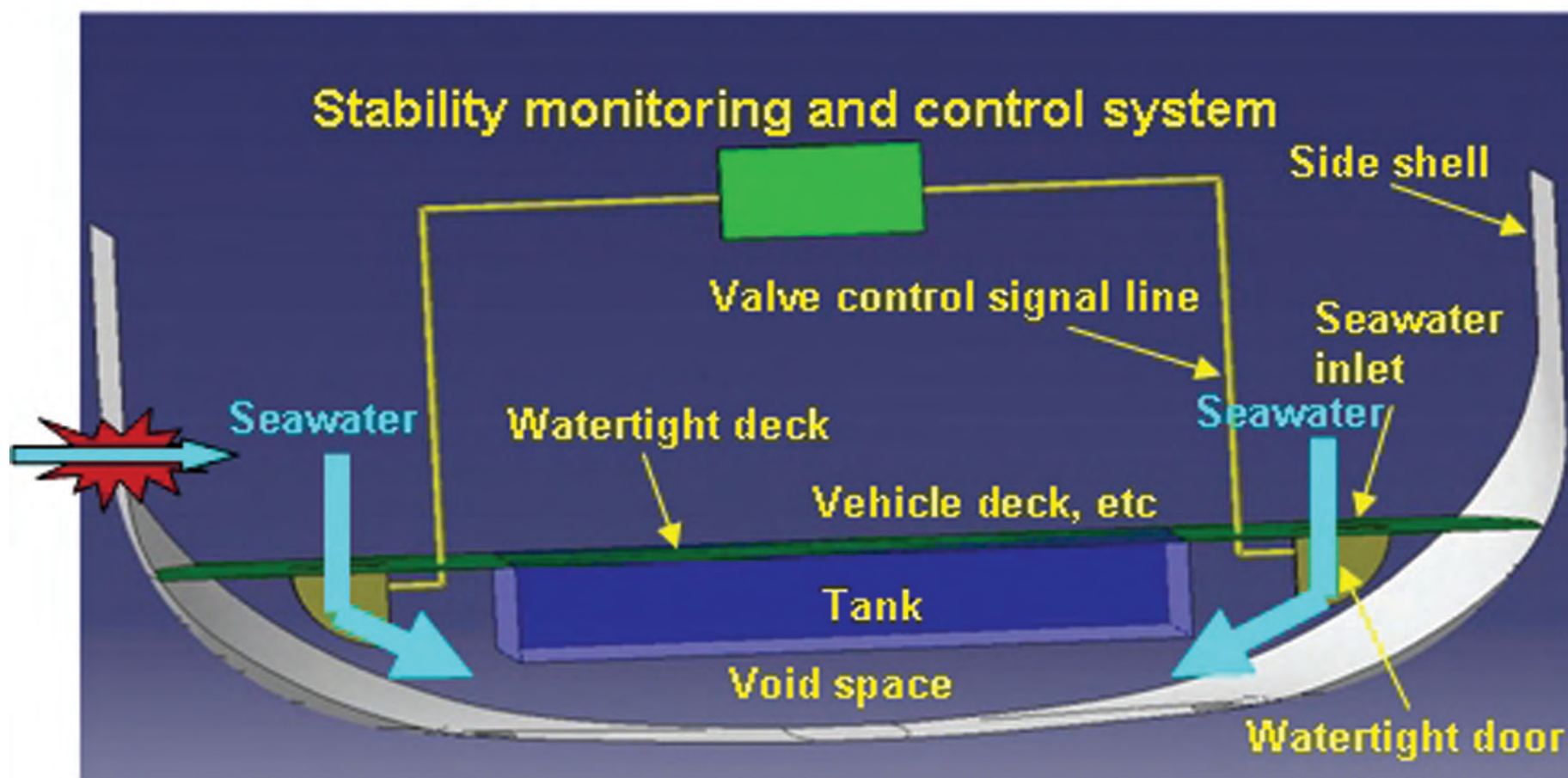
Two promising technologies in particular are expected to contribute to expansion of the company's engineering business.

