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2013
Volume 3
Number 1

Maritime Professional

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(Image: MAN)




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**ON THE COVER**

*Giuseppe Bono, CEO Fincantieri, knows a thing or two about risk. He's at the head of what is arguably Europe's largest, most diverse, progressive and aggressive ship construction entities, Fincantieri - Cantieri Navali Italiani S.p.A. Mr. Bono has his hands full combating lower-cost competition from the East, delicately balancing the convergence of a bad world economy, a worse Italian economy, a publicly owned shipyard with a new government coming, and increasing efficiencies while keeping the unions happy.* **p. 26**

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(Photo: Austal)

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(Photo: Boskalis)

## insights



## interviews



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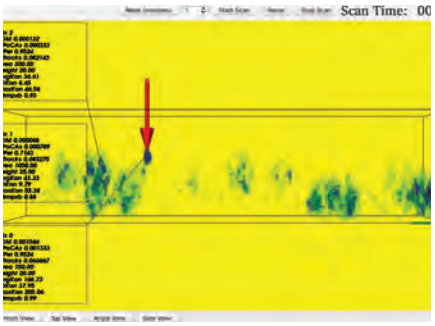


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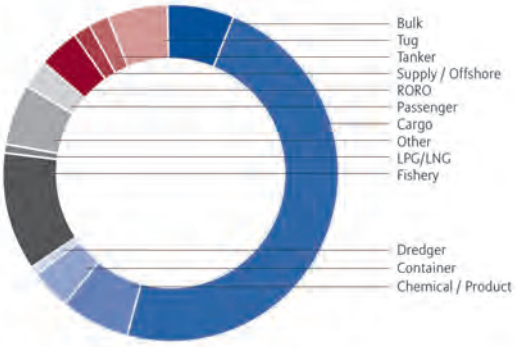
## Losses by type of vessel

12 months to 25 Nov 2012




| | |
|---|---|
| Bulk | 7 |
| Cargo | 51 |
| Chemical / Product | 7 |
| Container | 4 |
| Dredger | 1 |
| Fishery | 12 |
| LPG/LNG | 1 |
| Other | 6 |
| Passenger | 3 |
| RORO | 4 |
| Supply/ Offshore | 2 |
| Tanker | 2 |
| Tug | 6 |
| Total | 106 |

Source: Lloyd's List Intelligence Casualty Statistics. Analysis: AGCS.

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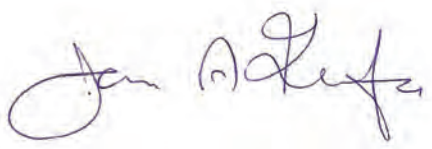
# *Risk:* Not Easily Defined

At the risk of overstating the obvious, and if it seems to you that it isn't getting any easier to balance the books for your far-flung maritime enterprise, then you probably find yourself in very good company. Like, for example, the four chief executives hailing from the diverse market sectors of shipbuilding, global classification societies and ship operations, as profiled in this edition of ***Maritime Professional***. And, because they can explain it far better than I can, I won't steal their thunder. Read on to see what you and they all have in common. There's no risk in that, is there?

As we publish this edition of ***Maritime Professional***, another high profile, but nominally less serious incident has given the cruise sector another black eye. From my chair, I can't even begin to calculate the net effect of that casualty, nor would I try. But, the messy episode occurring in the U.S. Gulf of Mexico serves to remind us once again that with any type of ocean commerce, managing the inherent risk that comes with all of it will be the primary factor that will determine which businesses succeed and those which will not. And physical, operational risk is just one part of the larger picture.

I have an old friend whose job it is to assess 'risk' for his energy related employers. He does this primarily through the development of sophisticated modeling software programs that crunch the myriad variables involved with their projects and, I suppose, the probability of failure or success somehow is magically produced on the other end. And, I've always thought that this MBA/CPA qualified individual somehow lives life on a higher plane than the average person – I can't even imagine what goes through his mind as he works the numbers. That said, I also wonder how anyone could possibly predict the continued growth and success of the world's cruise line businesses, especially in the face of the infamous *Costa Concordia* disaster. And yet, that's exactly what has happened.

Within these pages, the full spectrum of maritime risk – finance, safety, piracy and port security, vessel design, the environment, etc. – unfolds and provides a template from which you can benchmark your own operations. You'll also realize that making money in a challenging ocean freight market can be done and, more importantly; why. Also in this edition, we outline why the carefully considered up-front design of your next newbuild project, including what fuel you decide to burn, may be just as critical as the charter rate that you negotiate for that vessel after it is launched. Like the global classification societies that toil to mitigate and eliminate risk from the maritime perspective, this edition of ***MarPro*** serves as your primer for a safer, more financially secure operation.



*Joseph Keefe, Editor* | **keefe@marinelink.com**

## THE LIST People & Companies in This Edition

# Insights

## Cruising With Confidence

**Cruise Lines shrug off tragedy, bad publicity, new regulations and a weak economy to post impressive growth**

**By Barry Parker**

*In the year since the Costa Concordia tragedy, the cruise industry has seen a raft of new regulatory initiatives; in part developed in conjunction with industry associations. Harmonization of multiple regimes is the new mantra for industry stake-holders. In late December, the Florida-based Cruise Line Industry Association (CLIA) announced a tie-up which will result in one worldwide voice for the industry. This development parallels efforts at the IMO, where unified policies regarding lifeboat muster drills are expected to be incorporated into SOLAS; they would come into force in mid 2014. Additionally, the IMO's Maritime Safety Committee agreed to add measures developed in conjunction with industry to its Guidelines on Passenger Ship Safety.*

*Meanwhile, the technically innovative but painstaking salvage effort at Giglio, where the vessel grounded off the Tuscan coast, by Titan Salvage and an Italian partner, is continuing. If all goes according to plan, the Costa Concordia, righted in a complex operation and then refloated, would be towed to a yard for scrapping in the summer of 2013. No matter how competently carried out the salvage operation, however, the entire episode reflected badly on an industry that promotes maritime driven fun and safety.*

### Perceived Fear; Some Growth Instead

In the wake of the January 2012 tragedy, there were fears that travelers' fears would keep the passengers away from cruises. In an enviable success story, and against the backdrop of a less than rosy worldwide economy, the industry that had grown by 7.5% annually from 1980 through 2011 (according to statistics from the CLIA), managed to engineer a major growth spurt occurring in 2010 and 2011 alone – when total passengers carried exceeded 16 million.

In mid-August, 2012, CLIA's President and CEO, Christine Duffy, told the travel industry pres, "I think that people understand that what happened with the Costa Concordia tragedy was an isolated event … and … is not a systemic issue or problem." When asked about bookings, she suggested that a sampling of CLIA-affiliated travel agents were seeing a year over year increase in bookings.

Reports from large cruiseship owners bear out what CLIA's Duffy described as admittedly "…anecdotal evidence…" at that time. At the end of November, 2012, and as Costa Cruises' parent company, Carnival Corporation was raising US $500 million in 5 year notes, the rating agency Standard &

Oceania Cruises' MARINA at Miami

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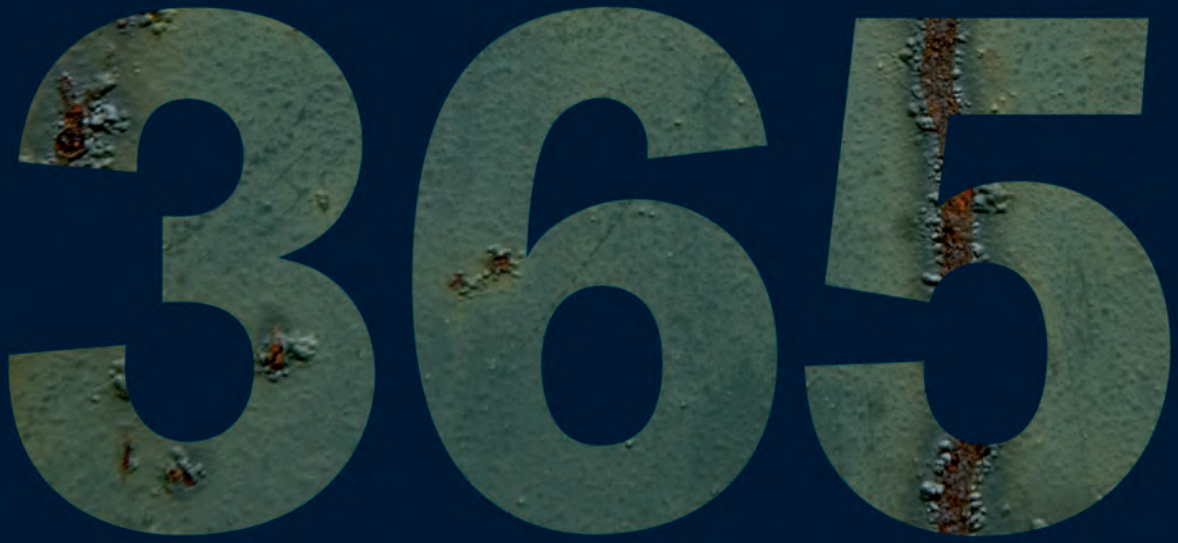

to general economic malaise as a concern. S & P explained: "We believe that the cruise sector has, to a large extent, recovered from the impact of the Costa Concordia grounding and should experience a low-single digit next yield growth in 2013, although the Eurozone recession remains a key risk factor." The S&P report added that both Royal Caribbean and NCL Corporation (who round out the "Top Three" in the industry's league tables) "… have reported that 2013 fleet-wide bookings are pricing higher compared to this year's (2012) bookings, and pricing remains strong across the industry for Caribbean itineraries.

The companies themselves have offered upbeat expectations, buttressed by the predominant position of the relatively stronger Caribbean segments compared to the more troublesome European businesses. On Carnival's late December 2012 conference call with investment analysts, its Chairman, Micky Arison, told investors, "I think we've been consistent in saying that recovery at Costa is not a one-year issue. It's going to be multiple years. And we're forecasting a recovery of about half the yield deterioration." In its previous quarter, Carnival's earnings release had explained that, "For the remainder of the year and first half of 2013, cumulative advance bookings excluding Costa are still behind the prior year at slightly lower prices. For Costa, cumulative advance bookings have shown considerable improvement but are still five occupancy points behind the prior year at lower prices over the same period." Costa is important for Carnival, but it is also part of a diversified portfolio. For 2013, Carnival was forecasting that its business program was expected to be 19% in the Mediterranean, and 12% in Europe (outside the Med). By mid 2013, two Costa vessels (Costa Atlantica and Costa Victoria) were expected to be deployed in the burgeoning Asian markets, of-

**The vibrant cruise market continues to dominate the Miami landscape.**

Photo Credit: Port of Miami(

fering Southeast Asian itineraries.

Royal Caribbean, ranked behind Carnival, also noted the impact of the Costa Concordia. RCL's Chairman and CEO, Richard Fain, told investors on its Q3 2012 conference call, "…we are still navigating an environment overshadowed by severe political and economic turmoil and the tail of the Costa Concordia effect." Mr. Fain, speaking to investors in late October, 2012, added, "The European market though continues to be the most puzzling market we're facing. The impact of the tragedy in Italy was obviously centered in Europe. Now that impact does continue to wane, but some of the effects still linger, and we continue to learn and be proactive in trying to recover from it."

## Headwinds

The bottom line, looking back, is that the cruise sector did see headwinds from last January's accident (ominously, on Friday the 13th), but also from Europe's economic downturn. RCL's Fain, responding to an analyst question about the likely improvement in his company's yield, answered, in part: "… we've effectively raised it back to the original forecast of around 3%. It's difficult for us to really pinpoint how much of that was due to the (Costa Concordia) incident, how much of that was due to a softer European economy." Yet, RCL was telegraphing full speed ahead during 2012's final week, when it announced an order for a third "Oasis" class 5,400 passenger vessel, to be delivered from STX France (in a switch from STX Finland - which built the two prior vessels) in 2016 at an undisclosed price, but presumed to exceed $1 billion.

Separately, in mid January 2013, private equity firms TPG and Apollo, along with an Asian cruise operator Genting, were able to float off a $446 million chunk of their investments in Norwegian Cruise Line Holdings (the parent of Norwegian

Cruise Lines, or NCL). Genting is the parent of Star Cruises, owner of NCL prior to Apollo's original 2007 investment in the sector. A previous attempt at an IPO, in late 2010, had foundered, but investors' appetite changed dramatically by early 2013. Within the requisite risk disclosures within the lengthy prospectus, there is no mention of Costa Concordia specifically, though one section notes the potential for "Adverse incidents involving cruise ships" could negatively impact customer perceptions - as well as insurance availability and premiums.

The positive tailwind behind the Cruise sector, a year after last year's accident, can be felt from an S&P rating opinion, regarding NCL's credit ratings (on debt) issued as the IPO road shows were beginning. S&P's positive outlook, portending likely improvements in the company credit rating (from "B+" to the slightly better "BB-") and upticks in ratings of individual notes outstanding, was predicated on IPO proceeds being used to pay down debt. As NCL's multi-year deleveraging program moves forward, less debt translates into less financial risk. In its review of NCL, S&P also reiterated its forecast of a likely industry recovery and its forecast for renewed growth after a sluggish 2012.

Though explicit business forecasts are not provided in the Norwegian Cruise prospectus, the company opines, "We believe that improving leisure travel trends along with a relatively low supply outlook in the near term from the Major North American Cruise Brands lead to an attractive business environment for our Company to operate in." It also points out that, for North Atlantic players, Europe's low market penetration provides a big upside, with the European vacation market cited as the "…fastest growing…" leisure segment globally.

### The View From 'Cruise Central'

From the vantage point at the Port of Miami, where voyages for most of the cruise majors originate, the outlook is bright. Paula Musto, Director of Public Affairs at the cruising hub, told ***Maritime Professional***, "Port Miami is looking forward to a strong 2013 cruise season with its largest expansion ever of new cruise brands and new build vessels. The parade of new cruise ships began with the arrival of Regent Seven Seas Cruises which re-located to Port Miami from Port Everglades last fall." Ms. Musto ticked off a list of additional successes for the 2013 cruising season: "Disney Cruise Lines' Disney Wonder, will make Port Miami Disney's second homeport in the State of Florida. We will also be attracting Carnival Cruise Lines' newest and largest ship, the Carnival Breeze, Oceania Cruises' newest ship, the Oceania Riviera and Celebrity Cruise Lines' newest ship, the Celebrity Reflection. In late 2013, MSC Cruises will begin sailing from Port Miami when the upscale European line brings its newest ship, the MSC Divina, to Miami."

The anniversary of last year's Costa Concordia has passed. Terrible and tragic as it was, the accident has nevertheless moved out of the popular psyche. This is evidenced by the enormous success of the NCL stock offering, which was sold

**Cruise Industry by the Numbers**

| Brand | 2013 Ships | 2013 Capacity | '13 PCT Market | 2009 Ships | 2009 Capacity |
|---|---|---|---|---|---|
| Carnival Group | 103 | 208,710 | 48% | 73 | 147,016 |
| RCL Group | 40 | 97,610 | 22% | 32 | 75,086 |
| MSC | 13 | 31,250 | 7% | 10 | 21,808 |
| Norwegian | 12 | 30170 | 7% | 10 | 22,318 |
| All Others (33) | 115 | 70,860 | 16% | *** | *** |
| Big Four (09-13) Growth: | + 125 | + 101,512 | 0.38% | | |
| TOTALS (END 2013) | 283 | 438,600 | 100% | | |

Source (2013): Cruisemarketwatch.com & CLIA

at $19/share, actually $1/ share above the range anticipated by bankers. In early trading, it rose as high as $26/share, before backing down. By late in the year, passengers on both newly delivering ships (including those that will call at Miami) and existing vessels will all be benefitting from the new SOLAS rules (even in advance of when they officially enter into force), likely with little thought of the terrible disaster which spawned them.

As this edition of ***MarPro*** went to print, all manners of media outlets were all abuzz with reports of another mishap, this time involving a Carnival vessel. The travails of passengers aboard Carnival Triumph, graphically depicted with smartphone videos (sewage and all), were absolutely front page material. Carnival itself seemed to be in full PR damage control mode against an onslaught of social media reporting and the possible lawsuits that could soon follow. Nevertheless and at the end of the day, cruise ship bookings were doing fine, more than one year after Costa Concordia – a true maritime "disaster" and far worse than Carnival Triumph. In the most recent incident, nobody was killed.

A year from now, in early 2014, it's likely that the business will be riding further upward on its growth trend. For the cruise industry itself, it has been a time of lessons learned and later applied, which in part have made the rebound possible. Combined with a slowly improving economy and the positioning of new and existing assets in the right markets, Cruise Lines are confidently moving forward on all fronts; full speed ahead.


### The Author

**Barry Parker**, bdp1 Consulting Ltd provides strategic and tactical support, including analytics and communications, to businesses across the maritime spectrum. The company can be found online at www.conconnect.com

Insights

# Reducing Boatbuilding Risk: Start with Requirements

By Brian Forstell

*Managing the risks associated with a new ship acquisition, whether commercial or military, can be a daunting process. For the commercial operator, the new ship must make a reasonable profit after the cost of design and the annual operating costs are accounted for. The warfighter must fit his new acquisition into ever-shrinking fiscal budgets while ensuring that a vital mission capability is met. Among the risks that must be considered are:*

- ***Programmatic Risk** – Will the selected hull form and associated requirements successfully meet the owner's needs?*
- ***Cost Risk** – Are the desired requirements affordable, and will they result in a successful and profitable operation?*
- ***Technical Risk** – Are the desired requirements driving the ship design to a point that is beyond the current state-of-the-art?*
- ***Schedule Risk** – Will the desired requirements result in a ship design that can be designed and built in a timely manner?*

All of these risk areas ultimately influence cost in one way or another. The common theme to all risk areas is requirements. Requirements are often set by what owners/operators would like to have and not necessarily by what they have to have. This "Requirements Setting Practice" is seen in both the military and commercial world and has resulted in numerous ventures failing before they ever really had a chance to succeed.

