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Compliance

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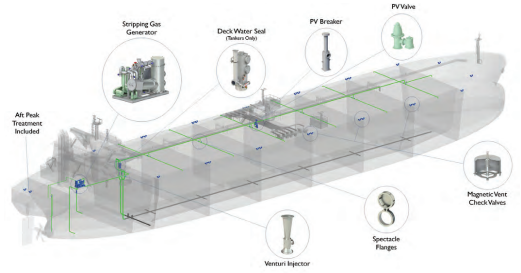

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Compliance & Stewardship: As the global maritime market works to incorporate a host of new rules on technical and personnel matters, its greatest challenge will be to run clean, compliant ships while being a sound environmental steward ... and still maintaining a sound balance sheet.

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Member

BPA WORLDWIDE BRAND REPORT

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Are Stewardship & Compliance Mutally Exclusive?

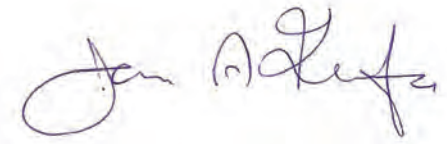
The Environment takes center stage in this edition of *Maritime Professional*. All of us within the maritime community are only too aware of the potential impact that our collective commerce might have on both local and global ecosystems. That said; and if stewardship is the ethic that embodies responsible planning and management of resources, while compliance is defined as the act of conforming, acquiescing, or yielding, then an important question remains unanswered: *can both endeavors exist as one within our business plans?* That depends on your corporate culture. In the coming year, it also may be the key metric that determines the fate of your business enterprise.

Stewardship and Compliance don't necessarily sound like they belong in the same sentence. And yet, within these pages, NAMEPA's founding Chairman Clay Maitland says that we cannot continue to leave either risk management or private-sector involvement in the hands of failed policy leaders and myopic spending policies. Industry has to take the ball and run with it. Successful compliance with the myriad regulations now pushing down on the maritime industry will require leadership ahead of the hammer. That means corporate stewardship.

Within the bigger regulatory picture, Port Security, Environmental Compliance Areas, the Maritime Labor Convention, Ballast Water Treatment and – if you are a U.S. inland brown water operator – the new subchapter M rules, all come together at just about the same time. Collectively, these rules represent the potential to eventually create a safer and more environmentally correct waterfront. At the same time, the total cost for compliance is also driving business decisions from Houston to Singapore, and beyond. Within these pages, we address the operational considerations of new regulations. Separately, Barry Parker (the cost of compliance) and Harry Ward (maritime mergers & acquisitions) each provide their own take on the all important financial side of the ledger.

It is clear that the regulatory reach of the world's governments only extends so far. Anyone who doubts that needs to look no further than page 61 of this edition where the breadth of what the United States Coast Guard trusts others to do on their behalf – the world's IACS member classification societies, for example – becomes only too clear. That's not going to change any time soon. Industry involvement in compliance is therefore already very much a part of the compliance equation, but there are many other forms that this can take, as well.

Compliance and corporate stewardship: The maritime professional who focuses too closely on the former, to the detriment of the latter, may find his or her business in hot water before too long. On the other hand, following the five-year course line set by NAMEPA members might just keep you from running aground in a world fraught with whistleblowers, hungry competitors looking to pick off a weaker rival, or merely the panic of the last-second scramble to satisfy a dozen regulators who all want something at precisely the same moment. You can do it. Turn these pages to find out how.



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

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Insights

The Rest of the Story

No Foreign 100% Scanning of In-bound Cargo Containers

By Dr. Jim Giermanski

While some call it a long road to nowhere, the outcome was predicted, and the security of the U.S. with respect to supply chain vulnerabilities is still weak. Here's where we are now.

Scanning 2006 – The U.S. Law

In December, 2007 I wrote an article critical of the federal requirement of 100% scanning required by the SAFE Port Act signed into law in October 2006. The SAFE Port Act stated:

I stated then and I state today: with respect to scanning, once a container arrives, it is simply too late. Our ports and nation would be at risk. To demonstrate this vulnerability, a shipping container carrying only 16 ounces of explosives was detonated by triggering it with Customs and Border Protection's (CBP) own RFID technology used in our ports at this time.

"SCANNING CONTAINERS.—Subject to section 1318 of title 19, United States Code, not later than December 31, 2007, all containers entering the United States through the 22 ports through which the greatest volume of containers enter the United States by vessel shall be scanned for radiation… (Section 121). Additionally, the Act says that scanning must detect …shielded and unshielded nuclear and radiological material (Section 231).

Scanning 2007 – Another U.S. Law

One year later, in an attempt to move the scanning to a location outside our territory, a new law was passed. On 3 August 2007 the United States enacted the Implementing Recommendations of the 9/11 Commission Act of 2007. This Act legislated that by July 1, 2012, 100% scanning of U.S.-bound maritime cargo be done abroad. In 2007, I said that legislating that a foreign nation obey our law, and bear the cost of doing so, was ridiculous. As a nation, we cannot or should not mandate another nation to provide the means for or perform the function of scanning U.S. in-bound containers in their ports for our purposes. There is an obvious issue of sovereignty and a foreign nation's right to decide what steps to take within its sovereign territory.

I also claimed that the level of technology available to do the scanning was unavailable and likely not to be available by July 1, 2012. U.S. ports utilize PVT (short for a plastic) portal machines that are very good at detecting radiation from materials such as ceramic tile but not highly enriched uranium or shielded uranium.