One is the "Mitsubishi Air Lubrication System (MALS)," an innovation that reduces frictional resistance between a vessel's hull and seawater using air bubbles produced at the vessel bottom, thereby enabling energy savings and reduction in CO2 emissions.

The other is a proprietary technology for vessels equipped with a ballast water treatment system to comply with the Ballast Water Management Convention, an international agreement requiring installation of a system to purify ballast water prior to its discharge from the ship. Leveraging these and other advanced technologies, MHI is now actively promoting its engineering business for both new ships and conversion of existing ships.

<http://www.mhi.co.jp>

Conceptual Drawing of Righting Moment Recovery System for Marine Vessel





Roughead



Widdows



Desch



Eik



Araujo



Jackson



Jonsson



Clopton

Former CNO Roughead Joins Northrop Grumman Board

Northrop Grumman Corporation elected retired U.S. Navy Admiral **Gary Roughead** to its board of directors. Roughead served as the 29th Chief of Naval Operations for the Navy prior to his retirement from the service in 2011. The addition of Roughead increases Northrop Grumman's board of directors to 13 members.

Widdows Takes the Helm at Rickmers

Jan B. Steffens will step down March 31, 2012 from his positions as CEO of Rickmers Holding and of Rickmers-Linie, but he will continue to serve on the Rickmers Group advisory board. **Ronald D Widdows**, former CEO of NOL/APL, will become the new CEO of Rickmers Holding and Rickmers-Linie as of April 1, 2012, and Rickmers' CFO Dr Ignace Van Meenen will act as his deputy.

Iridium CEO Desch Honored

Matthew (Matt) Desch, CEO, Iridium Communications was named Via Satellite's Satellite Executive of the Year for 2011. Iridium boasted a strong performance in 2011 that exceeded estimates on nearly every metric. Financially speaking, the MSS operator grew in areas where it was not expected to grow, driven by its service, its technological innovation and its ability to be a catalyst to its ecosystem of development partners in an increasingly competitive sector and in new sectors, as well. The company performed solidly from a financial perspective in 2011. In the nine months to the end of September, the operator generated close to \$290m in revenues, an increase of just under \$30m compared to the same stage last year. Its net income for the nine months ended September 30, 2011 was also up reaching more than \$31m, more than double when compared to the same period last year. In areas such as equipment revenue, it significantly outperformed expectations. In addition, in July, Iridium announced that Desch was appointed to serve on the U.S. National Security Telecommunications Advisory Committee (NSTAC), and Desch now advises and provides recommendations to U.S. President Barack Obama and other government leaders on the security of the

nation's telecommunications systems.

Sigma Offshore Appoints Internal Turret Moorings Expert

Offshore, appointed an experienced industry figure to head up one of its key service areas. **Geir Eik** has become Vice-President Internal Turret Systems at Aberdeen-headquartered Sigma Offshore as the business looks to sustain and enhance its capabilities across its product and service range. Geir will join Sigma's Singapore office established in 2010 by Vice-President Asia Pacific Eirik Refstie as the business looks to move forward in the established FPSO hub for the region.

W&O Expands Team at Brazil Office

W&O expanded its team in the newly opened office in Brazil. **Adriana Faria de Araujo** joins W&O as Commercial Director with more than a decade of marine industry experience. As Commercial Director, Araujo is responsible for developing and maintaining the infrastructure necessary to service the South American market. Araujo has extensive experience in Brazilian and international maritime law, having previously served as a lawyer for the Maritime Dutch Association in Brazil, and has her master's in offshore oil and gas management from Fluminense Federal University (UFF) in Brazil. Araujo will be based in the Brazil office. As Customer Services Deliver Manager, **Valeria Jackson** is responsible for ensuring efficient project management and customer delivery, while also identifying processes and procedures to continually improve the coordination effort between the North American and Brazil offices.

Ward to Head McLean Group's Transportation & Logistics Practice

The McLean Group, LLC appointed **Harry Ward** as Director leading the firm's Transportation & Logistics practice. Ward has more than 20 years' global strategy, business development and M&A experience supporting privately-held companies. He has worked across the transportation & logistics value chain, particularly in distribution, fulfillment and the maritime industry. Ward is a graduate of the US Naval Academy and earned an MBA at San Diego State University.