**CDI applied its proprietary ship design synthesis process and engineering model to this ship.**

History has shown that design decisions that are made very early in the ship design process impact approximately 75% of the total ship cost as shown in Figure 1. These design decisions by the naval architects are primarily driven by the requirements that were provided to them.

## Requirements Trade-Off Analysis

Considering the significant impact that design requirements can have at a very early stage of the ship design process, the logical approach to maximizing the Cost/Risk/Benefit trade-off is to perform a robust "Requirements Trade-off Analysis" very early in a program's life. By doing so, the impact that requirements have on all the risk areas is well understood. Thus, informed decisions can be made at a time when overall program success can be most readily assured. Such an approach to early stage ship design has been the cornerstone of CDI Corporation's practices and procedures for several decades.

To efficiently do this, CDI developed a proprietary ship design synthesis process and engineering model that has been successfully used to help assess the cost of requirements, and the cost versus capability of new technologies, for naval and commercial surface ships. Assessing and understanding the cost of escalating requirements and technology options via "what if" games early in the design process has been the principal key to minimizing or eliminating the potential for spiraling cost over-runs.

Ship design, however, is one of the most complicated engi-

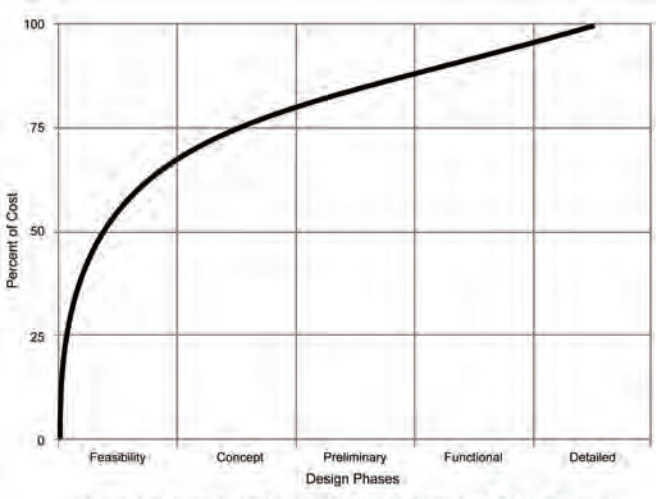


**Figure 1 - Percentage of Cost Locked In as a Function of Design Maturity; Absolute Costs To Be Determined by Subsequent Phases**

neering tasks. There are a large number of systems involved, and the interactions between and among them are so complicated that the description and quantification of every aspect of them is extremely difficult, if not impossible. The larger and more elaborate a computer model is, the more difficult it is to use and the less reliable it will become. Even in the traditional detail design process, where every detail is sought, there are still margins on the weight, space and power to account for the accumulation of many small uncertainties, as well as the vagaries of individual and shipyard work practices. The "exact" answer is extremely difficult to achieve, if it exists at all.

The CDI ship design synthesis tool has been, and continues to be, a living and ever-evolving program. Even though it is built with all the expertise accumulated over more than 35 years, and has gone through extensive debugging and testing, minor problems are still possible and improvements are almost certain to be necessary. Additionally, modifications are inevitable in order to keep up with new technology development. Electric propulsion, for example, is undergoing significant evolution. Catamaran technology is evolving quickly as faster and bigger ships are introduced to the market. Trimarans are also gaining significant recognition. Fuel cell technology is advancing rapidly as well. Technology of this nature needs constant and careful data gathering and monitoring, and this will be vital to maintaining CDI's ship design synthesis process as a premier technology assessment tool.

## Ship Design Synthesis Engine

The ship design synthesis engine is where the simulation of the ship design process is carried out. It starts with an initial estimate of ship displacement. The geometry module generates a set of offsets to provide the necessary hull displacement. With the offset information, the structure module predicts the structural loads and, based upon the selected material properties and starting with a minimum plating gauge, it sizes the hull plating and structural scantlings to resist the predicted seaway loads and then sums up the structure weights. The resistance module then calculates the total drag. With the required thrust known (equal to drag), the program then calls for the propulsor module to design the propellers and/or water-

jets. The shaft power required by the propulsor is then divided among each engine. The program then proceeds to design or select the engines, motors, generators and transmissions, and adds up all the propulsion machinery weights, deck area and volume.

The next step is to design the ship service electric plant and estimate the total electrical system weights, deck area and volume, which is accomplished in the electric plant module. If manning is not a direct input, the manning module will predict a complement mix based on the type and size of the ship, its various systems, and the automation level specified. The auxiliary module sizes all the auxiliary machinery and sums up their weight, deck area and volume for the auxiliary machinery group, while the outfit and furniture module assesses the total outfitting group weight, deck area and volume. Finally, various aspects of ship performance and cost are evaluated and the total fuel load is determined. Detailed weight updates are then made to establish the lightship weight, and then all the ship's loads are calculated. Arrangements are then created to check for sufficient deck area and volume. Insufficient space results in the required volume being added to the ship's superstructure.

Finally, a balance check is performed to determine if the weight used to establish the hull form matches the bottoms-up weight estimate just performed. This process is iterated around the spiral until two successive weight estimates are within 0.5% of each other. The Longitudinal Center of Gravity (LCG) and Vertical Center of Gravity (KG) are then estimated, based on the location of major systems. LCG is then matched to the Longitudinal Center of Buoyancy (LCB) and intact stability is calculated based on hull form offsets and KG, comparing area ratios and Metacentric Height (GM) to the corresponding stability standards to determine if the design has adequate intact stability. Cost analyses are then performed to determine acquisition and life-cycle cost. The final result is a balanced design that meets the specified mission requirements with sufficient internal volume for all required items. From here, the hull lines are developed and faired using other programs such as the NURBS modeling software

**CDI applied its ship design synthesis process and engineering model to US Navy T-AKE ships.**

"Rhinoceros," and, along with an estimate of the radii of gyration in pitch, roll and yaw based on the mass distribution, all geometries and mass properties are ready to feed to other programs such as those for predicting seakeeping.

### Unique Model: User Friendly Interface, too

The model is unique inasmuch as it uses, to whatever extent practical, algorithms derived from first-principle physics rather than from empirical data to characterize all major subsystems and their relationship to the overall ship. This approach was taken in order to ensure that new technologies were realistically modeled without being unduly biased by existing (and possibly outdated) trends in ship or ship-subsystem design.

The software features a user-friendly Excel interface and is capable of being used effectively by designers to assess the whole-ship impact of changes in technology and operational requirements. The code uses an object-oriented architecture and executes very quickly, even on a standard PC. The time taken to produce a single, balanced design is typically just a few seconds. Large parametric runs, where numerous combinations of parametric variations can be analyzed, can thus be executed in minutes. Effectively, the tool frees the designer from the tedious, iterative calculations of the naval architecture design spiral. This enables users to spend their effort assessing the results, observing trends, and determining the desired configuration.

The information contained in the parametric results is at least as important as the details of an optimized solution, and the intent is to provide the user with the information needed to make the appropriate choices so they can maximize their Cost/Risk/Benefit assessment.

**Brian Forstell** is Vice President and General Manager, Government Services, for CDI Corporation's Global Engineering and Technology Solutions business. Forstell has earned a reputation as one of the industry's leading innovators in the research, design and development of advanced marine vessels. Brian has a Bachelor of Science degree in Aerospace and Ocean Engineering from Virginia Tech University.

Insights

# Maritime Mergers and Acquisitions: All About Risk

**By Harry Ward**

*Risk is at the heart of all financial transactions. That said; in cases of Mergers and Acquisitions, buyers and sellers of companies can and do have contrasting goals and very different notions of risk in a deal. Sellers often take their company or division to market in order to reduce risk, exchanging an operating unit for cash or securities. In the case of a closely-held business, the owner may hold almost all of his or her wealth in the stock of one company and selling the company is the path to diversifying their personal portfolio.*

*For buyers of companies, the decision of whether to make an offer and at what price is underpinned entirely by risk analysis. Each potential acquirer in a competitive auction process will build financial models to determine the value and structure of their offer. After carefully analyzing the target company's operations and financial statements, the acquisition team develops a projected cash flow forecast that reflects the new division's potential under their ownership. The team then determines the current value of those estimated cash flows using a factor called the "discount rate." After the transaction, there may be some sharing of risk between buyer and seller in the form of deferred payments to the seller (an "earn-out") or a note held by the seller.*

## Ship Building and Repair – Consolidation

Buyers make acquisitions for a number of strategic reasons such as to build economies of scale, remove competitors, or diversify their product and service offerings. One trend that emerged in 2012 was consolidation in the ship repair market. **General Dynamics NASSCO** acquired two major US Navy ship repair yards in the Norfolk area in anticipation of a strong overhaul and repair market in the coming years. GD NASSCO followed its 2011 purchase of Norfolk's **Metro Machine** with the acquisition of nearby, privately-held **Earl Industries** in the summer of 2012. Together these acquisitions provide GD with greater scale, a strong East Coast presence and a number of new government contracts for the repair of multiple combat and support ship classes.

**Vigor Industrial** continued to make news in the shipbuilding and repair M&A market as well. After acquiring **Todd Pacific Shipyards** in 2011 for $130 million, Vigor reached beyond their stronghold in the Pacific Northwest and acquired **Alaska Ship and Drydock** in Ketchikan after raising $75 million through private equity firm **Endeavour Capital** of Portland, OR. Vigor owner, Frank Foti, continues to build scale through acquisitions, while diversifying the company's construction and repair capabilities to include cargo fleets, barges and workboats, ferries, and US Navy and Coast Guard vessels, among others.

## Kirby Corporation: Mastering Risk

It is impossible to discuss strategic scaling in the maritime industry without mentioning Kirby Corporation. Publicly-traded **Kirby** (NYSE: KEX) has been almost single-handedly consolidating the inland and coastwise tank barge markets for a few years now. The company has been able to utilize its large borrowing capacity at reasonable rates to finance several acquisitions, and some of the financial risk is offset by protections afforded by the Jones Act. The supply of vessels in the Jones Act markets is highly price "inelastic" since new capacity cannot be readily added to the market, meaning that cash flows can be calculated at least somewhat more readily than in a market with more flexible supply. Table 1 shows some notable recent Kirby acquisitions, and they seem to have had a good degree of success overall and exhibit strong cash flows going into 2013.

On the private equity front, **JF Lehman & Company** has

**Table 1: Key Kirby Corp Acquisitions**

| Date | Acquired Company | Deal Value | Description |
|---|---|---|---|
| July 2011 | K-Sea | $604M | 58 Tank Barges and 63 Tugs, US Coasts, Alaska, Hawaii |
| Feb 2011 | Enterprise Marine | $53M | Bunkering Operations for Florida and Gulf Coast |
| Feb 2011 | United Holdings | $270M | Diesel/Oilfield Service Equipment Manufacturing & Service |
| Sep 2012 | Allied Transportation | $116M | Coastwise Petrochem and Sugar Tug & Barge |
| Dec 2012 | Penn Maritime | $299M | Refinery, Asphalt, Crude: Tug & Double-Hulled Tank Barges |

recently been almost as busy as Kirby. Most recently, the investment firm added to its portfolio of maritime services companies by acquiring **IMECO**, of Iron Mountain Michigan. IMECO provides electro-mechanical solutions for government and commercial customers, and parallels Lehman's recent investments in marine repair and overhaul companies such as **US Joiner, Turnbull** and add-on acquisition **JCI Metal Products**.

On the selling side of the equation, the investment group that acquired **United Maritime Group** from TECO Energy in 2007 spent much of 2012 divesting multiple UMG divisions to a range of different buyers. The group paid down its significant debt load by selling **US United Barge LLC** to **Ingram Barge Company** in April for $219.8 million; unloaded **US United Bulk Terminal LLC** to **Bulk Handling USA** for $216 million in May; and in October sold **US United Ocean Services** to **International Shipholding Corp** (NYSE: ISH). United Maritime focused on serving the domestic and export coal and petroleum coke markets. Bulk rates have been under downward pressure since the acquisition from TECO in 2007, and the investor group successfully divested the units in a very short period of time. The struggles of bulk carriers are reflected in the poor three-year performance of the bulker public stock index (Figure 1).

## Bright Spots – Pacific and Offshore

Despite the continued doldrums for much of the marine industry worldwide, a few markets have shown strength in recent years. Emerging opportunities in Australia related to defense, oil & gas and mining have recently driven a string of acquisitions there. Britain's **Serco Group plc** (Serco) acquired the remaining 50% of their joint venture **DMS Maritime Pty Ltd** from their JV partner **P&O Maritime Services**. DMS, one of Australia's largest maritime service operators for defense and commercial customers now has a market value of about USD $260 million, and is well-positioned to benefit from emerging requirements of the Australian Defence Force. **BMT Group** acquired Western Australian marine and coastal environmental protection specialists **Oceanica Consulting** in November 2012; and **Champ Ventures** joined with **HarbourVest Partners** to purchase an 85% stake in Australian shipping company **Sea Swift** to serve remote mining and construction enterprises in and around Queensland. Finally, **Matson Navigation** extended its reach into the South Pacific

Figure 1: 3-Year Public Maritime Stock Indices


with the acquisition of **Reef Shipping** in Auckland, New Zealand. Reef serves a number of island nations which are all new markets for Matson. Positive news continues to flow from the US offshore industry as production increases and operators continue to move assets back into the Gulf Coast region from West Africa and Brazil. The offshore stock index remains relatively strong (Figure 1), and M&A activity may therefore pick up in the coming year. **Harvey Gulf International Marine** acquired relatively new supply vessels from **Bee Mar LLC** offshore for $243 million in September. Bollinger Shipyards built the PSV's on spec, and set up Bee Mar as an operating company when they found little market for the vessels. Harvey Gulf has added the Bee Mar boats to their growing fleet of "green" vessels and they currently have two LNG-powered OSV's under construction at TY Offshore.

Risk management is a critical skill in the asset-heavy marine industry, and numerous players are perpetually evaluating their exposure level and modifying their risk exposure. Mergers and Acquisitions are an excellent window into the financial risk landscape of the industry, and we will continue to track M&A activity that has been increasing steadily since the aftermath of the financial crisis.


### The Author

**Harry Ward** leads the transportation and logistics practice at The McLean Group, a middle-market investment bank based in the Washington, DC area. Mr. Ward has executive management experience in the marine industry and focuses on mergers and acquisitions for mid-sized companies. He is a US Naval Academy graduate and earned an MBA at San Diego State University.

**Chiarello**
**Tote Inc.**

**Bono**
**Fincantieri**

**Madsen**
**DNV**

**Perciavalle**
**Austal USA**

# Risk Breakers

***Risk is ubiquitous on the waterfront, and the effective identification, mitigation and management of that risk is critical to long-term success.* Maritime Professional *delivers insights from four acknowledged industry leaders from four distinct sectors and geographic regions as to the secret of their success.***

***By Matteo Bianchi, Joseph Keefe & Greg Trauthwein***

# Henrik O. Madsen

## CEO, DNV

***Risk is a mantra at Det Norske Veritas (DNV), and to be fair, at every major classification society. By their very nature, the identification, management and mitigation of risk runs through every aspect of class. Sitting atop DNV – and if the recently announced merger goes through, the combined DNV & Germanischer Lloyd (GL) – is Henrik O. Madsen, CEO, who shares with Maritime Professional his insights on managing risk in the maritime and offshore sectors.***

While DNV is adept at steering its clients through risk, the organization itself is embarked on a venture – the proposed merger of DNV with German classification society (GL) – that comes with its own brand of risk. "First of all, during the negotiations we did agree on a business plan for the next three years, as well as an integration plan," said Madsen in a recent interview from his office. "Some of the important elements that we have agreed on are for the vision of the company; we have agreed on the values and leadership principles. So the foundation on which we build this is really very strong."

So while the organizations file mountains of paperwork globally to the specification of the various national competitive authorities, the fine details of what could be a classification behemoth – more than 17,000 employees globally with expertise in the oil & gas, renewable energy and power sectors, maritime and among the global top three within management system certification – takes shape.

"Also, we were very similar in opinion on the importance of technology, technology leadership and the need to invest in that to support our industry, to support our customers. So I think some of these risks were mitigated very well from the outset. Personally, what I see is the biggest risk is during the integration period is to ensure we really keep focused on our customers. We can't take the eye off of our customers and their needs." And it is the customers that ultimately benefit from the collaboration, according to Madsen. "If you are a ship owner you will see the combined DNV & GL with an even denser station network around the world, ready to support you anywhere in the world in a better way. And these stations, which number more than 300, will have a wider and deeper competence of expertise."

### TECHNOLOGY TO THE LEAD

While human factors are routinely cited as the leading cause in maritime accidents, Madsen has a strong adherence to technology advances as the path to rationalizing maritime operations to optimal safety standards. "In DNV we always had the

"Sometimes I'm surprised how long it takes to take up new requirements on board. I think those who wait until the last minute do run a risk. (For example) if you look at sulfur requirements coming in 2020, 2020 is coming very fast. It just seems that some are slow in understanding that they must have a plan. There are different options, but it is necessary to have a plan."

commitment to invest 5 to 6% of revenue on R&D and innovation. And in the joint plan (the combination of DNV and GL) we are committed to invest 5% in R&D and innovation," said Madsen. "So in terms of money, that will be about $150m of our own money invested every year in R&D and innovation. This is a huge commitment." While technology advances in the maritime field have evolved rapidly in the past decade, driven both by the speed of business (ie. computing and communication technologies) ashore as well as by regulation, the reluctance of the maritime masses to embrace and incorporate new products and systems is, at times, maddeningly slow.