Scanning 2008 – CBP Statement

In 2008, Jay Ahern, Deputy Commissioner of CBP, disagreeing with the mandated July 2012 date, suggested that 100% scanning should be limited to high-risk trade corridors. However, as a result of pilot programs at operational at ports in Honduras, Pakistan, the United Kingdom, and certain terminals in Hong Kong, South Korea, Singapore and Oman, a number of significant operational, technical and diplomatic challenges associated with 100 percent scanning were identified:

- *sustainability of the scanning equipment in extreme weather conditions and certain port environments;*
- *varying and significant costs of transferring data back to the National Targeting Center in real time; and*
- *re-configuring port layouts to accommodate required equipment without affecting port efficiency.*

As a result, Ahern said CBP believes that the resource commitment required to achieve 100 percent scanning at the more than 700 ports shipping to the U.S. … could be more appropriately directed towards other cargo and passenger venues that present an equally real threat, but where current security programs are less developed.

Also in 2008, a Government Accountability Office report argued that the statutory requirement for 100% scanning of U.S.-bound container cargo by 2012 could threaten efforts to fashion international supply chain security standards and may actually provide a lower level of security than the current risk management approach.

2009 – Secretary of Homeland Security Testimony

In her, "Transportation Security Challenges Post-9/11" testimony before the Senate Commerce, Science and Transportation Committee, Secretary Napolitano stated Technology doesn't exist right now to effectively and automatically detect suspicious anomalies and cargo. This makes scanning difficult and time-consuming. Available technology is also limited in their ability to see accurately through very dense cargo and density often can be the measure of something being disguised. Other challenges are logistical. Many ports do not have a single point through which most of the cargo passes, which means that 100-percent scanning would either severely slow trade or require a redesign of the port, something I said two years earlier.

Additionally, she added: … the costs of 100-percent scanning are very steep, especially in a down economy. DHS equipment costs alone would be about $8 million for every one of the 2,100 shipping lanes at the more than 700 ports that ship to the United States. So therefore, DHS is compelled to seek the time extensions authorized by law with respect to the scanning provision. Thus, DHS will continue to build a layered approach to maritime cargo security, collecting advanced information on cargo entering the United States like … who has it, where it's going, who may have had access to it, so that we can focus on higher-risk cargo. Once DHS ensures that a company has put strong security measures in place, it will we focus on higher-risk shipments. She concluded: … we need to address the security of maritime cargo through a wider lens: how to mitigate the threat against all potential pathways including, metaphorically, the other doors, the windows and the chimney.

2010 – The Death Knell

In February, 2010, the European Commission released its staff working documents that set forth the EU's position and decision with respect to 100 % scanning. The EU objected to implementing 100% scanning and highlighted its consequences if implemented:

- *A total of €430 million would be required for investments for scanning and radiation detection including significant changes in infrastructure to create space for extra facilities for ports and terminals involved in US bound container traffic.*
- *Operational costs in European ports would rise by more than €200 million annually, including expenditure for 2200 extra staff.*
- *Direct transport costs of US-bound consignments would increase by about 10%...*

The 100% scanning requirement could lead to a loss of some €10 billion for the EU and US combined. Further rough calculations suggest that the worldwide loss due to the scanning law could be in the order of €17 billion. Moreover, if, following the US model, 100% scanning were replicated on a world scale to address the 'bomb in the box' as a worldwide threat, the annual welfare loss for the world might reach €150 billion.

In the absence of a convincing demonstration that 100% scanning at export will produce significant global supply-chain security benefits, incurring such costs is not justified.

In effect, the EU said no. It would not comply with U.S. unreasonable demands on sovereign nations and trading partners. Therefore, the congressionally mandated July 2012 deadline for the implementation of 100% scanning will not be met.

The consequences are that the United States has today include:

- *scanning system at its ports that is technologically-challenged, especially with respect to detecting shielded highly enriched uranium (HEU);*
- *an RFID system used by CBP that can trigger a catastrophic explosion;*
- *an ACE (Automated Commercial Environment System) that perpetuates the concept of "let's pretend" we know what's in the container;*
- *a Container Security Initiative (CSI) program that is limited in scope and doesn't really work;*
- *a transshipment system of foreign seaports where security barely exists and where even previously scanned containers can be compromised and re loaded aboard ships destined for the United States;*
- *a layered approach to security that is clearly better than nothing; and*
- *the refusal to promote the use of existing off-the-shelf container security devices (CSDs) and sensors that would do what 100% scanning was supposed to do.*

DHS continues to be out of touch in the maritime and land conveyance global supply chain security area. Why?

Dr. Jim Giermanski is Chairman, Powers Global Holdings, Inc., an international transportation security company. He has authored over 175 articles and is currently writing a global supply chain security book.

Insights

Cost of Compliance & the Oversupply of Tonnage

By Barry Parker, bdp1 Consulting Ltd.

Compliance Costs Collide with Oversupply of Tonnage and a Challenged Economic Climate. Can operators cope? And, what will it cost them if they can? MarPro's Barry Parker weighs in.

At a time when most maritime business sectors are suffering the pains of oversupply, the pace of regulation has also increased dramatically. In a business that went from the boom times of five years ago to near bust conditions for weaker players in 2012, penny pinching is now the norm. Nevertheless, the mandated costs brought on by regulation remain in the equation, whether we like it or not. And where choices are involved, how will shipowners analyze the alternative of a capital expenditure against cost savings in a future full of unknowns? A related question concerns the implications of regulation on the competitive landscape. For example, if everyone faces the same requirements, is one company (or segment) impacted disproportionately more or less than others? Any discussions of this type must also consider whether increased costs can be readily passed on to cargo providers in the form of increased freight rates or hires. So far, that – according to operators themselves – hasn't been the case.

Much recent attention has been focused on mandated installation of equipment for ballast water treatment (BWT), where a clear implementation timetable has now emerged following changes to U.S. Coast Guard regulations earlier in the year. In late June, the new amendments – with the U.S. rules closely paralleling those of the IMO – took effect. Reduction of emissions resulting from fuel burned, along with overall energy efficiency, are topics that have been widely discussed. The coming of the North American SECA in August, and the IMO's guidelines on the Energy Efficiency Design Index (EEDI-coming into force at the beginning of 2013), have brought these issues to the forefront. All of these variables have costs, sometimes dramatic, that have to be dealt with.