Jonsson Appointed Senior Specialist

Volvo Penta's engineer **Kåre Jonsson** has been appointed Group Senior Specialist within the Volvo Group for his unique propeller competencies. Group Senior Specialist is an honorary title that is awarded to individuals with unique skills and expertise in a specific area within the Volvo Group - one of the giants in the global commercial transport industry with approximately 100,000 employees and net sales of around USD 50 billion. Kåre Jonsson complies with all the criteria that are set in order to be regarded as a specialist. He is one of the world's most renowned propeller experts and one of many Volvo engineers that has contributed to Volvo Penta's world leading position within propeller technology.

With innovations such as the Aquamatic sterndrive, the counter rotating propellers Duoprop and the IPS system with forward facing propellers, Volvo Penta has been leading the development within marine transmissions and propellers in the past 50 years. Jonsson joined Volvo Penta in 1979 and he is one of the people behind the unique IPS system which since the launch in 2005 has established Volvo Penta as the undisputed market leader within the segment.

EBDG Adds a Marine Engineer

Elliott Bay Design Group is added **Julia Clopton** to its Seattle office as a Marine Engineer. She brings over 7 years of marine engineering experience and a B.S. in Mechanical Engineering from the California Maritime Academy and holds an EIT Certificate from Washington State.

Resource Power Group Adds Key Execs

Resource Power Group (RPG) appointed **Sean Carey** as the engine sales & service company's General Manager of the MaK and large bore engine business for the southeast US and the Caribbean territories. Carey is a graduate of the US Merchant Marine Academy who previously was employed as a Service Sales Manager for Wärtsilä North America, Inc. RPG appointed **Juan Carlos Perez** as Operations Manager for its Miami operations. Perez most recently served as the GM for Contract & Project Management for Wärtsilä North Amer-

ica, and Branch Manager for the Seattle and Long Beach offices. RPG also appointed **Jack A. Smith** as Technical Manager for the company's large bore engine business. Smith is a graduate of the US Merchant Marine Academy and a 28 year veteran of the sea, having served as the Chief Engineer for various Sealand container vessels.

Johnson joins Hempel USA

Hempel USA, the global supplier of Marine and Protective coatings has recently hired **Jennifer Johnson** as a Sales Representative in the U.S. Gulf. Ms. Johnson will be responsible for Marine sales of Hempel's extensive product line in the territory. A graduate of the United States Merchant Marine Academy with extensive industry experience, she will be located in Hempel's headquarters in Houston Texas.

STX Marine Expands Staff

John Hensler Mandy has joined STX Marine as the manager of STX Marine's Electrical Engineering department, bringing with him over 20 years of experience in the Naval/Marine power generation protection industry. Chad Oldfield has also joined STX Marine's Ottawa office as a Naval Architect with an emphasis in CFD and FEA. Chad brings with him a wealth of theoretical knowledge from his studies at Memorial University, where he obtained a Bachelors of Engineering in Ocean and Naval Architecture.

J.F. Lehman & Co. To Acquire NRC

J.F. Lehman & Co. signed a definitive agreement to acquire National Response Corporation and its affiliated businesses NRC Environmental Services and SEACOR Response from SEACOR Holdings Inc. NRC is a leading provider of United States Oil Pollution Act of 1990 regulatory compliance and emergency response services, one of the leading environmental contracting firms on the U.S. West Coast, and a global provider of diversified environmental, industrial, and emergency response solutions. Headquartered in Great River, NY with regional offices throughout the U.S. and internationally, NRC has approximately 540 employees. Steve Candito will be CEO of the independent company after closing.

Hua Hai Long Joins COSCO Shipping Heavy Lift Ship Pool

On February 1, COSCO Shipping Co., Ltd. signed a POOL agreement with Guangzhou Salvage Bureau of the Ministry of Transport (GSBMT) in Guangzhou Ocean Plaza. According to the agreement, M.V. Hua Hai Long, the 30,000 DWT semi-submersible vessel of GSBMT, will come into service under the management of COSCO Shipping Co. COSCO Shipping aims to become the lead integrator in the global semi-submersible vessel market therefore they have initiated the first POOL model among the Chinese shipping companies. The new joint semi-submersible vessel MV Hua Hai Long is a 30,000 dwt new-building with a length of 182.2m, a width of 43.6m and a depth of 11m. The Vessel has a large deck area, advanced ballast system, and can handle a wide range of cargoes. With the joining of the M.V. Hua Hai Long, COSCO Shipping's semi-submersible POOL has reached five vessels, giving them the capability of transporting small, medium and large offshore and onshore cargoes.