"Sometimes I'm surprised how long it takes to take up new requirements on board. I think those who wait until the last minute do run a risk. (For example) if you look at sulfur requirements coming in 2020, 2020 is coming very fast. It just seems that some are slow in understanding that they must have a plan. There are different options, but it is necessary to have a plan. The same goes for ballastwater treatment systems: of course the convention has not yet been ratified but owners and operators should have a plan for how to do it when it does come. And it will come," Madsen said. "I come from the R&D arm of DNV; we tell all of our customers that technology can solve many problems whether related to Safety or reliability. We are big believers that if we continue to invest into technology and innovation, it can help to better manager risks."

## THE GLOBAL ECONOMY

Arguably, there has been no greater risk to international business in the past five years than a sluggish global economy, and while a 'down' market is often a ripe one for mergers and takeovers, Madsen said this was not a factor in the decision to merge DNV and GL. "From our side we have tried to make this happen for the last six years and we have tried several times before that too," Madsen said. As proof, he said that when results for both DNV and GL come out, the hallmark will be solid growth. "We had good organic growth rates of 8-9%; in the oil and gas there is a growth of about 15%, while the shipping part is also growing but at a slower rate, slowing down a bit, as will deliveries in the coming few years. In the merger, there are of course going to be some duplicates, redundancies of function that will have to be addressed, but really the merger is a story of growth; we have separately been growing 8 to 9%, and together I think we can grow even better."

"In 2000 we had actually negotiated an alliance type of agreement which eventually fell through. Then in 2006 GL came up for sale and we gave what we thought was a very competitive bid but we didn't succeed. Then we have been talking with the family that did win the bid ever since. The fit between two class societies is by far the best between DNV and GL in all respects. GL are strong on marine warranty, marine operations, jack up technology, they have a good presence in the Middle East; and these were four areas where we wanted to strengthen ourselves. We are very strong on floaters, deep water technology, harsh environment, Arctic and pipelines."

## THE CHANGING ROLE OF CLASS

As class continues to consolidate into fewer, larger and more powerful organizations, debate will rage in many circles regarding the implication to the industries as a whole. But in Madsen's view, it really boils down to clarity of purpose. "Our purpose is to safeguard life, property and the environment. That is the purpose of DNV. It's a very motivating purpose, but we have to be careful to not always end up in a policing role, because all of the competence and expertise that we have should be delivered to our customers in a more proactive means," he said. "We've been trying to bring the competence, our innovation and industry knowledge on a broader scale. But still staying within our roles. We are very clear on our roles. One of the first things that we tell all of our own staff is that we don't certify our own work. Second we don't design, build or operate our customer's structures or management systems."

While DNV has been progressive in recent years to challenge industry, pushing the envelope on the environment and fuel efficiency, amongst others, Madsen maintains that the real power of ascertaining risk and reward lies with industry.

"We have challenged the maritime industry quite a bit, with a challenge in energy efficiency, with a challenge on environmental requirements and to look to alternate fuels like LNG. I think that's also our job because we have so much technical competence to really challenge the industry and bring new technology forward, and then it is up to the industry to use it or not."

**- Trauthwein**

# Giuseppe Bono

## CEO, Fincantieri

***RISK? Giuseppe Bono, CEO Fincantieri, knows a thing or two about risk. He's at the head of what is arguably Europe's largest, most diverse, progressive and aggressive ship construction entities, Fincantieri - Cantieri Navali Italiani S.p.A. Mr. Bono has his hands full combating lower-cost competition from the East, delicately balancing the convergence of a bad world economy, a worse Italian economy, a publicly owned shipyard with a new government coming, and increasing efficiencies while keeping the unions happy. Risk? Mr. Bono lives risk every day, yet still continues to win the lion's share of global shipbuilding contracts. Matteo Bianchi, Maritime Professional correspondent in Italy, recently discussed with Mr. Bono the way ahead.***

**ENG. BONO, THE YEAR BEHIND US WAS DIFFICULT FOR THE SHIPBUILDING INDUSTRY WORLDWIDE, AND FOR THE ITALIAN ECONOMY IN PARTICULAR. HOW DO YOU CONSIDER FINCANTIERI'S 2012?**

2012 has been an extremely difficult year, especially for shipbuilding. Total global investments have been little more than a quarter of those in 2007, resulting in a halving of the number of cruise ship orders. We've done our part by securing almost all of these orders and confirming the dual challenge we set ourselves: on the one hand, to focus on sectors that offer good opportunities for development, and on the other, to maintain our leadership in our traditional sectors.

**2013 WILL BE A YEAR OF CHANGE; ITALY WILL HAVE A NEW GOVERNMENT, FINCANTIERI WILL HAVE TO CONCLUDE NEGOTIATIONS WITH THE UNIONS ... WHAT ARE YOU EXPECTING FOR THIS YEAR?**

We have done our part, and we hope that the institutions responsible for supporting exports will continue to sustain those in this strategic industry for the national economy. We also hope that the unions and workers feel confident about the future by giving their utmost commitment to making our company ever more competitive. Without this determination, the results achieved this year, namely acquisition of basically all the new prototype cruise ships projects in 2012, will be hard to maintain.

**ALSO WITH A STRONG DETERMINATION THIS RESULT WILL BE HARD TO MAINTAIN, AS THE ECONOMY IS STILL IN DOWNTURN.**

Since 1990, Fincantieri has been a world leader in the cruise ship sector; we have delivered 63 cruise ships. Another seven ships are being built or will be built between now and 2016 in the group's shipyards. In addition to the ships under construction, Fincantieri has recently reached two important agreements: with the US group Carnival Corporation for the construction of two cruise ships for the Holland America Line

and Carnival Cruise Lines, and with Viking Ocean Cruises for another two cruise ships. These results confirm Fincantieri's world leadership in the cruise ship sector, even at a time of slowing demand.

**EXACTLY ONE YEAR HAS PASSED SINCE COSTA CONCORDIA SUNK OFF OF GIGLIO ISLAND. HOW IS THE RELATIONSHIP BETWEEN FINCANTIERI AND THE LARGEST CRUISE SHIPPING COMPANY CARNIVAL CORPORATION AT THE MOMENT?**

Carnival, and Costa Cruises in particular, remain for us and for the country, exceptional and indispensable investors. Out of 63 ships delivered 52 were for different brands in Carnival Group, 13 for Princess Cruises; Costa Diadema will be the 10th Costa ship built by Fincantieri in Italy since 2000, with a total investment worth almost 5 billion euros. We hope that this order is a strong signal for an upturn by a strategic sector for the country's economy and the industry as a whole. Fincantieri, even in a difficult moment as today, is resolutely continuing its commitment in a particularly depressed market in order to gain whatever orders there might be, thus holding on to its position as world leader.

**WHAT DOES THE PURCHASE OF STX OSV MEAN FOR FINCANTIERI?**

This transaction is a source of pride for all Fincantieri's employees and business partners. It marks the beginning of a new era for Fincantieri. The acquisition of STX OSV will further enhance our position as a leading international competitor. It will strengthen Fincantieri's commitment to pursuing a strategy of diversification and development in order to retain our long-term competitiveness and generate important positive impacts for our Italian assets. I'm sure this is the right way forward to optimize our global leadership position in the high value-added end of the shipbuilding industry and to establish ourselves as champions of the Western world.

**- Bianchi**

# Craig Perciavalle

## President, Austal USA

***The recently announced promotion of Craig Perciavalle to President, Austal USA was a logical one. At Austal since 2007, he moves up after serving as Senior Vice President of Operations. Significantly, he oversaw Austal's transition from a conventional commercial shipyard to an efficient, modular manufacturer that has improved its metrics and economy of scale with each new hull. Eventually, that could mean commercial, series build contracts – something Austal USA has already proven it can do. In a domestic shipbuilding market that is fraught with worries about sequester, reduced defense spending and other federal budgetary concerns, Perciavalle takes the helm at a time when Austal's risk must be managed and bets hedged against any eventuality.***

Austal USA today finds itself plowing into 2013 with the proverbial bone in its teeth, powered by an enviably fat U.S. government backorder book, possibly the most modern and efficient manufacturing infrastructure in U.S. shipbuilding and the leadership of a new President who, over the past five years, helped to make all that happen. Nevertheless, domestic shipbuilders all know that DoD and DHS spending cuts are coming. For those yards heavily leveraged in government contracts – and Austal is certainly one of them – that has to be a nagging concern. That said; Austal may be as well positioned to ride out the storm as anyone.

Best known as America's largest aluminum shipbuilding company, Austal USA also benefits from its position as a provider of design, construction and support of customized, high-performance aluminum vessels for the commercial high-speed ferry market. A full tour of the gleaming, meticulously clean Gulf Coast facility reveals an impressive assembly line infrastructure and a walk-through of vessels rapidly approaching completion at its berths. Under contract to build ten 103-meter JHSVs under a $1.6 billion contract and five 127-meter Independence-variant LCS class ships, part of a 10-ship, $3.5 billion contract, that fat backorder book would seem to preclude any need to plunge into commercial waters any time soon.

Perciavalle, however, and perhaps hinting at what could come next, adds, "We've been very fortunate to have constructed a brand new facility, custom designed to support lean manufacturing principals and modular construction. Our facility and manufacturing philosophy can accommodate various types of vessels within both the Government and Commercial sectors. Furthermore, the layout of our facility is designed to be flexible enough to be adjusted, if necessary, to accommodate other products."

2012 saw Austal USA continue to generate new work, finish existing contracts and commence work on still others. In late December, Austal was awarded a $166 million modification to a previous award for Joint High Speed Vessel (JHSV) 10. Two weeks prior to that, the Military Sealift Command accepted delivery of the first JHSV. With three more of these vessels under construction and as the 12th ship delivered by Austal USA in 11 years, JHSV 1 is part of an enviable benchmark that could easily lend itself to a commercial, series-build capability. Of more immediate concern is what could happen should the budget impasse in Washington rear its ugly head once again.

Perciavalle remains pragmatic. "We would rather not speculate on what may or may not happen with sequestration. We believe our best defense against sequestration comes from fo-

cusing on what we can directly control, successfully executing our existing contracts and providing the two most cost-effective and flexible platforms to the Navy."

Leaving aside uncertainties in Washington, it cannot be denied that the Austal USA's recent success has been one of the more upbeat stories when it comes to domestic shipbuilding today. The new federal contracts will require Austal to increase its Mobile, Alabama workforce to as many as 4,000 employees – something that may be as equally challenging as securing all that work in the first place. Austal's new President explains, "To support both the LCS and JHSV programs, we've been able to grow our workforce by over 2300 employees since January of 2010, from about 1000 to over 3,300 today and counting, all while maintaining an excellent safety record. This has certainly been a challenge, but we attribute much of our success to our geographic location where a vigorous shipbuilding industry and experienced workers are based; our drive to being an "employer of choice" by focusing on providing competitive salary and benefits--as well as a clean and safe work environment for our employees; our lean manufacturing processes which facilitates the incorporation of new hires and enables us to leverage the strengths of all employees of various experience levels; and most importantly, having a robust training program that we've been able to develop with incredible support from the State of Alabama." Austal started the four-year Apprentice Training Program over five years ago and has successfully graduated four classes into its work force.Austal's unique modular approach to ship manufacturing already has produced 35 of the 37 modules used to form the 127-meter aluminum trimaran Jackson (LCS 6). The economy of scale and lessons learned through its series-build approach are both quickly yielding dividends. Perciavalle adds enthusiastically, "As we move closer to delivering the second ship of each class in the coming months, we've seen substantial performance improvement on both programs. As our workforce matures, we anticipate our ability to drive cost out of each ship to consistently increase as we quickly come down the learning curve." Unspoken in all of that is the eventual ability of this yard to quickly transition those efficiencies to commercial work, if the need arises.

Managing risk is never an easy task. That said, and over the past few years, Austal has primarily focused on building a shipyard and securing the LCS and JHSV contracts. As it matures its considerable manufacturing processes through its federal work, other opportunities do exist beyond these contracts. Craig Perciavalle therefore has no intention of sitting on his hands even as he oversees a large and profitable backlog. He sums up the Austal philosophy neatly by saying, "We will also focus on diversifying our portfolio and positioning our company to capitalize upon our unique Pacific heritage, our facilities in the Pacific Basin, and our partnerships throughout the Pacific Rim."

**- Keefe**

# Anthony Chiarello

## CEO, TOTE Inc.

***Anthony Chiarello, President & CEO, TOTE, Inc., is a fourth-generation maritime professional, starting with his great grandfather who owned a ferry service from Sicily to North Africa. When the family emigrated to the U.S. in the late 1800s, Chiarello Brothers (later changed to American Stevedores) was founded in 1898, a company that became one of the largest stevedoring and terminal operating companies in the Port of New York, and one of the first Italian immigrants in the port. So it is fair to assume that Chiarello is well-versed in many matters of maritime risk. Late last year, TOTE made waves when it ordered the world's first LNG powered containership. Chiarelli addressed the inherent risk of the deal in an interview with Maritime Professional.***

> "I really think that going to an LNG fuel source is the next wave. I know it's a solution that is more aligned with shorter routes than long 12,000 nautical mile international runs due to the tankage required, but I firmly believe that at some point in the not too distant future that this challenge will be addressed as well and eventually LNG will be the primary fuel source for global shipping"

When U.S. ship owner Tote Inc. ordered the world's first LNG-powered containership, it literally shocked the maritime world as the order was from a U.S. company to be built by a U.S. shipbuilder (NASSCO in San Diego). Interesting too was the MAN power selection, the first major reference for the global power company's new line. Chiarello is a 33 year-year veteran in the maritime and logistics business, leading TOTE since August 2010 and previously COO and EVP of NYK Logistics (Americas), Inc., and before that with the AP Moller/Maersk organization for 16 years.

Fast forward to 2012 and TOTE is a company that currently owns six ships: three (two in service, one laid up) in the Puerto Rico service; and three (two in service, one laid up) in the Alaska service. In addition, it operates 14 ships under its TOTE Services division, mostly MarAd and MSC ships, but a few commercial ships too.

When the decision was taken to order the groundbreaking ships, in Chiarello's mind, the inherent risk was in not doing the deal, as the ships being replaced will be forced from the Puerto Rico trade in 2019 due to ECA rules. "For us, this decision was purely made on the back of the environmental impact and how the ECA guidelines are driving the shipping business," Chiarello said. Explaining that it was an environmental decision, not a financial decision, added for emphasis, "I don't know what LNG is going to cost in three years when the ships come out; I absolutely know what the impact will be in terms of emissions: that's not going to change.

If there's an advantage from a fuel cost perspective, that will be wonderful, but that's not what this decision was based upon."

Mitigating the risk is the fact that TOTE already has LNG experience under its belt, as last August it announced the conversion of its Alaska ORCA class ships to LNG. "So we had already spent a lot of time looking at LNG as an alternate fuel source. There was no doubt that the ships were going to be dual fuel and that LNG was going to be the primary fuel source. That was never a question," Chiarello said.

But anytime a shipbuilding deal comes with the tag "World's First" there are natural questions.

The first and last questions of risk on this deal are LNG, or more accurately, the ready supply of LNG to his ships. As of now, the infrastructure simply does not exist. While the U.S. continues to power forward and rapidly expand its discovery and recovery of natural gas, there remains a dearth of LNG bunkering stations here and abroad, presenting a classic 'chicken and egg' scenario: build the ships and hope for the bunkering infrastructure; or build the bunkering infrastructure and hope for the ships.

Though it is the only remaining piece of the puzzle, Chiarello is betting the bunkering market will follow in kind.

"Locking in our fuel source in both the Pacific NW as well as in the Puerto Rico service (is the only missing piece)," Chiarello said. "But immediately following our announcement, I had no less than a dozen contacts from parties who are already providing LNG in other locations that would like to provide it to us. We have little concern that there will be adequate choice of fuel source, but if there is any missing piece today, this is it."

With four generations of maritime risk management and mitigation in his DNA, odds are strongly in favor of Chiarello and TOTE working it out to commercial advantage.

**- Trauthwein**

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The program consists of eight one-week modules plus a final integrating strategy project (thesis). All modules will deal with leadership issues and personal development. In the process of working with the integrating strategy project (ISP) the participants will give three presentations and the last presentation will function as the oral defence of the ISP/thesis.

Each module presents theories and gives a thorough introduction to reading material and motivates participants for their independent studies.

Participants study the material in between sessions and write an assignment for each module. These assignments, as far as possible, will be focused on a problem related to the candidate's own firm.