Investment in BWT, where there is a cost but not a financial "return on investment," differs fundamentally from the choices facing consumers of fuels, where upfront costs (in a the form of a more efficient engine, a conversion to LNG fuelling, or purchase of a scrubber) are, in part, balanced against future cost savings.

Ballast Water Treatment

The market for retrofits of BWT systems has been estimated at around 40,000 vessels, according to Wartsila's Tom Nyman, General Manager, Environmental Services, Water Solutions, who also points out, "There is concern over the supply of BWTs and with the installation skills and resources of the industry to handle so many retrofits." Other estimates reach as high as 75,000 vessels to be retrofitted, where the preparation cost may rival that of the actual hardware.

An additional data point comes from Teekay Tankers, who operate a fleet that includes 28 owned vessels; some as old as 14 years and others delivered as recently as 2009. In its most recent "Form 20-F" (similar to an annual report), the company stated: "…we estimate that the installation of ballast water treatment systems on our tankers may cost between $2 million and $ 3 million per vessel."

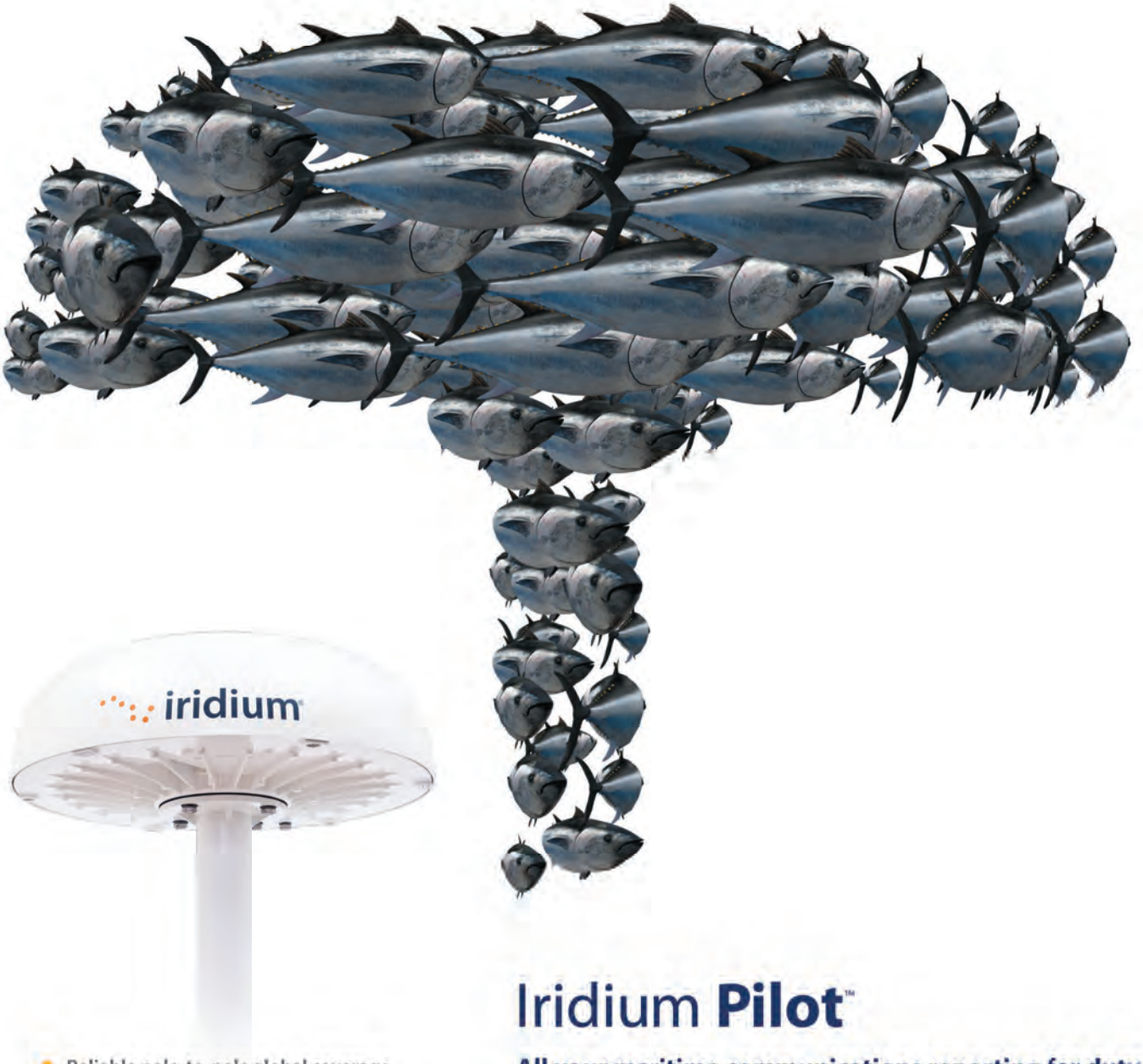
Teekay Tankers' fleet of mainly Aframaxes and Suezmaxes would likely require BWT equipment with throughput capacities of at least 50,000 m3 and a relatively high pumping rate of 2,500 m3/hour, or more. Most deepsea newbuilds with keels laid after January 1, 2012 must include a BWT, with the cost included in the yard's quoted price.

Costs of BWT extend beyond the capital expenditure. Data on annual operating costs is not widely available, and consultants' estimates of such expenses have varied widely. An analysis by Lloyds Register published in 2010, reflecting input from multiple BWT suppliers, showed a mean estimated operating cost of $39 per 1,000 cubic meters (m3) of treated water. Depending on assumptions of system performance, system capacity and the number of yearly ballast voyages, this could equate to an annual operating cost in the region of $30,000 per vessel. Hence, in the case of our Teekay Tankers example, a $30,000 annual vessel cost could impact the bottom line by almost $1 million USD annually – not including off hire time (for installation) and unexpected maintenance issues.