WSS Appoints Hawley

Wilhelmsen Ships Service (WSS) has appointed Brendon Hawley as its new Regional Operations Manager for Asia Pacific. Based in Jakarta, Indonesia, he will be responsible for all operations throughout Indonesia reporting to GM Cato Nordskog.



Hawley

Born in Durban and educated in Kenya,



Hua Hai Long Joins COSCO Shipping Heavy Lift Ship Pool

Uganda, Tanzania and South Africa, Hawley began his seafaring career in 1971 with UK-based shipowner T & J Harrison Lines, before joining Safmarine Corp & Unicorn Lines during which period he obtained his Masters License, serving on a range of vessel types, before becoming a Master on General Cargo Vessels. After coming ashore in 1986, he took up a position as P&I Surveyor in the Port of Richards Bay and went on to become a Director of P&I Associates (South Africa).

Management and Technical Developments at Massoel

Massoel, the Swiss based owner and operator of 14 bulk carriers, has appointed a new CEO and made a number of changes to its management and opera-

tional team. The Giorgio P Sulser headed company has appointed Lionel Fluckiger as the new CEO as from March 1, following the departure of Michael Deslarzes at the end of 2011. "We have looked at a number of candidates over the past two months and are now delighted to make the appointment from within our team" says Sulser.

Lionel Fluckiger was appointed CFO of Massoel in January 2010 and retains this role within the Group. He holds a bachelor's degree in Accounting and Finance from the University of Geneva and a masters in Finance from the University of Southern Queensland, Australia.

Philip Lord has been appointed as General Manager, Commercial, Operations and Insurance, again working out of the Group's Geneva office.

Rapp Hydema Establishes Office in Stavanger

Rapp Hydema, the winch and deck machinery specialist, are opening a new office in Stavanger. "We are pleased to be present in Norway's most expansive offshore environment. This new establishment is both strategic and necessary to meet our customers' demands for service and support," said Inge Henning Andersen, Managing Director of RH. Rapp Hydema has hired **Runar Tunem (pictured)** to head the Offshore Sales Division in Stavanger, where he will be responsible for global sales and marketing.

The company intends to grow in the offshore vendor market, "so the new office is strategically important to us," said Andersen. "Stavanger is a central location, not just for the Norwegian market, but also so as to position the company relative to international players. By moving closer to our customers, we are making sure that our growth aspirations in global offshore are attainable," he said. Tunem brings 17 years of experience in sales, marketing and commercial development within drilling, subsea and maritime industry.

"Runar's long track-record and genuine passion for the job mean we are delighted to have him on the team. This new office is an important step to meet customer demands for service and support, and a move they can look forward to," said MD Inge Henning Andersen.

Rapp Hydema AS is part of the Rapp Marine Group. Based in Bodø in Norway's far north, the Group is renowned for its production and sales winches and deck machinery for the global market. Hydraulic and electric winches are key to the range, featuring computerized control systems.



Northrop Grumman Delivers Megayacht IBS

Northrop Grumman Corporation's Sperry Marine business unit has delivered a suite of navigation electronics for a new megayacht being built by Proteksan-Turquoise Yachts in Turkey. The new megayacht is being equipped with a complete Northrop Grumman Sperry Marine VisionMaster FT integrated bridge system (IBS) with TotalWatch multifunction displays. The 72.6-m (238.3-ft.) megayacht (NB54), currently named MY Vicky, is the largest ever built by Proteksan-Turquoise Yachts. The steel and aluminum alloy vessel is scheduled for completion in the first quarter of 2012.

STX Finland Makes Management Changes

STX Finland announced a number of management changes, citing the challenging market situation. The primary target set for STX Finland is profitable operation. In 2011 this target was achieved, and now the focus is strongly on how similar development could also be secured over the years to come.