For the final integrating strategy project, topics should be chosen for their strategic purpose and integrating function, giving participating companies a valuable and practical analysis.

| | | | |
|---|---|---|---|
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| Module 00 | Accounting and international economics | 18-20 Sept. 2013 | Copenhagen Denmark |
| **Shipping as a Business and a Market** | | | |
| Module 01 | Shipping as a business and a market + Leadership | 23-28 Sept. 2013 | Copenhagen Denmark |
| **Understanding the Global Environment** | | | |
| Module 02 | Supply-chain management – new logistical challenges | 02-06 Dec. 2013 | Copenhagen Denmark |
| Module 03 | International economics and market analysis + Leadership | 10-15 Feb. 2014 | Copenhagen Denmark |
| **Focus on Maritime Issues** | | | |
| Module 04 | Ship design<br>The maritime legal framework | 07-11 April 2014 | Hamburg Germany |
| Module 05 | Operational management and information technology + Leadership | 23-28 June 2014 | Copenhagen Denmark |
| **Core Management Issues** | | | |
| Module 06 | Investment analysis, risk management and finance | 01-05 Sept. 2014 | London UK |
| Module 07 | International marketing and organization<br>Introduction to ISP Process | 03-07 Nov. 2014 | Copenhagen Denmark |
| Module 08 | Managing strategy and change<br>Introduction to Industry Analysis<br>+ Leadership | 12-17 Jan. 2015 | Copenhagen Denmark |
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| Presentation of Industry Analysis<br>Introduction to Company and Issue Analysis | | 18-20 March 2015 | Copenhagen Denmark |
| Presentation of Company and Issue Analysis<br>Introduction to Implementation Plan | | 20-22 May 2015 | Copenhagen Denmark |
| Presentation of the ISP with Implementation Plan (oral defence) | | 05-07 August 2015 | Copenhagen Denmark |
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# 100% Container Scanning *It is Possible*

***New technology, already in use by a major terminal operator, puts the requirement for 100% scanning of all inbound containers back on track. The breakthrough, however, represents so much more than that.***

***By Joseph Keefe***

In July 2007, U.S. legislators passed a law requiring 100% scanning of U.S. bound containers at their last foreign ports by the year 2012. That federal requirement nearly died a quick death recently but has received a reprieve of sorts. Originally scheduled to take effect July 1, Homeland Security Secretary Janet Napolitano in May of 2012 notified Congress that she would use her authority under the 2007 law to delay implementation by two years. Napolitano said systems available to scan containers would result in a negative impact on trade capacity and the flow of cargo, and that some foreign ports do not have the physical characteristics needed to install such systems. If the last part was true then, however, it may not necessarily be the case now.

As reported in our 1Q 2012 edition of ***MarPro***, pilot efforts were established at several foreign ports under the Secure Freight Initiative (SFI) targeting in-bound containers for weapons of mass destruction (WMD) prior to loading. Objections by trading partners surfaced and were confirmed by the Government Accounting Office (GAO).

In her testimony before the Senate Commerce, Science and Transportation Committee, DHS Secretary Janet Napolitano said in part, "DHS has learned a great deal from these pilots, but it has also encountered a number of steep challenges. Some of these issues relate to the limits on current technology. Technology doesn't exist right now to effectively and automatically detect suspicious anomalies and cargo. This makes scanning difficult and time-consuming. …Therefore, DHS is compelled to seek the time extensions authorized by law with respect to the scanning provision." At the time DHS's Science & Technology Directorate (S&T) had already spent nearly $10 million on efforts to develop a container security device; to no avail.

**Decision Sciences maintains that 100% container scanning is possible without bringing commerce to a crawl.**

### New Technology: New Hope for Compliance

As the U.S. government continues to try to find a solution to its own scanning requirements, it also continues to fund testing when a promising solution comes to light. In September of last year, Decision Sciences International Corporation (DSIC), a provider of security and detection systems, announced that it was awarded a $2.7 million contract by the DHS Domestic Nuclear Detection Office (DNDO) for an Advanced Technology Demonstration (ATD) of its Multi-Mode Passive Detection System (MMPDS). Under the contract, DSIC supports government testing of MMPDS intended to evaluate the system's effectiveness and readiness for transition to production. Before that, Decision Sciences was awarded another contract – this one worth $400,000 – by the U.S. Department of Defense to test muon tomography based scanning systems capable of detecting explosives.

### The Multi-Mode Passive Detection System – how it works

Based in Chantilly, VA, with a development/production facility in Poway, CA, DSIC and its 27 employees and contractors hope to bring together hardware and software development, systems integration and cutting edge science to improve the safety and security of global commerce. Based on

> "Our system is 100% passive; we don't generate any additional energy. We simply use the existing cosmic ray 'muons' to do the scanning. When cosmic rays hit the upper atmosphere, they create showers of atomic particles. One of the particles is a muon. High in mass, muons travel at near the velocity of light. Because of this, muons penetrate materials ... even very dense materials ... readily."
>
> **Dr. Stanton D. Sloane, DSIC President and CEO**

patented technology invented by scientists at the Alamos National Laboratory, the Multi-Mode Passive Detection System (MMPDS) was developed with private sector investment and expertise. MMPDS is billed as a safe, effective and reliable automated scanning device for detecting unshielded to heavily shielded nuclear and radiological threats. In reality, and as ***MarPro*** found out during a focused site visit in Freeport, Bahamas, the system does so much more.

DSIC's passive scanning technology uses naturally occurring cosmic ray muons to detect potential threats in cargo, vehicles and other conveyances. DSIC President and CEO Dr. Stanton D. Sloane explains, "Equipment can generally be classified into two main categories; active and passive. Active systems include x-ray and/or radiation technologies. In other words, they add some sort of radiation or energy to the environment. Our system is 100 percent passive; we don't generate any additional energy. We simply use the existing cosmic ray 'muons' to do the scanning. When cosmic rays hit the upper atmosphere, they create showers of atomic particles. One of the particles is a muon. High in mass, muons travel at near the velocity of light. Because of this, muons penetrate materials ... even very dense materials ... readily.

Normal cosmic radiation is 5000 muons per minute and penetrates through lead, steel, concrete and just about anything else. Sloane adds, "That's really the breakthrough technology. We have upper and lower detectors. As the muons go through the upper detector we calculate their trajectory. As they go through the bottom detector, we calculate their trajectory and we look for a change in that track. The angular change of the track is a function of the density of the material that the muons go through. The denser the material that the muons penetrate, the larger the angular change."

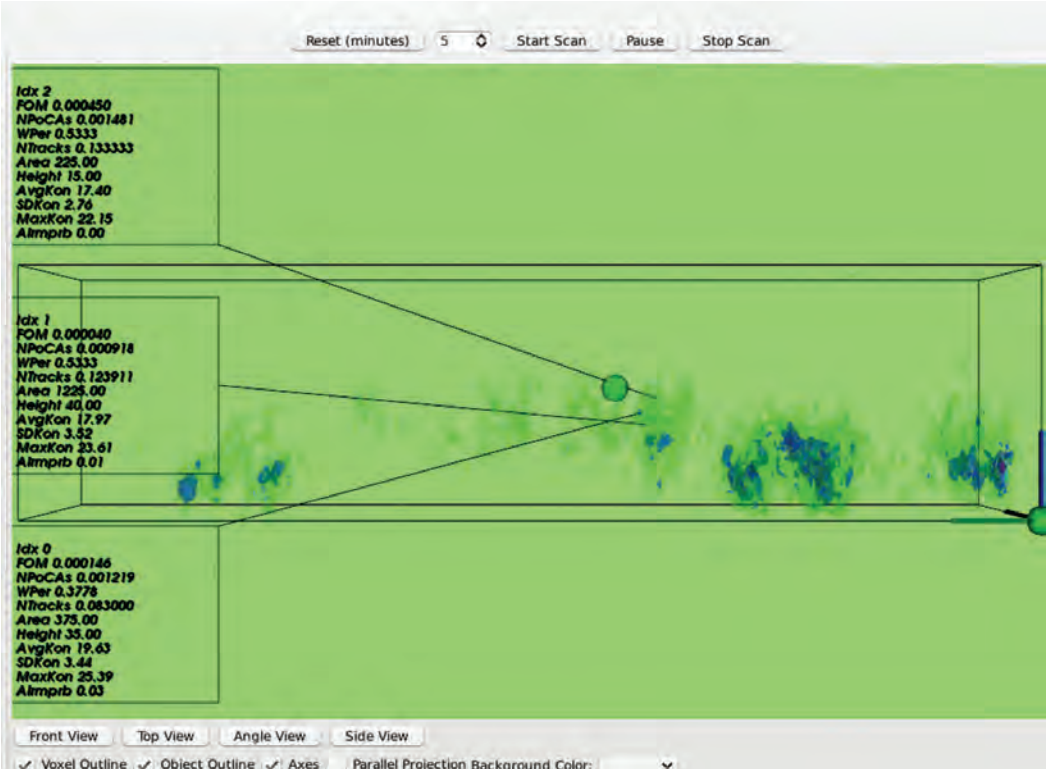
Beyond the efficacy of the system is its vivid imagery of the inside of the container it is scanning. With x-ray machines, if something is found, the container must be taken to the side, analysis performed and delays to the container magnified. Not so with Decision Sciences technology: false positives are eliminated because the density of typical items – and the dangerous ones too – can be catalogued.

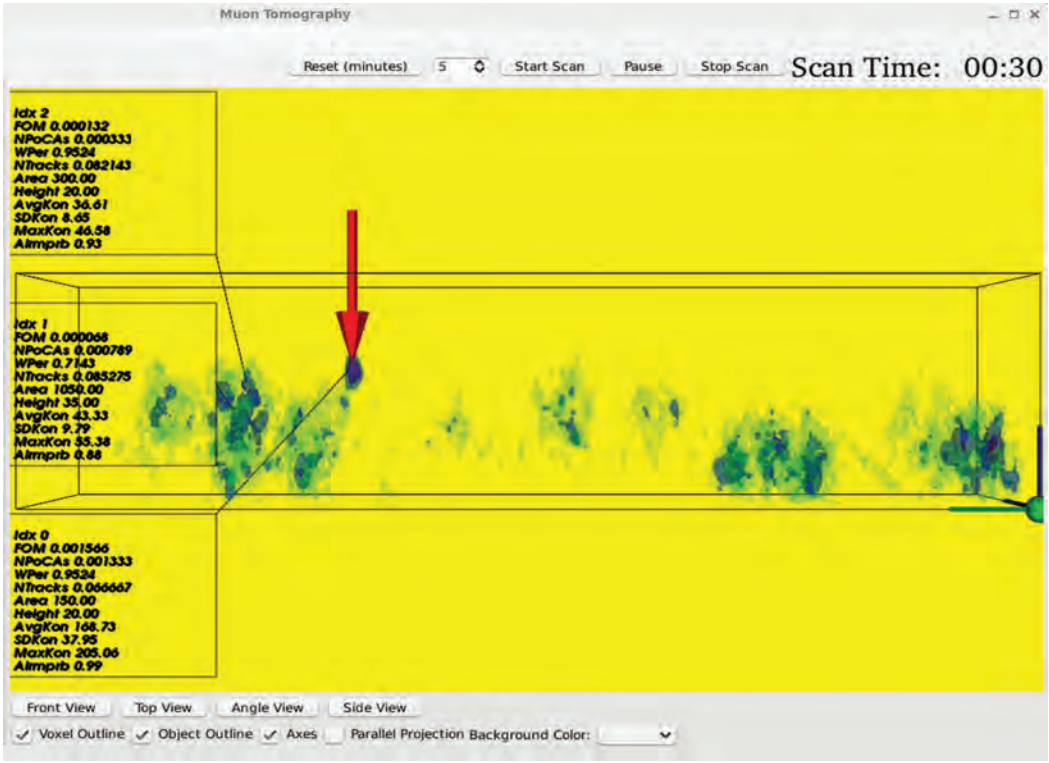
### Testing – Proving the System

According to Sloane, private investment saw a need, found

## What's in that Container?

**Truck #1 – Medium Density with Naturally Occurring Radioactive Material (NORM).) Successful scan is elevated non-localized radiation (gamma marker or "ball"), no Muon Tomography (MT) objects located, clear container.**




**If a threat is detected, MMPDS automatically alerts the operator. Threats are located in three dimensions within a few inches in the container.**

technology, and put together the solution. They did that, by Sloane's estimation, "Fairly quick by U.S. government standards. The talk of repealing the 100 percent scanning requirement was therefore distressing because it threatened to eliminate the entrepreneurial incentive in the marketplace to create and invent the solution." As it turned out for DSIC, this was not a problem.

In January, ***MarPro*** traveled to Freeport to get a firsthand look at the technology. A demonstration involving four trucks, each towing containers in the usual fashion, showed that each could be easily driven into the scanner through a normal traffic lane. Scanning for each took 50 seconds or less – or in other words, in less time than it took for the driver to interface with Customs, exchange documents and clear the truck for departure. The configuration can be scaled up or down as needed, for high traffic facilities. Sloane insists, "A principal design parameter of the technology is that it should not impede the flow of commerce."

As a part of the requirement for an acceptable system, the scanner has to be automatic or in other words, provide a green or red indicator. No operator interpretation is needed. Consistent with the initial intent to eliminate the need for expensive, extensive training and/or the need to make judgment calls, the system showed itself to be fully operational and able to detect partially shielded and completely shielded nuclear threats. But, in reality, the system's utility extends far beyond mere nuclear detection capabilities.

Through a contract with DoD, testing the detection of other materials is underway now. This involves a software change, says Sloane, but not to the technology itself. And a testing mechanism is built into the system, the results of which can be remotely transmitted elsewhere to make sure machines are working properly. Sloane added, "We believe we are the solution. The technology had not been converted into an operationally useful system prior to this, so I think the objections to the 100 percent scanning are based on previous technologies. I think we've addressed all of the issues that have been raised by all of the people who are in opposition to the 100% scanning requirement."

## Feasibility & Cost

According to DSIC, their passive solution is significantly less expensive – perhaps as little as 25% of the cost of active scanners. The machines – the detectors – are made out of aluminum tubes and as a result, are very scalable closer together. The pilot program set-up at the Hutchinson Container Terminal located at Freeport, Bahamas, for example, is designed so that entire tractor trailer can be driven into the system without having to take anything apart or interfering with the flow of commerce. And one scanning machine, unlike x-ray or active systems, can handle multiple lanes at once, giving real economy of scale to the system.

## Unique Partners – Real Results

The DSIC partnership at Freeport is with Hutchinson Ports, who operates the Freeport Container Terminal. Hutchinson also operates 52 ports in 25 countries around the globe. The partnership, says Sloane, was not undertaken lightly, nor should it be viewed as a one-off deal. He says, "Based on our initial successes here, the Hutchinson management is encouraging other ports to look at the technology." He adds that the system, deployed under public/private partnerships, would not require the U.S. or foreign governments to fund it. Instead, a 'pay per scan' system could be employed.

Testing will continue through next summer. And the partnership with Hutchinson, with its footprint in ports all over the world, makes a great deal of sense. Experienced in transshipment, Hutchinson's Freeport terminal is more than just a container port. The DSIC scanner and traffic lane there is set up to mimic a high traffic port; something Freeport may someday aspire to be.

At Freeport today, only 1% of containers that arrive go in and out of the facility. Primarily a transshipment point now, it could become a very important one for East and Gulf Coast ports in the very near future. Although only handling 1.2 million container TEU's annually, the deep draft port is capable of accepting 9,000+ TEU ships. And, the Bahamas is looking quite seriously at the Panama Canal expansion, preparing now to handle vessels and cargo from post-Panamax ships that might be too big and deep for US ports and infrastructure.

For Hutchinson, DSIC and the Bahamas, the possibilities are endless. Industry insiders complain that the hassle at U.S. ports for inbound containers can include a four to six day wait for clearance, something which could be avoided by prescreening – as the U.S. laws intended – in Freeport and cargo then transshipped via niche, feeder vessels to the U.S. mainland. The Bahamas already has a rich history in transshipment – oil and crude oil have been handled here in that fashion for decades. That's not just a model; it's a proven concept.

## Leverage the Cost: Expanded utility, economy of scale

DSIC President Sloane claims that they could be up and running in production with added plant space within two to three months of approval of their technology. Installation would take six months initially; eventually as little as four months – much of that construction involving the set up of multiple traffic lanes. Scaling up for production would be a function of investment in the technology. The passive technology has no complicated high energy outputs or shielding necessary for employees. Unlike bigger, more dangerous x-ray machines,

the scanning unit itself would fit into a small closet.

Advantages of the Decision Science scanning solution include a low physical footprint, no dangers (radiation), one machine can scan 3 lanes of traffic and using redundant power sources, the system could run for as much as a month on backup power. And, how much quicker could a container facility in the port of NJ/ NY come back up to speed in the wake of a calamity such as Sandy or a deliberate interruption of power designed to sidestep an effective scanning program?

This summer, more stringent testing with the federal Department of Nuclear Detection Office (DNDO) will include blind testing with various materials to determine the viability of machine. But, as ***MarPro*** already discovered in the Bahamas, the DSIC scanning analysis already can see the scale and density of various objects, and will eventually cross reference with pictures of each and manifest data for each container. Plans are also underway to collect data for existing machines, providing expected response of scans for a particular type of cargo and then to program the computers for *"what if"* scenarios for deviations. For example, the machine's alarm could be set to detect Gold smuggling by simply setting parameters for that material's unique density.