SoX, NoX and Greenhouse Gases

Reduced sulfur content in fuels has already cost shipowners plenty. The MARPOL Annex VI delineated timeline has already seen the worldwide sulfur cap drop to 3.5% (from 4.5%). In SECA areas – which now include North America – the cap will drop to 0.1% at the beginning of 2015 (from 1% presently). Worldwide, maximum allowable sulfur levels could drop to 0.5% as early as 2020 if the refining industry is able to provide sufficient low sulfur fuels. Peter Hinchliffe, Secretary General of the International Chamber of Shipping

Ship Shape



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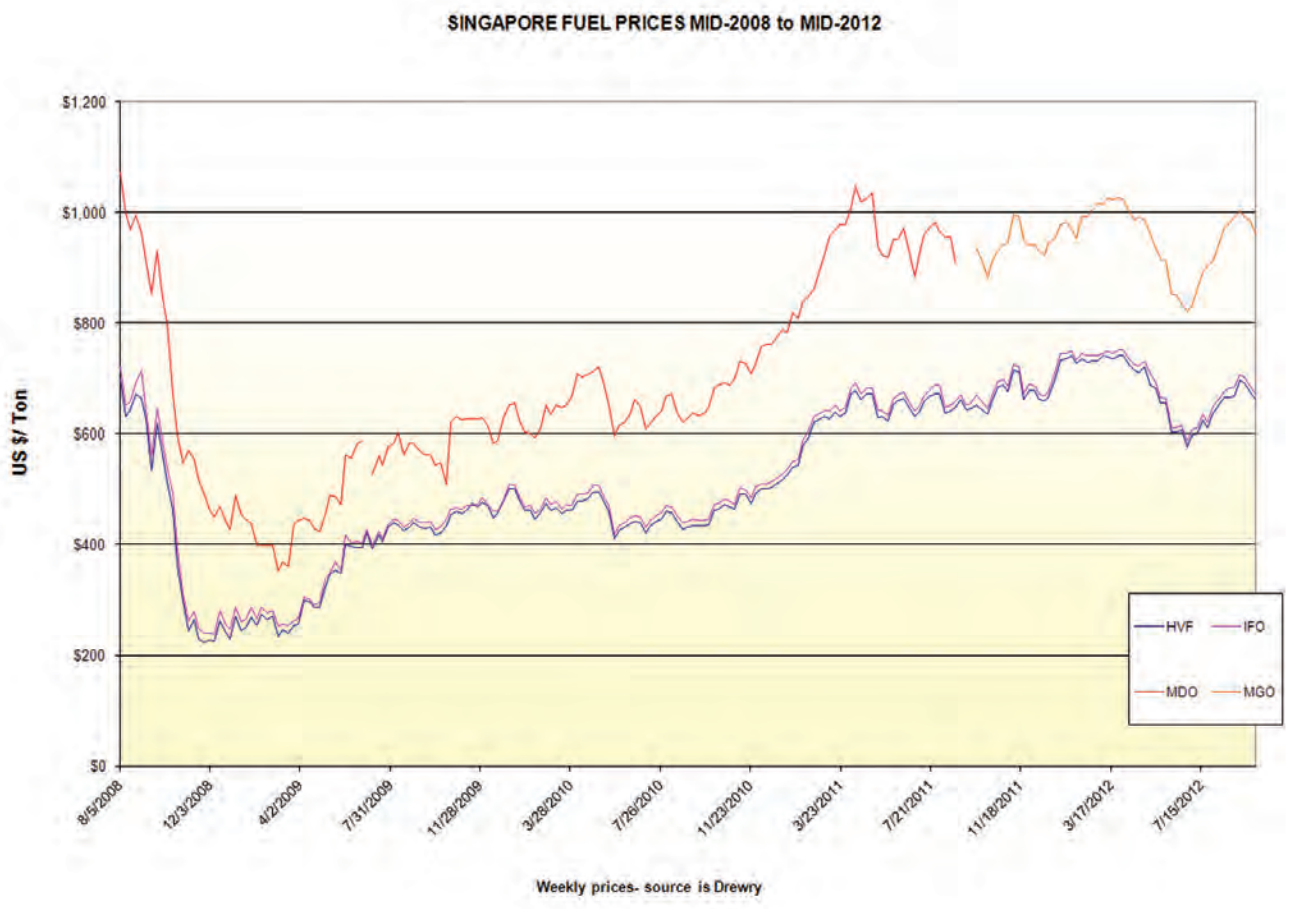
(ICS) said, in early October, "…the current 50% price differential between low sulfur distillate and the residual fuel oil that is currently in use is predicted to increase yet further if the new demand that will be created by the MARPOL requirements is not matched by increased supply."

Owners face economic choices in meeting sulfur emissions requirements; however, the investment return is far from certain. Historically, differentials have varied widely, ranging from $200/ton to $500/ton; reduced distillate fuel supplies will lead to the higher distillate premiums alluded to by ICS Secretary Hinchcliffe. From a commercial perspective, owners must consider whether certain sectors or contractual arrangements might enable full or partial pass-through of increased fuel prices.

EEDI

Financial analysis is not straightforward. Analysts have suggested that the Energy Efficiency Design Index (EEDI), effective January 1, 2013, will bring about additional capital expenditures for newly ordered tonnage. Price data is sketchy, at best, for newly emerging alternatives, notably LNG fuelling. Ongoing political sparring on Greenhouse reduction further complicates matters; amidst an unclear set of rules, it is difficult, if not impossible to estimate costs (which could take the form of capital investment or fuel procurement choices) and benefits. In the latest twist, the European Union (impatient with the IMO's perceived lack of progress and concerns about the efficacy of the EEDI) will begin monitoring maritime CO2 emissions in 2013. Financial executives, eager to gain visibility into future costs, are waiting to see whether the IMO adopts additional tools to reduce emissions, such as levies on fuel purchases, or development of a trading market for carbon credits.