By consolidating sales and marketing into a corporate level activity, STX Finland strengthen and increase the efficiency of its strategic targets which main focuses are diversification, differentiation and customer relationship management.

Appointments and special areas of responsibility:

— **Timo Suistio** has been appointed EVP, CMO of STX Finland. He is tasked with enhancing the functioning capacity of sales and marketing and boosting the order book of the shipyards to ensure long-term operation of the company.

— **Jari Anttila** has been appointed EVP, COO of STX Finland. He is tasked with ensuring cost-efficient implementation of company projects, exploiting the resources of both Turku and Rauma shipyards. Mr Anttila will also continue as Director of the Turku Shipyard.

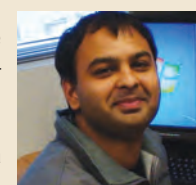
— **Toivo Ilvonen** has been appointed Director — **Tapani Pulli** has been appointed Deputy Director of the Turku Shipyard. He will also continue as Vice President, Strategic Planning.

Markey Adds Professional Staff

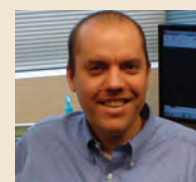
Markey Machinery has added two appointments to the Markey engineering team; Srihari Gowri Shankar and Brian Cox. Both have joined Markey as Design Engineers.

Srihari recently graduated from UC Davis with a Master's Degree in Mechanical Engineering. His primary focus was in the area of Dynamics & Control Engineering.

Brian graduated from the University of Washington with a Bachelor's Degree in Mechanical Engineering in 2011. He focused his University studies on Computer-Aided Engineering and a Human-Powered Submarine Design.



Shankar



Cox

Ferry Operator Improves Efficiency Using Trimble's Nomad

A paper ticket system created inefficiencies for FRS, a ferry operator based in Northern Germany, which operates two vessels on the Helgoland – a high-speed catamaran with 579 seats and a traditional ferry with 1000 passengers. The problem: Paper tickets required more time to process during the boarding

process, and the lack of an electronic connection between the ticket and the database meant tracking tickets was difficult. Martin Borus, an IT expert with FRS, was unhappy with ticket operations, because they did not provide timely information to the company, and reselling unredeemed tickets was costly. Under the

paper ticket system, tickets were torn and collected as passengers boarded the vessel. The collected stubs were then taken to an office where they were scanned, often days later. Martin wanted a new system that would solve three key issues:

1. Speed up the boarding process.
2. Allow for seamless online ticketing.



With the old system, tickets were either purchased at an outside location or online. Online tickets were sent through the mail or the passenger had to pick them up at a designated ticket office.

3. Speed up and improve quality of data collection. Inefficiencies in data collection were significant. Government regulations require FRS to report passenger lists within 30 minutes of a request. That was very difficult with the paper tickets. FRS also needed to sync with the latest ticket information at each port. Cancellations often resulted in available space, but no way to know that so the ticket could be resold. Passengers received a refund, but the company lost a revenue opportunity.

Martin started looking for a powerful handheld computer rugged enough for use on the vessels, as well as software. Martin and his IT team quickly decided that it would be difficult and time consuming to define their problem well enough to an outside software provider. So, the IT team wrote the software during the winter off-season. They developed an extensive set of features for a computer that would need to operate under outdoor conditions. After seeing a video of Trimble's Nomad operating perfectly after being submerged in water and then using it on another project, the IT team agreed that the Nomad was their computer of choice. The new software allowed FRS to load pre-approved passenger lists onto the computer for each departure. The lists, generated from ticket sales, were transferred to the Nomad via a mobile phone card, which contained barcodes and cancelled ticket numbers. During ticket scanning, the crew used the Nomad to determine if a scanned ticket number was valid. The operator could then either accept the ticket or query the online system for status of the ticket.

With the Nomad, FRS now had a computer with a powerful barcode scanner that worked in rain or direct sunlight. The integrated scanner also allowed for expanded ticketing options. After one season, other ferry operators have noticed the efficiencies, and the company has sold its software to other operators.