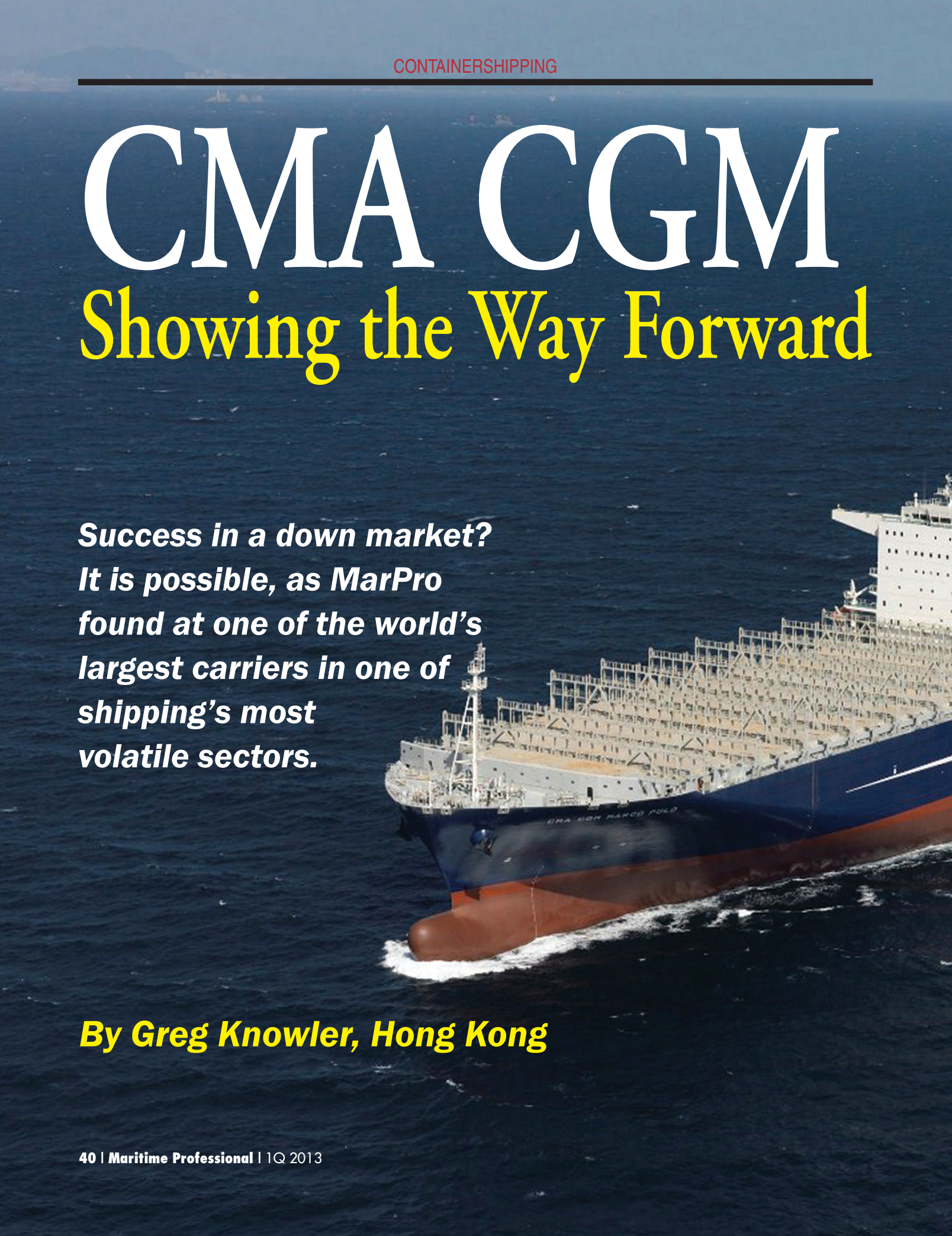
In the end, the ultimate utility of the Decision Sciences technology could extend far beyond its intended goal of effectively meeting the requirements of U.S. scanning laws. This system could be used by Customs and Border patrol personnel to detect and seize contraband, and because it is passive and operates without harmful radiation, will be extremely effective in checking for human trafficking, stowaways and myriad other illegal activities. Finally, and when measuring the cost of system, buyers need to think far beyond the obvious nuclear threat.

The idea that commerce-friendly, effective and safe 100% container screening can be put into widespread practice appears to be alive and well. For now, that concept is confined to the confines of a happy container terminal operation on a small island just off the coast of Florida. And unless something changes between now and the end of some focused U.S. government vetting of DSIC's new technology, Janet Napolitano's edict that "technology doesn't exist right now to effectively and automatically detect suspicious anomalies and cargo" might just have to be amended. Let's hope so.

# CMA CGM

## Showing the Way Forward

***Success in a down market? It is possible, as MarPro found at one of the world's largest carriers in one of shipping's most volatile sectors.***



***By Greg Knowler, Hong Kong***


When CMA CGM signed a deal selling 49% of its Terminal Link division to China Merchants Holdings (International) for $535 million in January 2013, it sealed a remarkable turnaround for the world's third largest container carrier. Just three years ago, the Marseilles-based shipping company controlled by the Saade family was almost crippled by debt, struggling with heavy losses in 2009 after the financial crisis. Improvements in 2010 were wiped out by a slump in freight rates in 2011.

Late last year, however, the French line surprised the world when it announced it was on course for a full-year profit. Its results in the nine months up to September showed a profit of $284 million, no small achievement in a highly volatile trading environment. At the time of writing the final 2012 financial results for CMA CGM and its peers were not yet available, but the profit warnings were coming thick and fast.

## Bucking the Trend

Across the container shipping industry, carriers are preparing to report significant losses attributable to excess capacity of container vessels, falling demand, rising fuel prices and weak freight rates. Too much supply, too little demand and too high costs – a cycle of diminishing returns.

China's biggest shipping company, the state-controlled Cosco, warned in late January that it would report "a large net loss" for 2012. The shipping giant did not indicate the size of the loss but analysts were more than happy to provide an estimate: $1 billion. Maersk's container division expects a "negative" result for the past year after losing $521 million in 2011 and puts the blame on overcapacity and a 25% drop in global freight rates in 2012. On Asia-Europe, the Danish carrier said the drop in prices was almost 60%. Separately, NOL's liner shipping business APL announced that it expected to post a full year loss for 2012 and German line Hapag Lloyd was down 94% for the first nine months and unlikely to claw its way back into the black.

## Family Recipe

Curiously, the French company operates on the same trades and on the same planet as these carriers, so how did the line manage to profit while the competition founded in turbulent financial waters? To find the answer, we need to travel back to the dark days of 2009. By the middle of that year, CMA CGM was in serious trouble. The French line had built up debts of $5.6 billion, and its orderbook in that crippling post financial crisis period was 60% of its fleet. The carrier could simply not continue to operate with such a chronic debt overhang. Retail spending across the world's major markets had dried up, and as the transporters of 90% of global consumer goods, container shipping companies were being hit hard. CMA CGM needed help, and fast. Going out of business was not an option, and the determination of the founding Saade family to maintain control of the line it has run for more than three decades simply cannot be overstated.

CMA (Compagnie Maritime d'Affretement) was established by Jacques Saade in 1978, a Lebanese who settled in Marseilles and started his line with one 200 TEU ship, initially serving Mediterranean Europe, Lebanon and Syria, where brother Johnny Saade managed the agencies, then expanding to North Africa, a Dynamar report stated.

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In 1999, CMA merged with state-owned CGM (Compagnie Generale Maritime), a loss-making entity that the French government finally decided to privatize. Because CGM had withdrawn from several trades before its privatization, the move was a logical one and served the new carrier well.

Jacques Saade proved to be an astute shipping executive, building his liner services even as the container market began to expand across the long-haul trade lanes.

Most of CMA CGM's growth has been by acquisition, but two large purchases stand out. In 2007, the French line acquired Cheng Lie Navigation of Taiwan, an intra-Asia specialist, and US Lines that served the US West Coast and Australasia trade. US Lines is a subsidiary of CMA CGM-owned ANL Container Line. Those acquisitions opened new markets, but came just a year before the greatest financial meltdown the world had ever seen. The financial crisis hit while container lines were riding a wave of profitability with the newbuilding orderbook reaching far into the distance.

### Orderbooks & Overcapacity

At the beginning of 2009, CMA CGM had orders for 73 ships comprising a total of 596,000 TEUs, 60% of its fleet. The financing of these vessels was a huge contributor to the massive debt that had been accumulated by the line. The orderbook was looking more like the plank. That's because in January 2009, container throughput in Shanghai, then the world's second-busiest container port, plunged 15%; in Shenzhen the drop was a steeper 17.5%. The declines were the worst year-on-year performance ever for the two ports. And in Hong Kong, container throughput fell 23.2% in January, the worst container throughput since the early 1990s.

The financial impact of China's falling exports on container lines was devastating. First half industry losses in 2009 reached $6.9 billion, with CMA CGM down more than $700 million. With Saade family control as a non-negotiable position, the line went in search of ways to restructure its mounting debts. By the middle of 2009, a committee of 77 banks and financial institutions was involved in restructuring the debt and coming up with an interim package. But what CMA CGM also desperately required was an injection of cash, and the line began casting about for potential investors. The white knights eventually arrived in 2010 in the form of Turkish family-owned container terminal and shipping operator Yildirim Group with an investment of around $500 million in return for five-year convertible bonds equal to 20% of the share capital and three seats on the board.

A bond issue in the first half of 2011 raised around $950 million and CMA CGM reached an agreement with creditor banks on its debt restructuring. It also cancelled orders for 12 vessels, postponed the delivery of 30 others, sold 50% of its stake in Malta Freeport to Yildirim for $285 million and implemented a vigorous cost-cutting program.

In 2012, the carrier saw Yildirim adding another $100 million into the French line, giving it the rights to an additional 4% stake in the company, along with additional investment from French sovereign fund Fonds Stratégique d'Investissement (FSI) that injected $150 million in bonds redeemable as shares.

Alphaliner valued CMA CGM equity after the September 2012 deal at $2.5 billion with a net debt of $5 billion, giving CMA CGM a total enterprise value of $7.5 billion. The Terminal Link sale to CMHI in January 2013 capped a remarkable period for the French company.

"The finalization of the debt restructuring combined with new equity injection from FSI and Yildirim Group and the sale of 49% of Terminal Link will allow CMA CGM to operate with the required financial flexibility and constitutes key milestones before contemplating an IPO," CMA CGM executive officer Rodolphe Saade said in a recent statement. With other CMA CGM executives unavailable for comment in this story, we turned to the shipping analysts to find out how the carrier had managed to turn its bleak position around.

Maritime consultancy Dynamar's Dirk Visser said CMA CGM was not doing anything "radically different" to the other carriers to finish the year in the black. "But perhaps it has benefitted from the aggregation of marginal gains, teeny improvements here, there and all over that add up to a significant improvement," Visser said. He added, "As such, we don't think that CMA CGM's Q2 and Q3 2012 results are actually the results of what they have done in 2012, more accurately accruing the benefit from a range of measures they undertook before and during 2012."

Visser said those measures included interim agreements with banks in 2009, the entrance of Yildirim as a shareholder in

2011, reducing and better managing the orderbook (now just 15 ships), selling vessels, cutting costs, controlling charter costs and entering into deeper strategic partnerships with Maersk and MSC.

Lars Jensen of SeaIntel said the Maersk and MSC partnerships made a significant contribution to the line's turnaround, as "that has indeed allowed them access to the lower unit costs of large vessels on some of the main trades." Separately, an Alphaliner report said the superior performance of CMA CGM and Maersk were more closely related to their trade mix. "Compared to their competitors, both carriers have a large share of volumes on the Asia-Europe and Latin America trades, which have performed better than other trade lanes during the third quarter," the report stated.

Drewry's senior manager of equity research Rahul Kapoor said CMA CGM's better than market expectations performance in 2012 was primarily driven by a strong recovery in freight rates in its core trade lanes, volume gains and achieved cost efficiencies. "Along with recovery in freight rates, the positive tailwinds from declining fleet wide bunker consumption due to further slow steaming and tighter cost controls including network optimization and reduction in chartering costs paved way for much improved operating performance," Kapoor said.

Analyzing the last reported third quarter numbers, Kapoor said the French line had already achieved $550 million in cost savings for the first three quarters of 2012, surpassing an initial full year FY12 savings target of $400 million. "Company operating expenses suggest higher cost efficiencies were gained from lower bunker and chartering costs," he said.

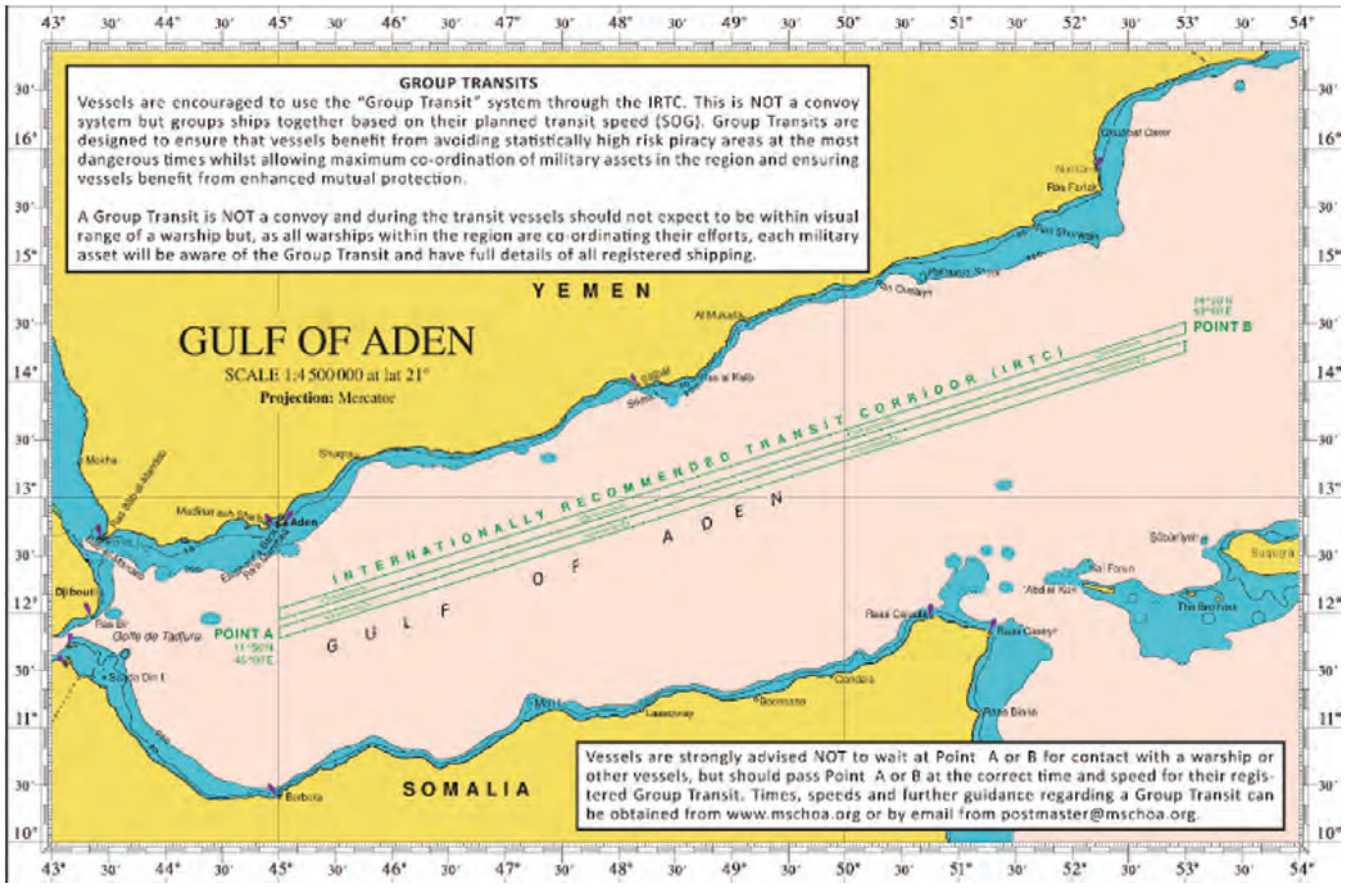
Achieving success in a down market is indeed possible, and the carrier has managed to fight its way out of a tight corner. The series of measures CMA CGM was forced to implement over the last three years may have diluted the Saade family share of the business, but they have left the carrier executives wiser and the line in a better position to capitalize when general rates increases are successfully implemented.

# The Riskiest Places to do Business – and Why

**By Glen Forbes**

Maritime security, over the last four years, has been synonymous with the effort launched by a multinational armada to combat the high seas criminality and the humanitarian and economic consequences of Somali piracy. The drama which has unfolded off the Horn of Africa, spreading into the Indian Ocean, has been headline news around the world. Attack and hijacking of small fishing vessels and even supertankers, with crews held for ransom for upwards of 2 years, has horrified everyone concerned. The murders of innocent seafarers demonstrate the dangers faced in vast expanses of oceans. But it is not restricted to one region. It also occurs in other regions such as West Africa, throughout Southeast Asia and the South Americas, including the Caribbean.

Piracy is only one part of maritime security; the specter of human trafficking, drug and weapon smuggling, illegal fishing and oil bunkering (transfer of crude oil) and the growing crime of kidnap would imply that life on the ocean wave is not like an ocean-bird set free. Indeed, these are dangerous times.




## *Somalia, Horn of Africa & Indian Ocean*

Somali piracy, from 2008 onwards, grew to unprecedented levels in the following years. In the vacuum of effective shore-based governance, the clan rule across Somalia and the feared Islamic militants with the long-term humanitarian dilemma of displaced persons, the scourge of piracy took hold. In seeking to protect World Food Program relief efforts, NATO, EU and Combined Maritime Forces, along with other international navies, began escorts and monitoring of commercial shipping transiting the region, within the Gulf of Aden (GoA). As international efforts to stem the tide of piracy centered on the GoA, ever resourceful the pirates spread across the Indian Ocean and changed tactics to use previously hijacked vessels as motherships to use in attacking other larger vessels.

Naval operations evolved to include convoy escort, transit corridor and vulnerable shipping protection; boarding and search of suspect vessels, patrols closer to the Somali coast and eventually authorization for a land-based attack. Special Forces operations to rescue humanitarian workers and seafarers have been conducted, however, the fear of causing fatalities or resulting in recriminations against hostages has made this option one of high risk. At the lowest point for seafarers, more than a thousand sailors were held hostage by pirates.

The shipping industry did not sit back and expect the military authorities to be everywhere and anywhere piracy may occur. Taking the initiative, they collectively established Best Management Practices as a guide to shipping companies and operators in better protection of vessels and crew. Tellingly, after initial misgivings, private maritime security companies (PMSC) became a staple method of protecting shipping. Whilst not permitted by every flag state, armed security teams are more prevalent but international standardized practices are rather more difficult to come by, and the rules for the use of force by commercial security is a sticking point for all.