The Germanischer Lloyd (GL) classification society, in conjunction with engine maker MAN Diesel, has conducted a rigorous economic analysis of investment in scrubber technology, in its early stages for vessels, and investment in ship's engines burning LNG, where supply chains are only beginning to emerge.



Using scenarios of future pricing for heavy fuel, gas oil and LNG fuel, out to 2030, the researchers concluded: "Using LNG as ship fuel promises less emissions and, given the right circumstances, less fuel costs." The lengthy analysis is heavily qualified, and is vessel and trade-specific; LNG's advantage depends on a larger price difference for LNG versus heavy fuel, a reasonable cost for an LNG tank system and the percentage of operation within ECAs. Initial investments for scrubbers and for LNG systems, shown for a notional newbuild 2,500 TEU containership, are each around $5 million. The analysis also considers the installation of Waste Heat Recovery (WHR) systems, which adds approximately $4 million to the upfront outlay. For the basic LNG configuration, annual benefits, in the form of cost savings (compared to distillate fuels) are calculated to be around $4 million; when vessels spending a significant proportion of trading time inside ECAs, benefits rise and the theoretical "payback" times are calculated to be less than 12 months in the most optimistic cases.

Bottom Line – No Easy Answers

Because of the bespoke nature of cost economics, and the large number of variables involved, the next few years will be very busy for GL and others in the business of performing such calculations for shipowners. For the operators themselves, and given the likely ongoing constraints on sourcing capital, a wrong decision today could contribute to disaster tomorrow. The new cost of compliance comes at a particularly bad time. Yet, these costs are not going away and must remain a part of every owner's financial planning.

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

NAMEPA After Five Years Continues Building Bridges

By Clay Maitland
Founding Chairman of NAMEPA

Industry Icon Clay Maitland, founding chairman and leader of NAMEPA, explains how the organization is working towards is engaging business, the regulators and environmental groups.

When NAMEPA was founded in October 2007, there had been no major oil spill in North America waters since the EXON VALDEZ in 1989. Although there were shoal waters ahead for those with eyes to see them, 2007 was seemingly a boom year for all sectors of the shipping industry. What a difference five years makes. NAMEPA has developed – in addition to more than its 100 members – a close relationship with regulators, environmentalists and private sector leaders.

NAMEPA is the North American Marine Environment Protection Association. The words "North American" give some idea of its scope. Membership is open to any company that openly shares its commitment. It was conceived from a growing sense among industry leaders that shipping was being marginalized, and, to a degree, misunderstood. The rising tide of regulation, and the growing pressures imposed on our fragmented constituencies, represented (as they still do) a challenge that was (and is) not fully met by other private-sector representatives. Too often, it is said, we are good at communicating with ourselves; less so, with the public, with thought leaders in the community at large, and with regulators.

In 2007, "environmental risk" in shipping was virtually unheard of. True, a few companies had launched corporate social responsibility programs, and there was some feeling – which gave rise to NAMEPA – that more needed to be done.

NAMEPA is committed to dialogue with those who, while working for cleaner seas, do not aim at blocking economic development, and those of us in the shipping industry that recognize our duty to protect our planet's most vital resource; and the need for us to work in partnership. We recognize the opportunities that exist, to achieve a balance between needs and resources. Part of this involves communicating. It also involves education of our future maritime industry leaders, students, and our "seed corn" as it were – on the importance of oceans.

North America, NAMEPA's field of endeavor, includes the Great Lakes – our planet's largest body of fresh water. North America itself is virtually an island, surrounded by an ocean that supports many industries, and millions of jobs. The oceans that surround our continent absorb roughly 26% of the CO2 emitted by human activity. About 6 million of our people live within coastal areas, from Alaska to Mexico and the Caribbean.

These and other people vote. The growing environmental concern for our oceans, which sometimes even penetrates to shipping's "great and good," is giving rise to massive regulatory pressures – the so-called "green squeeze" – in areas ranging from ballast water management to oil spill control, and air emissions. Above all, as the 2010 Deepwater Horizon disaster illustrated, there is a thing called political, as well as regulatory, risk. The crisis in relationships arising from these and other high-profile episodes means that we cannot continue to leave either risk management or private-sector involvement in the hands of failed policy leaders and myopic spending policies.

The oceans that surround us contain vast and extensive clean renewable energy resources, as well as oil and gas reserves, which will play a major role in meeting our future energy needs. It is possible that ocean energy sources will become a primary source for coastal communities, as well as our continent as a whole. We view international shipping as a crucial element in risk management, and in the attainment of a stable and healthy marine environment.

A great deal of our work is with schools, colleges and maritime academies. At those schools, and in critical areas such as Alaska, we work with educators and students to develop courses in environmental and resource education – solutions and tools for sustainable management and development. On November 14, in New York City, themes important to NAMEPA were reviewed by a number of speakers and panelists. These include ballast water management; training and environmental compliance of shore based personnel and seafarers; regulatory compliance; new designs and technology for reducing shipping's environmental impact; emissions, ECAs and Annex VI of MARPOL; oil pollution from ships; the challenge of the Arctic; the role of the Coast Guard; safety at sea in its many aspects; and corporate risk management.

All of this is familiar to us. What is different is the fact that the industry is faced with a phenomenal recession, stretching from shipbuilding to operations, shipbuilding overcapacity, declining rates, and the evaporation of profits. Simply stated, it may not be possible to maintain vessel quality in an era of financial loss. There is a growing concern that the "substandard ship" may be making a comeback. The cost of saving money is often the penalty of cost-cutting somewhere else. As modern fuel-efficient designs and lower-priced ships are offered for sale on the secondhand market, such older vessels will not necessarily disappear from international trade. The condition of ships is of critical importance, but even more vital is the need for properly trained and experienced ships' crews. Today, we hear a great deal about "fleet optimization," but does this mean that training and hiring of qualified crew must be sacrificed to the bottom line?

Experience teaches us – and we hear it at conference after conference – that ship operation is largely about metrics, algorithms and key performance indicators. Does this mean, as some fear, yielding to the temptation to cut corners on quality, safety and risk management?