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<p>April Ad Close: Mar 22</p> <p>Offshore Deepwater Annual</p> <p>Market: Offshore Wind & Renewable Energy</p> <p>Technical: Offshore Service Vessels</p> <p>Directory: Deck Machinery, Winches & Ropes</p> <p>Special Report: The Netherlands</p> <p>OTC April 30 - May 3</p>	<p>May Ad Close: April 26</p> <p>The Green Ship Edition</p> <p>Market: Patrol, Escort Craft & RIBs</p> <p>Technical: The Integrated Bridge: Modern Bridge Technology & Technique</p> <p>Directory: Posidonia 2012 Preview: New Technology Guide</p> <p>Special Report: Middle East Maritime Cluster</p> <p>RoRo May 22-24 MACC June Posidonia June 4-8</p>	<p>June Ad Close: May 24</p> <p>Annual World Yearbook</p> <p>Market: Military Might: Innovative Designs</p> <p>ROUNDTABLE: Information Technology & Software Solutions</p> <p>Directory: Maritime Fuels, Lubricants & Additives</p> <p>Don Sutherland Photo Contest</p>
<p>July Ad Close: June 2</p> <p>Arctic Operations</p> <p>Market: Oil Spill Response & Recovery</p> <p>ROUNDTABLE: Coatings & Corrosion</p> <p>Directory: Training & Education – Facilities & Systems</p> <p>Special Report: Brazil</p>	<p>August Ad Close: July 26</p> <p>The Shipyard Edition</p> <p>Market: Maritime Communications</p> <p>Technical: Maritime & Shipbuilding Tools</p> <p>Directory: SMM 2012 Preview: New Products & Technologies</p> <p>Special Report: Singapore Maritime Cluster</p> <p>SMM Sept 4-7</p>	<p>September Ad Close: Aug 23</p> <p>Marine Propulsion Annual</p> <p>ROUNDTABLE: Diesel Engine Manufacturers</p> <p>Technical: Marine Salvage & Recovery</p> <p>Directory: Insulation, Pipes, Pumps & Valves</p> <p>Rio Oil & Gas Sept 17-20</p>
<p>October Ad Close: Sept 20</p> <p>Marine Design & Construction</p> <p>Market: Maritime, Port & Harbor Security</p> <p>Technical: Deepwater Floating Production Systems</p> <p>Directory: CAD/CAM & Other Software</p> <p>SNAME Oct 24-26 MAST Americas Nov 14-16 Inmex China Nov 21-23</p>	<p>November Ad Close: Oct 25</p> <p>Workboat Annual</p> <p>Market: Offshore Service Vessels (OSVs)</p> <p>ROUNDTABLE: Workboat Academy: Training & Education</p> <p>Directory: Heavy Lifting: Deck Machinery & Cranes</p> <p>Special Report: Turkey</p> <p>Int'l Workboat Show Dec 5-7</p>	<p>December Ad Close: Nov 22</p> <p>Great Ships of 2012</p> <p>Market: Port & Harbor Dredging Annual</p> <p>Technical: Maritime Fire & Safety Products & Systems</p> <p>Directory: World Shipyards: Newbuild, Repair & Conversion</p> <p>* Please note that the publisher reserves the right to alter this editorial calendar. All planned features are subject to change in light of changing industry trends and developments.</p>

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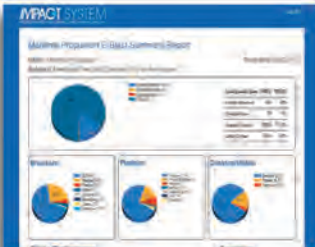
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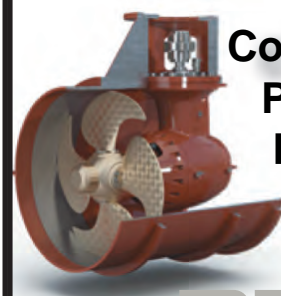
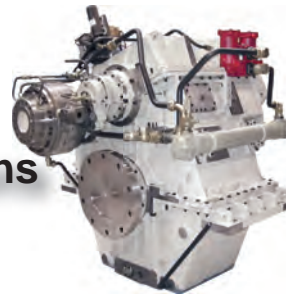
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