There are a few aspects that are not directly related to the threat in this area, but nevertheless, have an impact on piracy. The newly-elected Federal Government of Somalia (FGS) has been recognized by the USA, and subsequently, the improvement of law on land is seen as developing along the right road. Add to this situation the long-running fight against the Al Qaeda-based Islamic militants, Al Shabaab and then the potential for a convergence between them and the pirates. The kidnap of humanitarian aid workers from displaced person camps (food shortages remain a major problem) and journalists should not be overlooked either. If the international forces are reduced due to the perceived successes in combating piracy, then there


(Image source: google maps)

**Piracy is only one part of maritime security; the specter of human trafficking, drug and weapon smuggling, illegal fishing and oil bunkering (transfer of crude oil) and the growing crime of kidnap.**


(Image source: google maps)

is every possibility that piracy could see resurgence in yet another vacuum. Without a doubt, the situation today is fragile and reversible.

## Gulf of Guinea

The Gulf of Guinea (GoG) has seen resurgence of piracy incidents in 2012 as piracy, or alternatively robbery at sea, has shifted around the region. Omitting Nigeria from this particular equation, the attacks have varied from robbery of crew personal items whilst the ship is anchored or in port, to hijack for the fuel cargo in the prevailing illegal oil trade. The attacks in ports and anchorages of Togo, Guinea, Ivory Coast and Benin have seen more a violent approach during such incidents. In some cases, port authorities have not responded to distress calls made within the areas.

## Nigeria

The challenges to maritime security off Nigeria are beginning to overshadow that of Somalia. The main difference between East and West Africa is that the attacks have taken place in territorial or Exclusive Economic Zones (EEZ) waters of the nations surrounding the GOG. Nigeria-based criminal gangs dominate the illegal oil syndicates in the country and the bunkering of oil from tankers in the GoG. Despite a 2009 amnesty, piracy (or robbery at sea) has increased but with lessons learned from the Somali model in the use of motherships, kidnapping, the Southeast Asia model of hijack for fuel cargo, destruction of communications and navigation equipment, and then release. Furthermore, as Nigerian forces increased efforts in local waters, pirate gangs moved to the less protected waters of Togo and Benin and on towards Ivory Coast. With illegal oil refineries in the creeks of Nigeria, kidnapping ship crew for ransom, the insurgents, Movement for the Emancipation of the Niger Delta (MEND) are able to hide their hostages in the jungles of the state. Subsequently, the attacks have become more violent. The Joint Task Force in Nigeria is making inroads in arresting the gangs, however, global criminal networks and corrupt officials connected to a multi-billion dollar industry mean that the phenomenon is not likely to be reduced any time soon. West African nations have viable governments, unlike Somalia, until recently; therefore UN and international navies are unlikely to become involved to the same degree as off East Africa. North Africa, however, may see maritime security come under closer scrutiny as threats develop around Yemen, Eritrea and the upheaval in other states over the last year.

## Southeast Asia

Security in this region is increasingly dangerous. A common problem is petty theft from ships off Indonesia whilst pirate boarding and hijacks continue to plague the region with little let up to date. Vessels are hijacked and renamed for illegal use,

taken for oil cargo, and hostages are often taken during these acts – kidnap for ransom is less prevalent. The Malacca and Singapore Straits also remain common grounds for piracy. The East China Sea and South China Sea are experiencing crises and dilemmas that threaten to spiral out of control as claims to territory and natural resource rights are often at the center of disputes in the region, particularly between China and Japan – an escalation of reprisals that may see retaliations not witnessed for many years as other states are drawn into the situation.

The disputes over fishing grounds regularly result in the opposing nations' coastguards arresting fishermen by the hundreds each year. The pirate groups in the Bay of Bengal kill over 50 fishermen and injure many more each year; however, as it is seldom international commercial shipping, little is heard.

## Looking Back ... and Ahead

The prospect of being taken hostage or losing a ship through hijack has greatly diminished over the past 12 months. Security issues continue to include increased violence against seafarers, the potential for attacks around ports and the level of possible conflict between nations – particularly in SE Asia – on the rise. Oil theft remains a global phenomenon at sea and ashore, and with the growth of global oil and gas resource exploitation expected in the next three to five years. There is ever more likely that this will become an even greater challenge to maritime security. Piracy and robbery at sea may evolve, but the naval forces aligned against them may not be in an economically viable or sustainable position with which to combat the issue, despite the likely revenue losses.

The absence of internationally coordinated efforts, regional maritime awareness training, and appropriately common international laws and regulations results in human and drug trafficking, piracy prosecutions, possible terrorism, illegal fishing and any arrests falling short of acceptable standards. Instead of recommendations and strongly advised actions, mandatory and lawful regulations are necessary to support the desired maritime security for trade and development which, although not understood by all consumers, has a global impact.

PROPULSION

# LNG as the Ultimate Solution?
## Not so fast ...

By Joseph Keefe

*Debating the merits of LNG as the preferred marine fuel; should you wait or dive right in? It's much more complicated than you think.*

The case for the use of Liquified Natural Gas (LNG) as marine fuel has been building steadily and has now achieved a position in the commercial propulsion equation. A quick check of the global fleet lists 30 vessels built and operating on LNG and a backorder list of another 40 in the pipeline. Global classification society DNV predicts that by 2030, up to 45% of vessels will be fueled by LNG. A growing consensus says that LNG is the future of marine propulsion, while others argue that marine diesel fuel will always have its place in the mix and that the rush to convert to LNG should be done carefully, if at all.

Seemingly, there is every reason to plunge into the LNG waters and few reasons to hold back. High profile newbuild projects are underway in virtually every sector of ocean shipping. TOTE's recent announcement that it had committed over $350 million to the construction of at least two LNG-powered containerships was probably the most surprising deal. Equally exciting is the Harvey Gulf Marine effort to build a new class of dual fuel offshore supply vessels. The repowering market is heating up, tool. At least one Staten Island ferry will reportedly be converted to LNG; the first in North America to use LNG for power. Separately, the Washington state ferry system is also exploring the use of LNG to power its fleet.

Hamburg-based Marine Service announced late last year the world's first LNG Fuel Tank Container. Developed as a mobile LNG tank, the 40 feet standard container provides a solution for two of the main issues concerning the use of LNG as marine fuel: limited availability due to lack of infrastructure and the issue of the reconstruction as well as the operation of existing fleets.

This, and other efforts to close the gap on the lack of global LNG bunkering infrastructure inevitably seem to point to a commercial marine world that will be all but 100 percent powered by LNG within a generation. Not so fast, says Ron Huibers, president of Volvo Penta Region Americas.

### Not so Fast …

Volvo Penta's range of engines, spanning all the way to 900 HP, focuses on offshore supply vessels, tugs and other workboats. Primarily known as a leisure market propulsion supplier here in North America, Volvo Penta has been active in the commercial markets in such places as Argentina for many years. Its current push to ramp up its commercial footprint in North America won't include the immediate headlong rush into LNG, despite being widely known for its on-road success with LNG powered trucks. Huibers says that there are carefully considered reasons why.

"At Volvo group, we supply products for commercial transportation industries, as well as commercial and leisure marine markets. As an engine company, one of our top concerns is efficiency relative also to environmental conditions. We believe that as an engine manufacturer, we are part of the emissions problem, so we should also be part of the solution. We evaluate different alternative fuels, from both an environmental as well as an economic perspective for owners." He adds, "Back in 2007, we determined that we could produce a diesel engine that could run on seven different alternative fuels. From a technology perspective – whether it is biofuels, different gases, we have the technology to produce these engines – so it is not an engineering challenge."

Volvo Penta, despite deep roots in gas propulsion, is not dipping its toes into the marine waters with LNG just yet. "Although we leverage off of the Volvo group R&D platform, Volvo Penta doesn't have an LNG offering right now because the infrastructure and technology isn't yet there in the marine environment. In 2014, we'll be producing high pressure direct injection (HPDI) to our highway engines, which will be using LNG. Down the road, we'll see how that can translate into the marine market."

According to Huibers, comparisons between LNG, CNG and diesel show that diesel still has the highest fuel density per gallon (BTU wise). And, he insists, "These other fuels are viable and we as a group are riding all of these horses – including LNG and CNG, biofuels and DME. What we also see going forward with the emission regulations is that diesel will still be a prevalent and the primary fuel for propulsion for transportation at least for the next ten years. I don't see this going away. That has to do with the underlying economics; handling, range, its availability, the infrastructure and other factors."

Huibers continues, "You can't focus only on the fuel cost. Even if the price of LNG is one half that of diesel, if that fuel doesn't have the power density/efficiency, then what have you achieved? Yes, you gain in other areas, emission outputs, NOX, CO2. But, you have to carry twice as much fuel to hit the same range of travel. On top of that, the entry and exit costs are much higher on LNG – 50 to 100% more expensive than a diesel."

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The entire lifecycle cost of the LNG option has to be explored, said Huibers. "If you do that math and add in everything else and it works for you, then fine. On the other hand, at the end of a life cycle, especially for a standalone gas engine – where do you sell that vessel to? Where's the market for it? Right now, the salvage value on these LNG engines isn't the same as diesel. It is important for people to pencil the numbers on the total cost of ownership, not just fuel costs, and then you realize that yes – there is a risk here. Put your toe in the water for the right application – but look at the total picture. This is why we at Volvo Penta are taking a measured approach."

"Clearly the new regulations, particularly the regulations in North America will drive a lot. And LNG is the obvious choice; to me it's a no-brainer.
DNV CEO Henrik O. Madsen

| Type | Benefits | Challenges | Comments |
|---|---|---|---|
| MGO | Low engine / boiler modification cost | Fuel switching needed | Safety issues |
| | Familiar technology | Higher fuel cost | |
| | Less staff training needed | CO2 emission is not reduced | Non compliant w/ IMO EEDI |
| | | NOx emission is not reduced | Non compliant w/ECA Tier III |
| | | Potential limited ULSD availability | |
| HFO + Scrubber | Moderate retrofit cost | CO2 emission is not reduced | Non compliant w/ IMO EEDI |
| | Lower fuel cost | NOx emission is not reduced | Non compliant w/ ECA Tier I |
| | | Increased maintenance | |
| | | Immature technology | |
| | | Some port restriction on open or even closed type. | |
| | | Onboard space needed | |
| LNG | 20 – 25% CO2 reduction | Additional investment cost | Meets IMO EEDI |
| | 100% SOx reduction | Fuel availability | Meets ECA |
| | 100% PM reduction | Special competence & safe handling | |
| | 80% NOx reduction | Increased fuel tank space | Meets ECA Tier III |
| | Green image | Uncertain regulatory framework on bunkering and competence requirement | |
| | Lower engine maintenance and wear | | |
| | No lube oil renewal for pure gas engines | | |
| | Clean engine room | | Better crew safety |

*Source: Tony Teo / DNV*

## Ron Huibers, President, Volvo Penta Region Americas


For large LNG haulers, LNG may make perfect sense, but for the regular workboat people that Volvo Penta caters to, the market is still immature and switching to LNG involves risk. Responding to the assertion that the cost of LNG propulsion was only 16 percent more than diesel, Huibers said, "You have to look at the cost of the bunker tankage, running these specially constructed cryogenic tanks at temperatures of minus 250 degrees, the venting that goes on – the cost is huge. So, are they counting the engine or also the tankage as well?" Beyond this, Huibers adds, "Claims of reduced maintenance for the engines are as yet, unproven. In the early stages, it is actually a higher cost. Especially in dual fuel, the argument that maintenance costs will significantly be reduced has not been fully borne out."

Circling back to Volvo Penta's deep experience with LNG, Huibers charts the future of the marine markets that he serves. "Because so many diesel engines are of automotive origin, we're already achieving the toughest environmental compliance standards in the world – right here and without the use of credits. Since 1988, in NOX and in particulate matter, from what EPA standards were, an exponential reduction in emissions has been seen." Relating that land-based experience to marine, he adds, "EPA 2010 is really what is going to be equivalent to Tier IV on the water. In the marine industry, we're not there yet. We already have the solution; proven, on the road with the diesel package that we provide. It utilizes after treatment because that's the only way you can do it efficiently. Simply looking at acquisition costs, it makes sense to stay with diesel. We'll have an LNG marine engine – but it is going to have to hit the right spots, market, and the right application."

### Class Weighs In

From the class side of the equation, DNV CEO Henrik O. Madsen says that there a number of drivers for LNG on the water today. "Clearly the new regulations, particularly the regulations in North America will drive a lot. And LNG is the obvious choice; to me it's a no-brainer. If you are going to travel in ECA areas, and LNG is available, then for the newbuildings LNG should be the fuel. Then in the U.S., the LNG is very cheap compared to diesel or distillates, so that also gives a huge incentive in North America."

Tony Teo, also of DNV, condensed the discussion of fuels, their downsides and advantages, within the context of coming regulations and the options available to shipowners. He notes that, "From August 1st, 2012 new regulations on the sulphur content of fuel for shipping in US waters within 200 miles will come into force. Accordingly, this will be further reduced to 0.1% by 2015. Within the shipping industry, the next decade will see a significant challenge as IMO's Marpol Annex VI Emission Control Areas (ECAs) and the EEDI are imposed for SOx, NOx and CO2 limits." That said, Teo asserts that there are three main options available to operators. These include (a.) the use of low sulphur fuels/distillates (MGO), (b.) the installation of EGS (Scrubber) or (c.) switching to LNG as a fuel. The table on page 50 illustrates the benefits and challenges of each option.

### Another View from the Engineroom

Ole Grøne, Senior Vice President Low-Speed Sales and Promotions at MAN Diesel & Turbo also weighed in. Grøne said in January, "There is absolutely a future for Diesel engines, especially for our ME-GI engine, which is a dual-fuel engine that works according to the Diesel principle, in contrast to the majority of medium-speed engines that follow the Otto principle. The first development we will see is that, over a relatively short period of time, all LNG carriers will move 100% to being powered by dual-fuel engines – there are currently still some with steam turbines as prime mover. Subsequently, there

MAN Diesel & Turbo's ME-GI engine, a dual-fuel engine that works according to the Diesel principle.

Ole Grøne, SVP Low-Speed Sales and Promotions at MAN Diesel & Turbo

will be a trend for coastal ships sailing between two points to adopt LNG-powered engines and, as we see with the TOTE order for containerships, for shipping lines sailing permanent routes where LNG is available at a low cost combined with local emission rules. The future will show what is most beneficial for owners."

MAN Diesel's approach to the question is pragmatic. Grøne continues, "The pure diesel engine still has a future as long as owners can procure fuel oil at a beneficial price. However, if LNG represents a better business case as a fuel, then owners will shift to it. We develop our engines to fulfill future, as well as contemporary, emission legislation. In this respect, we have the first Tier-III heavy fuel oil-powered engines already in service."

The advent of more stringent emissions requirements and the possibility that, at some point, both diesel and LNG will eventually require after-treatment in order to meet future, more stringent emissions requirements was also addressed. MAN's Senior Vice President added, "There could very well be a time where regulations are such that after-treatment will be required for all combustion engines, but a cleaner fuel like LNG will always be less demanding, in respect to after-treatment requirements, than a liquid diesel fuel." But Grøne says MAN will be ready for all eventualities. "Practically all of our Low Speed Engines are offered in an ME-GI version today. The majority of orders are still purely diesel engines and this will remain the case for years to come. You could compare the situation today with 100 years ago when we first introduced Diesel engines aboard oceangoing vessels with the famous MS Selandia. In the beginning, it was only ships in liner trade that were ordered with Diesel engines and it was only after 10 years that the first tramp ships were ordered with Diesel engines. Even up to the 1970's, some tankers were still being ordered with steam turbines. We are prepared for all fuel scenarios."

MAN Diesel & Turbo sees significant opportunities arising for gas-fueled tonnage as fuel prices rise and modern exhaust-emission limits tighten. Indeed, previous research indicates that the ME-GI engine delivers significant reductions in CO2, NOx and SOx emissions. Furthermore, the ME-GI engine has no methane slip, and Grøne touts it as the most environmentally friendly technology available.

## Silver Bullet?

Not unlike ballast water technology solutions, perhaps, and when it comes to environmentally correct and economically sound propulsion solutions, there may be no silver bullet to get every sector and size of vessel to the Promised Land. Considering the more than 115,000 commercial vessels on the water today, the introduction of less than 100 boats to the global propulsion equation does not necessarily constitute a done deal for LNG. LNG is coming. Indeed, it is here. To what extent that it eventually permeates the global marine markets is still to be determined. How operators determine what is right for them is another thing altogether.

# Maritime Error Management

By Geoffrey Gill

*Costa Concordia: An opportunity for advancing human factor awareness? Will the casualty advance desirable critical thinking and cognitive awareness or merely trigger shortfall RRPP?*

A maritime casualty with everything a novelist could hope for – a huge state-of-the-art modern passenger vessel strikes a rock and eventually grounds on the foreshore of a bucolic island town, thousands of lives are imperiled, likely chaos on the bridge, a captain – excoriated by officialdom – who contends he "fell" into one of the earliest departing lifeboats and now is suing to be re-hired by his former cruise line employer, divine intervention returning the vessel to shore according to the prosecutor, and – even – a mysterious blond and a Friday the 13th sailing and disaster date short by only three months from the 100th "anniversary" of R.M.S. Titanic striking an iceberg and sinking with tragic loss of life.

Sadly, on January 13, 2012, fiction became reality for Costa Concordia.