A decade ago, great faith was placed in the International Safety Management (ISM) Code, and a hopeful new dawn in the achievement of "safer ships, cleaner seas." The tanker, containership, dry and liquid bulk, and cruise shipping sectors, as well as flag and port states, rose to the occasion. The statistics gathered by the International Maritime Organization, and the leading port state MOUs, bear witness to significant progress.

What is less clear is whether this is lasting progress, or just a "golden age," fading into the past. The "education ministry" embraced by NAMEPA's members is aimed at addressing the declining role of experienced seafarers in the shore-based operations of shipping companies. This problem began to appear during the last major shipping recession, in the 1970s. Today, increasingly, management decisions are made by businessmen (rarely women) whose experience is more likely to originate in the "C-suite" or boardroom, rather than on the bridge of a ship. The decline of risk awareness, and risk management, is admittedly a long story. We can measure it in the casualties of the past: *Torrey Canyon*, *Amoco Cadiz*, *and Deepwater Horizon*, just to mention a few celebrated environmental disasters.

There have been changes, down through the years. The cost of liability, and a failure to embrace sound safety management practices, has grown vastly in recent years. A relatively small containership, aground on the coast of New Zealand, can drown any owner or operator in extraordinary costs and expense.

So there is a very practical aspect to NAMEPA's mission: when the cost of bunkers has soared to something in the area of 50% of total operating costs, and where, as we are now seeing, aggressive regulation is forcing new ships to reach a 10% improvement in energy efficiency by

Insights

> "… What is different is the fact that the industry is faced with a phenomenal recession, stretching from shipbuilding to operations, shipbuilding overcapacity, declining rates, and the evaporation of profits. Simply stated, it may not be possible to maintain vessel quality in an era of financial loss. There is a growing concern that the "substandard ship" may be making a comeback."

2015, followed by a further 20% by 2020, and another 30% by 2025, environmental management and risk management become an integral part of "management" itself.

Safer ships, environmental awareness and concern for cleaner seas are probably not being taught, even in more general terms, at the Harvard Business School. They are often ignored at conferences on ship finance, even as the traditional lenders to the shipping industry hang out the "going out of business" sign, all over the world. But in the course of widespread economic misery for the maritime industry, those who are not, in Thomas Paine's memorable words, "Summer patriots and sunshine soldiers," with a lasting commitment to shipping, are aware that sound and economical management goes hand in hand with competent and effective stewardship of the seas around us.

Clay Maitland is the Founding Chairman of NAMEPA, a maritime industry-led initiative which engages maritime businesses, government and the public to "Save our Seas" by promoting sound environmental practices. **www.namepa.net**

Whistleblower Awards: Time for Standards

By Jeanne M. Grasso and Gregory F. Linsin

According to the Department of Justice ("DOJ"), over 50 percent of oily water separator ("OWS") prosecutions arise from whistleblower reports. This could lead some to conclude that the whistleblower award provision in the Act to Prevent Pollution from Ships ("APPS") is working. It could lead others to conclude that prospective whistleblowers are now sophisticated enough to "game the system" and, rather than reporting improprieties to the "designated person ashore" under the International Safety Management ("ISM") Code or to some other shoreside official so that the impropriety can be promptly addressed, they are waiting for a U.S. port call to cash in. In a few recent cases, whistleblowers have gathered information for months and then packaged that information, which commonly includes photos, videos, diagrams, and memoranda containing dates, times, and locations of alleged improper discharges, for delivery to the U.S. Coast Guard upon arrival in a U.S. port, often times allowing pollution to continue for months.

The reality is that whistleblowers are becoming more common, and awards are increasing, in large part because criminal fines in OWS cases are increasing. And, unlike other federal whistleblower programs, there are no standards applied to the government's request for an award or to the court's exercise of its discretion to grant such an award under APPS, which states simply: "In the discretion of the Court, an amount equal to not more than ½ of such fine may be paid to the person giving information leading to a conviction." In the vast majority of cases in which awards have been granted, courts have agreed with the government's award recommendations without articulating the factors that supported those decisions.

Without clear standards dictating when an award is warranted, the granting of an award can undermine the purposes of the ISM Code and a company's ability to effectively implement its environmental compliance program. This is because, if whistleblowers simply gather information, hide it from shoreside management, and then give it to the Coast Guard, vessel operators do not have the ability to correct problems that may arise despite their best efforts to prevent them. Because they are concerned with the blatant disregard of their MARPOL compliance policies, some companies are encouraging the government not to request awards or challenging the government's request for awards and have been successful in arguing that an award is not warranted or should be reduced.

For example, in a case in Maryland, the operator explained to the government that it did not believe an award was warranted because the whistleblower had ample opportunity and the means to report his concerns to shoreside management, but failed to do so. The operator also informed the court that it wanted to be heard if the government requested an award. Ultimately, the government chose not to request an award.

In another case in Texas, the government requested an award of $500,000 and the operator objected on similar grounds, i.e., the whistleblower did not report the wrongdoing to a shoreside superintendent, but rather provided a memorandum with hundreds of photographs to the Coast Guard just days after signing the company's MARPOL Declaration certifying that he was not aware of any MARPOL violations. In this case, the court reduced the award to $200,000.

In a current case in Maryland where the owner and operator were both fined, the government requested an award of $462,500 from each company. The owner did not challenge the award request and the court awarded one whistleblower $462,500. The operator challenged the request and the operator, the government, and the whistleblower submitted briefs. The operator's rationale was that the vessel called on 16 ports and there were four superintendent visits and two classification society inspections of the vessel over an eight month period, but the whistleblower never alerted anyone to the problems, but rather decided to await for a U.S. port call where he could turn in his "evidence" to the Coast Guard. The court asked the parties to provide information on past awards, what standards have been applied, and when courts have deviated from government requests. That decision is still pending.