## Lessons Learned?

Already there is talk of "lessons to be learned" from this casualty. In fact though, once the vessel data recorded information is developed, analyzed, an official transcript issued and testimony is assessed, new "lessons" are unlikely to be revealed. The informed conclusions likely will be that lessons previously "learned" simply, as usual, are not being applied in practice as well as that common sense assessment of long standing conditions should be re-enforced by implementation of more Rules, Regulations, Policies and Practices, among which are included the International Safety Management Code and its attendant Safety Management System ("RRPP"). For example, passenger evacuation from the grounded Costa Concordia was impeded and inefficient because passengers had not received muster instruction and guidance within the few hours from boarding until the grounding. This, despite an informed maritime industry knowing for years that ships generally are at greatest risk from collision, allision, and grounding when close to land, such as when leaving port, than when under way on the open sea. Given this knowledge, one asks why were the conditions on Costa Concordia necessary to trigger the new common sense policy requiring mandatory emergency drills be conducted prior to a passenger vessel departing an embarkation port.

In keeping with maritime tradition, the casualty is being viewed with 20-20 hindsight in an effort to determine what happened and how similar events can be avoided in the future. Also in keeping with maritime tradition, the anticipated outcome will be consideration and eventual implementation of a variety of new reactive RRPP or modification of existing RRPP, or, more likely, both.

## RRPP: the panacea?

Danger lurks to the extent that new and existing RRPP will be accepted and relied upon as adequate to the risks and, trusting in that reliance, the industry will proceed "business as usual." But reality is that RRPP are not a panacea capable of remedying risk and human error within the maritime domain, despite politicians' and regulators' enthusiasm for reacting to media orchestrated popular concerns as well as even the well-intentioned separate efforts on the part of maritime management.

At least one trade journal has reported existence of a culture of Italian passenger vessels sailing close to shore, a practice of such long standing as to have received the Italian title "inchino." Shipboard morale benefitted from close passage off towns where many crew members lived and public relations benefitted from passengers' enjoyment of the novelty of the experience. Under such circumstances, credulity is strained when management disavows knowledge of its masters' participation in the practice. Inchino may present little risk if performed at a safe distance stated in promulgated RRPP. But existence of such RRPP does not, of itself, ensure adherence.

Given the implied beneficent purposes of inchino, more likely than not, human nature together with cultural and personality factors suggest that over time shipboard justifications would result in the prescribed safe distance observed being progressively decreased and so shrinking the margin of error initially factored into the determination of what distance a safe distance would be and so coming ever closer to land hazards. What initially may have been idiosyncratic behavior becomes shared as more and more sharp end practitioners perceived a benefit from coming closer to the island without experiencing peer or management criticism or punishment. This type of gradual RRPP erosion is styled "normalization of deviance," a pernicious undermining of RRPP.

Deliberate violation of RRPP, especially of those that are inartfully worded or are perceived as incompatible with the operational environment, is not infrequent. The violators' rationales include a misguided desire to advance the company's economic interests, lack of peer or managerial criticism as well as the personality of the violator. Therefore, RRPP ad-

herence cannot be presumed, even where simulator or audited competence is confirmed.

Even in the absence of violations, there is the potential for violation "coming out of the blue." A recent study, where sheep are persons normally disinclined to violate RRPP and wolves have no such scruples, reveals the propensity for RRPP violation:

***Sheep in Sheep's' Clothing (confirmed non-violators)*** *– 22.5% of respondents, guardians of the standards.*

***Wolves in Sheep's' Clothing*** *– 33.8% of respondents have not yet violated but would violate if circumstances are "appropriate".*

***Sheep in Wolves' Clothing*** *– 14.1% of respondents are violators but not happy violators.*

***Wolves in Wolves' Clothing*** *– 29.6% of respondents would not hesitate to violate RRPP.*

Strikingly, 77.5% of respondents either reported violating or would have no qualms violating when the opportunity arrives.

The maritime domain is unique in its long tradition of mariners' recognition and pride in their professional knowledge and competence combined with an environment in which the variety of potential risky circumstances is so extreme that no catechism of RRPP can account for all situations. The rigidity of RRPP must be balanced against a flexibility that encourages critical thinking and exercise of sound judgment. This necessity is recognized by Rule 2(a) of the COLREGS that, though inartfully worded, allows recourse to "the ordinary practice of seamen or … the special circumstances of the case." There is real danger that overly detailed and embracive RRPP, however well intentioned, undermine development of necessary judgmental skills. The issue is well stated by a shipmaster quoted as saying: "… when you are at sea, you have to be able to think, and you can't [think] when you must slavishly look up [written procedures] in a book. … No matter if your own thought is better or not, you have to do what is written." Unlike biblical Pharisees bound to the letter of a law, mariners require and deserve reasonable latitude allowing them to accomplish their primary duty of vigilance to protect the lives and material assets entrusted to their keeping.

The challenge that RRPP inhibit critical thinking runs from the sharp end operator upstream to management, where there may be misplaced reliance that RRPP, with little more, satisfies management's responsibility to ensure a functional Safety Management System. The folly of relying exclusively or excessively upon formal RRPP as providing an appropriate level of safety can be demonstrated from the 2007 sinking in Antarctic waters of the Liberian flagged passenger vessel Explorer, fortunately without casualties. The vessel was in compliance with class requirements for a vessel of her age, type and geographic operating area. However, the classification society and SOLAS rules were unrealistic in view of the harsh Antarctic conditions regularly to be encountered.

The vessel's shell plating thickness criteria were "grandfathered," accepted on a thickness percentage basis rather than tested against design load generated by ice pressure. The number of immersion suits required was insufficient for the ship's complement of crew and passengers. The four lifeboats were uncovered, exposing occupants to the harsh Antarctic conditions. Critical and proactive stakeholder thinking was invited by the investigation report asking "[r]ather than just meet the current SOLAS regulations[,] should cruise companies not carry out a safety case analysis based on the reality of working in these harsh waters?"

And while formal RRPP may reflect an industry standard, such standard will not necessarily protect against legal liability. The 1932 federal Second Circuit Court of Appeals admiralty decision T.J. Hooper, and its progeny, are accepted for the proposition that "there are precautions so imperative that even their universal disregard will not excuse their omission."

By their nature, RRPP tend to apply more heavily at the operational level than to management, with the exception of those that financially penalize consequences, such as post-Exxon Valdez OPA 90. Didactic RRPP affecting higher shore side level management are difficult to construct because such management is inherently inductive, that is to say based upon observation and wide-ranging experiences from multiple sources, with no one pattern fitting all situations, as acknowledged by the ISM Code. While management may benefit from the great discretion allowed due to its particular services, types of vessels and culture, the flip side is that the discretion must be soundly applied; taking into account all that management knows or should know. Simply put, the ship owner/operator/manager is not allowed to function with a "blind eye," such as to the potential dangers posed by inchino or the failure to conduct an appropriate muster before departing an embarkation port.

## Effective RRPP

RRPP innovation is easiest in response to particular past or presently existing situations, where relevant facts are discrete and known. But effective RRPP must address future eventualities to minimize their adverse occurrence and mitigate their consequences if they do occur. A curious and informed mind, willing to explore future possibilities and proactive risk assessment is required for drafting prophylactic RRPP and also a willingness objectively to determine with what response the RRPP are received by those persons intended to apply them and how the RRPP function in practice, i.e. an impact and sustainability assessment.

But reality is that RRPP are not a panacea capable of remedying risk and human error within the maritime domain, despite politicians' and regulators' enthusiasm for reacting to media orchestrated popular concerns as well as even the well-intentioned separate efforts on the part of maritime management.

(Photo courtesy Boskalis)

Remarkable strides have been made, since Titanic's loss one hundred years ago, in bridge-to-bridge and ship-to-shore (and vice versa) communication, ECDIS, ARPA, AIS, GPS and the like, as well as ship design and construction. And promulgation of well-intentioned safety oriented RRPP has flourished.

Remaining relatively consistent, however, has been the shipboard authority gradient (despite various incantations of bridge/crew resource management), a degree of nautical daring-do, and organizational competition between protection and profit; the latter no doubt exacerbated by the current challenging economic situation. And while there has developed greater awareness of scene-setting errors and omissions upstream from the front line operator and greater understanding of cognitive limitations, there has been no corresponding advance modifying cognitive limitations of human behavior, such as confirmation and other biases, situational awareness assessment, assimilating information of varying reliability and relevance from multiple sources, dealing with multiculturism and decision making, to name but a few.

When considering what "new" lessons may be learned out of the Costa Concordia casualty, worthy of consideration would be a critical examination of maritime domain RRPP and their limitations and also expanded operator and management education addressing cognitive factors and how those factors influence what occurs on the bridge, in the engine room, and in the boardroom.


**The Author**

**Geoffrey Gill** began his maritime career as deckboy on a Norwegian freighter. He subsequently graduated from the United States Merchant Marine Academy, United States Naval War College program and Fordham University School of Law. He has seen service in deck officer positions in break bulk and container vessels and is a Maritime attorney admitted in New York, Florida and California. Frequently a lecturer on a variety of maritime and maritime law issues, he is also the author of Maritime Error Management, published in 2011.

MARINE INSURANCE

# Small Sector – Big Risk

By H. Elder Brown, Jr.

*Why getting value and price from a marine insurer are not necessarily the same thing.*

Marine insurance represents but a minuscule part of the insurance industry, but the risks associated with insuring maritime companies are enormous. This fact alone makes the underwriting of marine insurance an art in and of itself. Understanding the process and mindset of a marine insurer will pay dividends for the serious buyer. Earning those dividends, however, involves some sweat equity from your side of the equation, too.

## Solid Coverage – for the long run

How does a vessel owner interested in a quality product at a fair price get the attention of a reputable underwriter? The process starts by securing reliable and proven representation for your interests. Some owners, large and small, think that the more agents they invite into a Request for Proposal, the better the results that they will find. Nothing could be further from the truth. Depending on the buyer, it often makes sense to have a sole representative in the market as there may really only be a few serious, quality markets interested in writing an insured's policy. Changing insurers as often as some vessels conduct fire and boat drills will not put your company in its best light. Eventually, and sooner than you think, the more solid underwriters will simply pass on writing your account altogether.

At the time an operator seeks coverage, on the other side of the equation, the insurance provider is also busy determining whether a prospect fits their underwriting model. Starting with an initial goal of establishing a long-term relationship, the effort to find common ground with an insured simply cannot be rushed. Adequate time to assess the potential account is a critical aspect of any underwriting decision; hence the practice of simply sending in an application and waiting for a quote is therefore problematic.

Written quotations for the business being underwritten should not be set in concrete. That's because further discussion with the insured can open the door to redesigning insurance, building a lasting relationship.

## Choosing Carefully – from both sides

Insureds should check carefully the reputation of any proposed underwriter and they should speak, candidly and directly, with respect to any concerns they may have. To do otherwise can find the insured very lonely when a chosen market fails to perform and not all underwriters have the experience to stick with their clients and many try to underwrite after a loss. Many times, individual underwriters, having failed in one company, will try to resurrect a new identity elsewhere. Marine insurance is not covered by any guarantee fund. Therefore, overly competitive markets tend to come and go, typically with the goal of making a fast buck without leaving enough money to pay future claims.

Quality insurers like to be taken seriously and many like to negotiate coverage accordingly. Having an underwriter's application fully completed and signed by the insured is always a good start. Each underwriter has designed their application to satisfy their own internal information requirements and insurers use highly trained actuaries. An actuary focuses on the financial risk and the unknown. The perils of the sea are huge and actuaries are worth their weight in salt if they understand the risks their principals intend to insure. That starts with the potential insured.

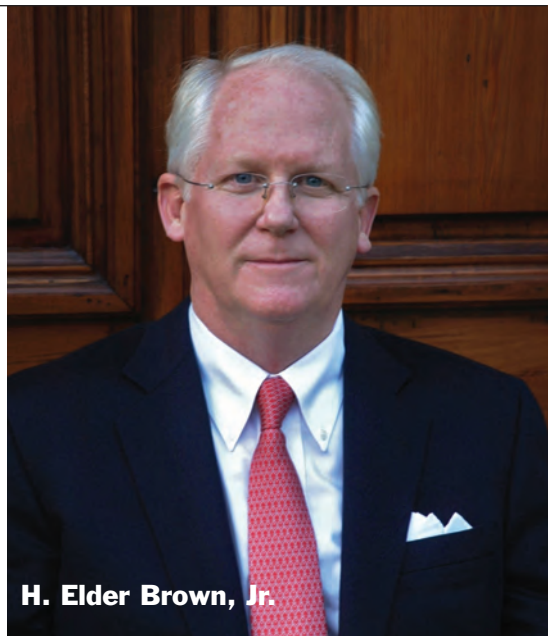
Complimenting the application should be an accurate loss record that consists of a narrative on the claims. In this case, more is better, and a quality insurer prefers more than five years of loss information, regardless as to how bad the earlier years may be. That's because long term experience, spread out over continuous marine insurance service and almost every conceivable claim allows a particular insurer to consider difficult accounts and give consideration to those insureds that truly display certifiable improvement of their loss record. That said, seasoned insurers will not give much credence to "green" years as it takes three years for any underwriting year to develop on average, liability claims can take 32-36 months to settle and year-over-year deterioration in incurred losses may increase 30-50% or higher.

When it comes to information, more is better. Supplying a detailed company narrative, inclusive of vessel data, pictures of vessels, contractual arrangements, offices and contact information of key personnel of the company is appreciated. Providing an insurer with preferred vendors such as attorneys, surveyors and adjusters is always helpful and opens the door for dialogue. Insurers, like insureds, have opinions on professionals in the maritime arena. Therefore, knowing these preferred professionals in advance will help both parties. The insurance contract is between the vessel owner and the insurer and both of them need to be heard.

## The Many Faces of Risk

Glossing over an insured's problems often backfires. At the same time, an insurer who is willing to work with clients who

Complimenting the application should be an accurate loss record that consists of a narrative on the claims. In this case, more is better and a quality insurer prefers more than five years of loss information, regardless as to how bad the earlier years may be. That's because long term experience, spread out over continuous marine insurance service and almost every conceivable claim allows a particular insurer to consider difficult accounts and give consideration to those insureds that truly display certifiable improvement of their loss record.


H. Elder Brown, Jr.

have experienced difficulties but who are willing to improve can represent a mutually beneficial relationship. Many insureds have a run of bad luck and can be seen in some quarters to be uninsurable. Successful remediation of troubled accounts can be accomplished but only if those parties are genuinely interested in better results and are willing to discuss their situation candidly.

Just as an honest man fears no audit, for some insureds, the mere mention of an audit raises undue concern. It should be expected that a quality underwriter will, at its own expense, perform annual reviews of all of its business. While many agents and insureds do a credible job outlining the overall flavor of an account, a serious insurer will want their own people to review the operations of an insured.

If an underwriter has taken the time to meet, review, underwrite and agree to bind insurances, they are displaying commitment to that insured. Recognizing that the better insurers want to send in their own experts should be seen as flattery. As a starting point, it is of great value if a well known, professionally credentialed surveyor has performed a survey for the vessel to be insured.

It saves a lot of time and will give the insurer some room for comfort knowing that an independent eye has viewed the physical risk.

Underwriters (should) consider risk in two parts. The first part involves the integrity of the insured and the other, the physical risk. The split between the two in percentage was 90/10 respectively. In soft market conditions, however, the percentages tend to flip-flop and losses within the industry can produce abysmal results. For this writer, placing the majority of the focus on the 90/10 split is the only way to go. Integrity is non-negotiable; you either have it or you don't.

When it comes to marine insurance, everyone likes a fair deal. This doesn't always involve the cheap deal, and it is a fact that the lowest price policy rarely if ever is part of quality coverage. There are no cheap, quality deals. Although ratings may be a bit stale, do not underestimate the insurance company financial ratings when selecting your insurer. The rating is indicative of an insurer's quality of management and their balance sheet strength. Good buyers will always go with the higher rated insurer: one who has the experience to underwrite insurance and one whose reputation gives the insured a good night's sleep. Placing your insurance with marginally or non-rated companies, with price as the primary driver, will likely give an insured untold financial worry.

Beyond the financial ratings, however, many insurers simply don't have the experience to write marine insurance. It is a fact that most insurance business is non-marine in nature. Moreover, very few specialize in this market sector. The top 25 insurers average just 1.4% of their business in this sector, and with rare exception; marine insurance is not the mainstay of most insurers. As such, many get in and out of the business whenever the wind blows unfavorably. Choose the firm that knows your business.

Serious operators in it for the long haul likewise choose a relationship-oriented company that has unparalleled client retention and exceptional claims handling service. That involves attention to detail on both sides. Ultimately, this produces the mutual loyalty that allows creative and flexible policies and also allows a client to budget insurance costs within several percentage points. That's because marine claims can go on for many years past the expiration of a policy year. Avoiding the turmoil that many insureds face (when utilizing marginal markets) will undoubtedly have better long-term results than those who treat marine insurers as an expendable commodity. Really, that's your best bet.

REGULATORY COMPLIANCE

# UK Club Checklists Aid Practical Compliance for Owners

*Aiding compliance was the specific objective of the UK Club's joint venture with Lloyd's Register when it launched its Port State Control (PSC) Checklists.*

The first pocket checklist in the series *"Port State Inspections"* was designed as an aide-mémoire to supplement owners' operational and maintenance procedures and used in conjunction with other guides in the series. Conveniently organized by distinct ship area, the checklist identifies the top 50 most common causes of ship detention. The pocket checklist is particularly useful when incorporated into pre-arrival checks, to ensure consideration has been given to all the areas that concern a PSC inspector.

## Checklists for Compliance

Port State Control detentions due to ISM failures are becoming more common as authorities group deficiencies together to justify detaining the ship. The operator is responsible for implementing effective safety and security management systems to ensure objectives are met. By doing this, the risk to the fleet can be minimized, costly fines and Port State Control detentions avoided. Effective implementation of ISM and ISPS protects the fleet's reputation and helps to get more out of the company's resources.

The Marine Pollution Prevention pocket checklist can help masters and owners comply with the International Convention for the Prevention of Pollution from Ships 1973, as amended by MARPOL 73/78. With a detailed list of areas that must be up to standard and covering areas where operational deficiencies are frequently found, it should help to reduce the risk of PSC detentions.

## Practical Safety & Port State Control

With an alarming number of deaths and injuries attributable to accidents involving lifeboats, this pocket checklist highlights the vital importance of life-saving appliances working properly and lifeboat drills being conducted safely. All lifeboat equipment should be ready for operation, well maintained and inspected regularly. This checklist will act as a practical, on the spot device to make sure that life-saving appliances fully comply with regulations.

The fourth pocket checklist aims to reduce the risk of fire and explosion at sea. Fire is one of the most expensive sources of cargo liability claims across the shipping industry. Only hatch cover problems and bad stowage have been comparable. Dry and bagged bulk were the cargoes most often hit by fire while crude oil, containers, dry bulk and cars produced the highest claims.

## Proactive Loss Prevention

The UK Club takes Loss Prevention seriously. One of the most significant risks is personal injuries, occurring on board with monotonous frequency and at great expense. Less frequently but often highly expensive are claims from non-crew sources such as those whose duties take them on board ships or who are involved in the loading/unloading process. Because P&I clubs are owned by their shipowner 'Members', it is essential that personal injury claims are not allowed to escalate. More claims equals higher premiums and no Member wants his premiums to rise.

For this reason, the UK P&I Club is committed to publishing loss prevention material both in paper form and downloadable from its website. This is intended to reach the crews of ships, the people who incur – and sometimes cause – personal injuries. They reinforce the training by showing, sometimes graphically, the results of accidents and even deaths that result from oversights, carelessness, laziness and even care for fellow shipmates (trying to rescue someone in trouble by putting yourself at risk, for example).

## Escape From Enginerooms

The latest publication, *Escape from Engine Rooms*, provides advice that should enable crews to exit the engine room quickly and safely should an incident occur. Engine rooms by their very design are hazard areas for all sorts of reasons to the unwary or unfamiliar – automatically starting machinery, loud noises, loud alarms, poorly indicated or signposted escape routes, locked doors that shouldn't be locked and other blind areas that will lead you into a place with no exit.

To a new crewmember, all will look perfect with clearly marked exits but after a few years' service, an engine room can look very different. The UK Club points to some simple safety ideas that can and should be applied even to new ships if the shipbuilder hasn't thought of it already.

Escaping from a smoke-filled engine room is more difficult, even if the smoke is not dense, and the UK Club suggests painting arrows on the decks and gangways to lead escapees to safety. It should not be forgotten that while the ship's engineers may be capable of getting around the engine room blindfolded, the same can't be said of new crew or visiting technical personnel.

> "Because P&I clubs are owned by their shipowner 'Members', it is essential that personal injury claims are not allowed to escalate. More claims equals higher premiums and no Member wants his premiums to rise."

**The UK Club's Loss Prevention Director Karl Lumbers**

## Slips, Trips and Falls

Another recent publication is *Risk Focus: Slips, trips and falls.* Reducing slips, trips and falls may appear to be at first a simple issue but the UK Club stresses its importance by pointing out that slips, trips and falls represent nearly one in three of the large personal injury claims submitted to the UK Club and have amounted to a staggering $155 million over the past ten years.

The Club's Loss Prevention Director Karl Lumbers, referring to personal inuries and claims that arise from these incidents, "They are important because they represent genuine pain and suffering from people who have been injured or even killed because they have slipped, tripped or fallen aboard ship. It is not simply a matter of money, squashed metal or damaged ships as encountered in other sorts of claim." He continued, "Inevitably many of these claims are caused by a moment of carelessness, thoughtlessness or complacency as people have moved around a ship, possibly doing their jobs, or even just because the ship is not only their place of work but where they live. It is easy to dismiss these unpleasant accidents as 'human error' or even 'crew negligence' but to examine the detail of so many of them is to reveal other contributors to the chain of causation."

Lumbers adds, "Training could have been deficient or even completely missing as there is often an assumption that people 'can look after themselves' and must take responsibility for their own actions. The environment, which is mostly a function of design, may well have been a contributor: if there was inadequate lighting, if the dangers were not obvious, or the particular design of the ship required people to put themselves in hazardous situations just to get the job done. Visitors to the ship unfamiliar with the layout of the vessel are especially vulnerable."

"Because of the huge costs of these claims and because of the human suffering represented by each of them, we strongly believe that a concerted attack must be made on the incidence of slips, trip and falls. We need to understand better the reasons behind the existence of these hazards so that we can put in place controls that will hopefully prevent accidents occurring, but will also mitigate their consequences when they do."

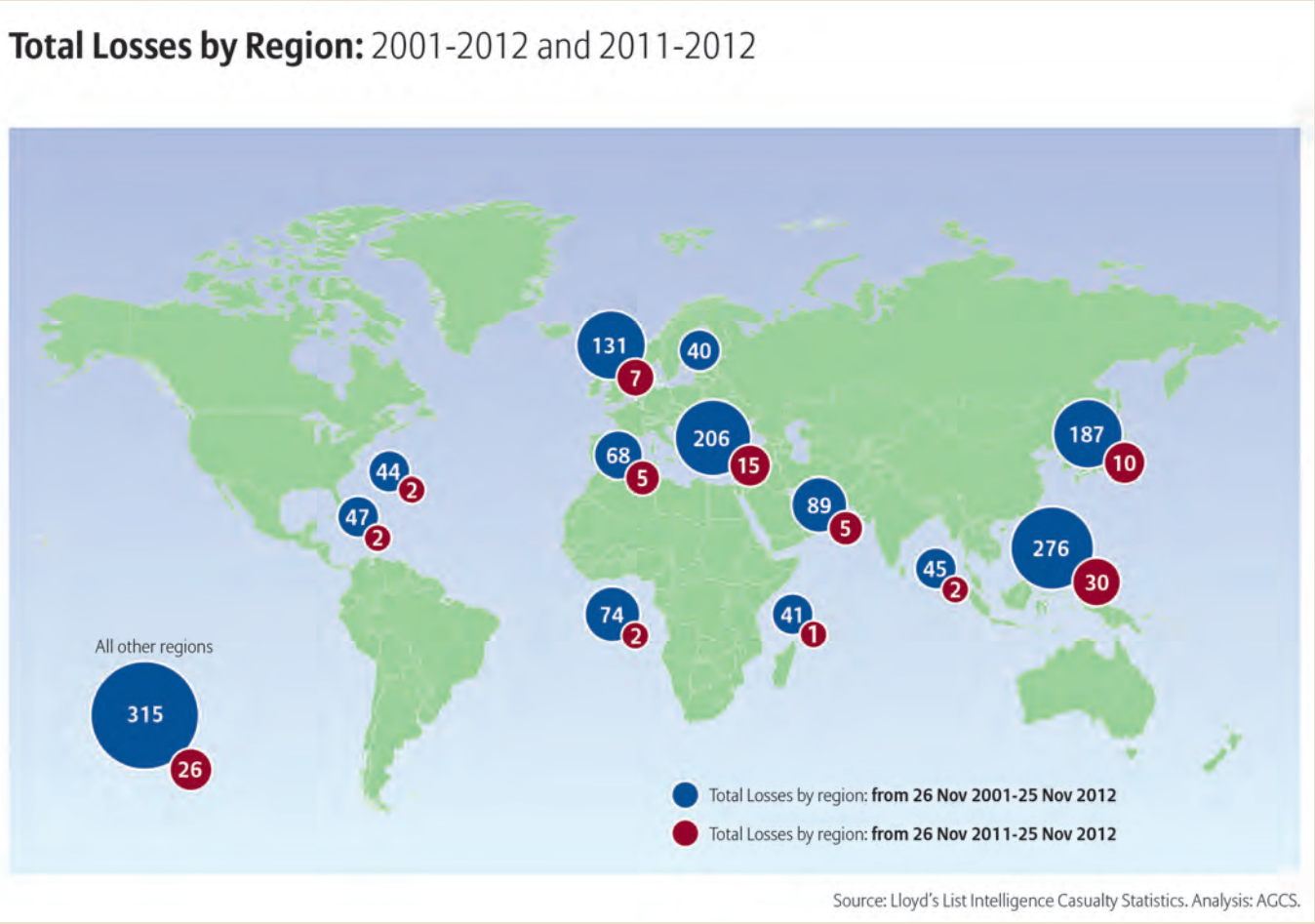
## Mooring Incidents

Another activity which has the capability of serious injuring, maiming or even killing crew members takes place during the arrival or departure of a ship from port. While the Club concedes that its inspectors report that equipment used during mooring is generally found to be in good condition, this is not always the case. Consequently, *Risk Focus: Moorings* addresses those instances where things have been done incorrectly or could be done better. Over the past few years, the UK Club has published a great deal on this subject and all of it is downloadable from the Loss Prevention section of its website.

While it may be difficult to prove a direct link to these useful publications, the UK Club can show a better than average performance for its ships when they encounter PSC inspectors. Industry association Intercargo states that UK Club ships had only 1.82 deficiencies raised per inspection, much lower than the industry average figure. The UK Club has subsequently produced checklists on ISM / ISPS, Marine Pollution Prevention, Marine Fire Safety and Life-Saving Appliances.

# Shipping Losses & Risk

Allianz Global Corporate & Specialty's Safety and Shipping Review 2013 focuses on key developments in maritime safety during 2012, and analyzes reported shipping losses (of over 100 gross tons) during the 12 months prior to 25 November 2012. The recently released statistics and analysis are an eye opener for any stakeholder and the annual review also examines trends and developments affecting shipping safety, future challenges to safety and looking ahead; some topics to watch. Allianz identifies 106 ship losses in the 12 months to November 25 2012 – up from 91 ships the previous year, but a 27% decrease on the ten year average of 146 ships per annum. Despite this long term downward trend, Allianz says that human error remains the core challenge. Twice as many shipping accidents centered on the seas around South China, Indo China, Indonesia and the Philippines. Shipping losses also occurred more often in the East Mediterranean and the Black Sea or around Japan, Korea and North China (10 losses).




Foundering (sinking or submerging) was the most common cause of losses in the past year (49%) followed by wrecking or running aground. Collisions accounted for a relatively small number of losses (6%).

## Cause of Losses: 2001-2012

| CAUSE / YEAR > | 01-02 | 02-03 | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 | 08-09 | 09-10 | 10-11 | 11-12 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Collision | 20 | 21 | 13 | 24 | 25 | 16 | 11 | 13 | 10 | 3 | 6 | 162 |
| Allision | 2 | 1 | 3 | 4 | 4 | 2 | 1 | | 1 | | 2 | 20 |
| Foundered | 51 | 59 | 72 | 62 | 61 | 68 | 74 | 62 | 58 | 50 | 52 | 669 |
| Fire/Explosion | 35 | 22 | 21 | 18 | 18 | 15 | 17 | 14 | 12 | 6 | 11 | 189 |
| Hull Damage | 24 | 12 | 7 | 7 | 5 | 11 | 3 | 8 | 3 | 3 | 5 | 88 |
| Missing/Overdue | | | 1 | 3 | 1 | 1 | | | 1 | | | 7 |
| Machinery Failure | 15 | 13 | 9 | 10 | 7 | 17 | 8 | 7 | 3 | 5 | 6 | 100 |
| Piracy | | | 1 | 1 | | 1 | | 1 | 2 | | | 6 |
| Wrecked/Aground | 22 | 34 | 28 | 23 | 26 | 39 | 33 | 24 | 18 | 24 | 23 | 294 |
| Miscellaneous | 8 | 7 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | | 28 |
| Grand Totals | 177 | 169 | 156 | 154 | 149 | 172 | 148 | 131 | 110 | 91 | 106 | 1563 |

The rate of losses declined over the period in general, with cargo and fishery vessels making up 61% of losses, despite making up approximately 45% of the average world fleet. Passenger vessel losses make up a small number of the overall shipping losses, despite media attention.

## Losses By Type of Vessel

| Type / YEAR > | 01-02 | 02-03 | 03-04 | 04-05 | 05-06 | 06-07 | 07-08 | 08-09 | 09-10 | 10-11 | 11-12 | TOTAL (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Barge | 4 | 3 | 2 | 5 | 7 | 5 | 4 | | 1 | | | 31 |
| Bulk | 9 | 11 | 6 | 8 | 8 | 10 | 8 | 12 | 10 | 12 | 7 | 101 |
| Cargo | 70 | 68 | 65 | 58 | 56 | 76 | 55 | 49 | 57 | 35 | 51 | 640 |
| Chemical/Product | 6 | 9 | 9 | 7 | 10 | 5 | 9 | 8 | 4 | 4 | 7 | 78 |
| Container | 1 | 1 | 1 | 2 | 5 | 3 | 1 | 5 | 4 | 2 | 4 | 29 |
| Dredger | 4 | 1 | 4 | 3 | 2 | 4 | 3 | 1 | 1 | 2 | 1 | 26 |
| Fishery | 43 | 31 | 30 | 38 | 23 | 34 | 36 | 30 | 20 | 17 | 12 | 314 |
| LPG/LNG | 2 | | | 2 | | | 1 | | | 1 | 1 | 7 |
| Other | 13 | 9 | 4 | 3 | 2 | 7 | 4 | 6 | 3 | 2 | 6 | 59 |
| Passenger | 11 | 14 | 10 | 13 | 12 | 7 | 5 | 5 | 2 | 8 | 3 | 90 |
| RORO | 5 | 7 | 9 | 7 | 10 | 5 | 8 | 5 | 1 | 2 | 4 | 63 |
| Supply/Offshore | 1 | | 3 | 3 | 3 | 5 | 1 | 3 | 1 | 2 | 2 | 24 |
| Tanker | 2 | 4 | 3 | | 2 | 1 | 3 | 2 | 3 | 1 | 2 | 23 |
| Tug | 6 | 8 | 9 | 5 | 8 | 9 | 9 | 5 | 3 | 3 | 6 | 71 |
| Unknown | | 3 | 1 | | 1 | 1 | 1 | | | | | 7 |
| Totals | 177 | 169 | 156 | 154 | 149 | 172 | 148 | 131 | 110 | 91 | 106 | 1563 |

**Other key findings of the report:**

Human error remains a root cause of most incidents. Fatigue, economic pressures, and inadequate training are causes for concern. New regulations focus on the problem of human error. The Maritime Labor Convention (2006) will help improve safety by addressing the welfare and working conditions of seafarers. Major shipping companies have initiated self-regulation initiatives post-Costa Concordia, with the Cruise Lines International Association and the European Cruise Council partnering to lead industry-wide voluntary adoption of policies that go beyond international regulations. Eventually, self-regulation of the industry may become the core driver of safety. Technological improvements such as the introduction of mandatory Electronic Chart Display and Information Systems (ECDIS) in July 2012 are expected to reduce accidents, but only where properly applied with effective training and management oversight.



# Maritime Professional

2013 Editorial Calendar

## Q1 Maritime Risk

Publish: **March 2013**

**Ad Closing: Feb 15th**

Risk is everywhere on the waterfront. Define, control and mitigate your maritime risk, with guidance taken directly from the pages of this edition

- Finance, Insurance, P&I Cover
- Security, Safety & Operations
- Prevention and Response & Loss Control
- Maritime Salvage & Response

**ASNE Day (Feb 21-22 Jacksonville, FL)**
**Seatrade Cruise Shipping** (Mar 11-14 Miami Beach, FL)
**CMA Shipping 2013** (Mar 18-20 Stamford, CT)
**AWO Spring** (Apr 16-19 Washington, DC)
**Workboats Exchange (April 1-4)**
**OTC 2013 (May 6-9 Houston, TX)**
**Marine Money** (May 8 Houston, TX)

## Q2 Energy - Offshore Exploration & Transportation

Publish: **May 2013**

**Ad Closing: May 1st**

The oil and gas sector gets the MarPro treatment, with in-depth reports on the sector.

- Classification & Ship Registries: The CommonThread to Quality
- LNG: Upstream, Downstream & Your Bottom Line
- Navigating the New Normal: Regulatory, Safety & Profit Centers
- Offshore Support Evolves: For Operators, Designers & Shipyards

**NorShipping 2013** (Jun 4-7 Oslo, NO)
**Marine Money Week** (June TBA New York, NY)

## Q3 Training & Security

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**Ad Closing: Sept 1st**

MarPro explores the most important aspects of ocean shipping. As safety and regulatory compliance parameters rapidly evolve, so too will training and education requirements and shipbuilding standards. Find out how, why and when each will impact your bottom line.

- Crew Welfare, Recruiting and Seafarer Retention
- Ship & Port Security, Anti-Piracy Measures
- SatCom Evolves: Technology, Affordability & Real Utility
- Maritime Simulation & Navigation

**Int'l Workboat Show** (Oct 9-11 New Orleans, LA)
**American Waterways Operators** (Oct 16-19 Miami, FL)
**Europort Rotterdam** (Nov 5-8 Rotterdam, NL)
**SNAME Annual Meeting** (Nov 6-8 Seattle, WA)

## Q4 Shipbuilding, Repair & Conversion

Publish: **Dec 2013**

**Ad Closing: Nov 27th**

Zeroing in on design standards, machinery, engines, hull forms and maintenance issues.

- Propulsion: Emissions Regulations & Engine Technology
- CAD/CAM & Naval Architecture: Two kinds of green
- Ballast Water Treatment: What best fits your fleet &business plan?
- Machinery & Hardware: At the heart of your operation

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