And, in a recent case in Alabama, the owner/operator is challenging a $500,000 award request, which is recommended to be split amongst five crewmembers. The challenge is also based on the crewmembers' violations of company policies and failure to report internally.

Awarding whistleblowers in circumstances when they violate company policy, fail to follow internal reporting requirements, and allow pollution to continue, sometimes for months, is contrary to international law and public policy. Providing substantial financial rewards for such conduct not only incentivizes non-compliance, but undermines the effectiveness of international conventions to which the United States is party, such as the ISM Code, that seek to eliminate pollution.

Because of these challenges, some companies are redoubling their efforts to incentivize crewmembers to report MARPOL problems internally so they can be promptly remedied. Companies are then addressing such deficiencies with the Flag state and making corrective entries in the Oil Record Book before the improprieties develop into an enforcement action by the Coast Guard.

The government and the courts should ask a number of questions when evaluating the information provided by a whistleblower before requesting or granting an award, including:

1. How long did the whistleblower delay in reporting the information and was the delay justified?

2. Did the whistleblower report the misconduct internally, without corrective action being taken?

3. Did the company have in place credible policies and procedures for reporting misconduct and did the whistleblower ignore those policies and procedures?

4. Where a whistleblower claims that his failure to report the misconduct to the vessel owner/operator was based on an absence of internal reporting procedures, did the whistleblower ignore other opportunities to report the misconduct to, for example, other port state control officials?

5. Did the actions of the whistleblower unreasonably delay or thwart an effective response to the environmental deficiency?

6. Did the whistleblower allow pollution to continue?

The answers to these questions should be weighed carefully in evaluating whether a whistleblower award should be requested or granted. It is imperative that the government support the systems set forth in international conventions, such as the ISM Code, and not issue awards to whistleblowers that, in many cases, allow illegal discharges to continue and incentivize other whistleblowers to undermine the environmental compliance programs that owners/operators have taken pains to develop.

Simply put, behavior that undermines an international compliance regime should not be rewarded. Where shoreside management has not addressed problems that have been identified, whistleblower awards may be warranted. What is clear is that it is high time for DOJ, in conjunction with the Coast Guard and the maritime industry, to develop standards that guide whistleblower awards, such as those outlined above, so that the purposes of international conventions can be furthered rather than compromised.

Jeanne Grasso and **Gregory Linsin** are partners at Blank Rome Grasso focuses her practice on maritime, international, and environmental law for clients worldwide. Linsin is an experienced criminal litigator and concentrates his practice in the areas of white collar criminal law, environmental criminal litigation involving shore-based and maritime clients, environmental compliance, and internal corporate compliance investigations.

Human Factor

Can Fatigue Cause Oil Spills?

The new MLC code collides with the realities of today's maritime work environment. ***By Jeff Cowan***

Numerous studies outside of the maritime industry have documented how fatigue leads to accidents on roadways, injury during the manufacturing of goods, and mistakes during other business activity. For the maritime industry, conventions have been set in place to address fatigue. The International Labor Organization recently ratified 2006 Maritime Labor Convention (MLC) and these rules become effective August of 2013. The Convention addresses many aspects of how we should treat crewmembers, minimum standards of comfort and pay and related matters. The new code also mandates strict parameters of maximum work periods and minimum rest.

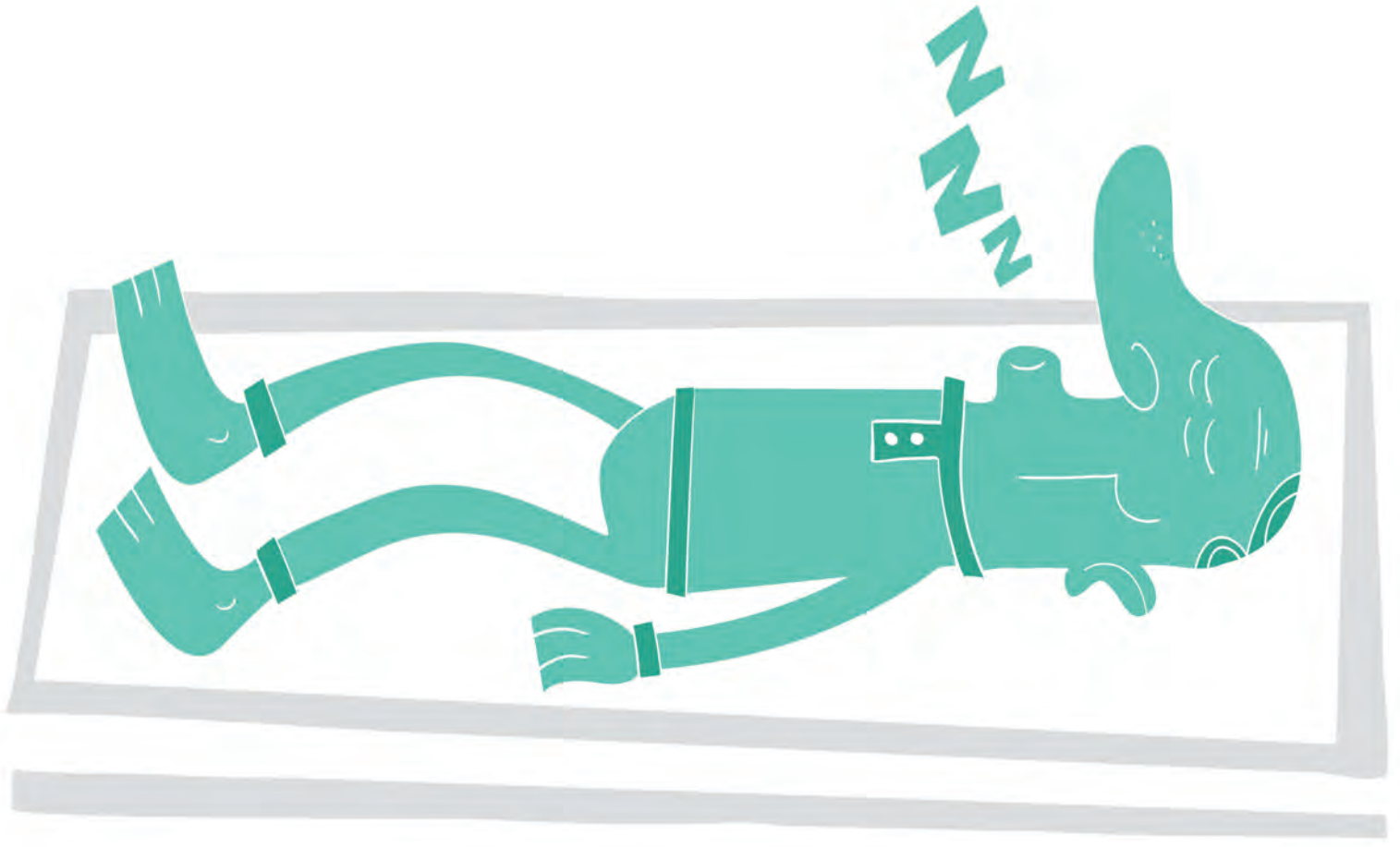
Many operators have chosen to start observing the 2006 MLC early. That's because, as shown below, the rules will be very hard to comply with in today's fast moving world of ocean commerce:

2006 MLC Regulation 2.3:
Hours of work and hours of rest

Under Regulation 2.3, Section 5, the work hours and rest hours have been established as:

(a) Maximum hours of work shall not exceed:
(i) 14 hours in any 24-hour period; and
(ii) 72 hours in any seven-day period; or
(b) Minimum hours of rest shall not be less than:
(i) ten hours in any 24-hour period; and
(ii) 77 hours in any seven-day period.

Under Section 6, it states that hours of rest may be divided into no more than two periods, one of which shall be at least six hours in length, and the interval between consecutive periods of rest shall not exceed 14 hours.



Real Conditions of Work Today

According to an IMO study (MSC/Circ.1014), Jet-lag occurs following long flights through several time zones or in the case of a ship transiting from west to east through several time zones. This condition causes fatigue in addition to sleep-deprivation and irritability. Our bodies adjust at the rate of approximately one hour per day. In essence, the ships travelling from Asia to the West Coast of the United States have crews already suffering the effects of jet lag and arriving fatigued.

In some areas, like California, on-ship workloads increase on the approach to port due to local regulations and requirements. Ships coming to California must address the increased work for Bridge/Engine teams associated with fuel switching for Heavy Fuel Oil to Distillate Fuel Oil (or back). Recognizing the fatigue brought on by trans-Pacific crossings and standard ship operations, it begs the question: could the increased time working and lack of rest lead to fatigue which in turn could cause an oil spill from a grounding, allision or collision? The answer, of course, is a resounding "yes."

Standard operations when transiting California has a Captain conning the ship in and out of Los Angeles/Long Beach (LA/LB) and then doing same for San Francisco with less than one day between ports. In addition, Senior staff has additional obligations with officials coming aboard to check for compliance with regulation and vendors requiring direction, further stressing Senior staff. But the demands upon Senior staff do not stop there.

In California, operations usually begin with Customs and Border Patrol inspections, and until the ship is cleared no cargo maybe discharged. Once cleared, the situation usually devolves into a marathon of activity. In some cases, the discharge of cargo may be followed with visits from California Office of Spill Prevention and Response, California State Lands Office, local port firefighters, US Department of Agriculture and perhaps last the US Coast Guard (USCG) checking for regulation and security compliance. Various vendors may need direction regarding stores or repairs, while the United States Occupational Safety and Health Administration (US OSHA) may check for safety violations. This Captain once had the US Center for Disease Control (CDC), US Public Health, Califor-

nia Public Health and local County Public Health in addition to the others mentioned.

The Convention states that the Member has responsibility to enforce the regulations but in most cases, this ultimately falls upon the ship's Master. What happens to the Master if his ship suffers a loss of propulsion incident or any other reportable incident? He must then fill out CG-2692 which if the signatory is a native English speaker, usually takes four hours. When the Master is not a native English speaker, filling out the CG-2692 becomes an onerous task that could take more hours to get witness statements, drug tests and independent investigation results. If the ship Master must fill out the CG-2692 that ship will inevitably have a visit from the USCG investigations and inspection team demanding the ship Masters' attention. These visitors must be placated before getting any rest.

The Chief Mate supervises the loading/discharge of cargo, and is on call for everything concerning cargo or other deckside items. Upon sailing, he/she usually stands the bridge watch as most shore terminals keep the hours of 0800-1700. As sometimes occurs, both the Master and Chief Mate can exceed the STCW or MLC 2006 rest requirements upon taking over that sea watch.

And then, consider the Chief Engineer facing the challenge of first switching fuel for the Emissions Control Area then five or so hours later switching fuel again to distillate in order to comply with the California mandate for those ships coming within 24 miles of the coastline. If the ship is coming to the San Francisco Bay area, our Chief Engineer may also be standing by in the Engine Room enroute Oakland (2.5 hour transit) or Stockton (8 hour transit). Upon docking, the Chief assumes the duties of Person In Charge of bunkering (refueling). Aboard a typical container ship, bunkering could take eight hours and the follow-up bunker survey and calculations easily adds another hour. If repairs have been performed or stores loaded, the Chief will look these items over before resting. Unfortunately, it is not unusual for a Chief to be up 20 hours in a 24-hour period.

Skirting the Truth; Skating on Thin Ice

Industry has a term that originated with the military known as "gun decking," defined as filling out a form to appear to be in compliance. Regulators define that as falsification of a log. If an investigator looks over the bell book (known as the rough log) and compares it with the rest log, inconsistencies easily appear to the trained/experienced investigator.

The paradox that many Masters face is if the ship's complement fills out the rest log properly with less than the required rest, the ship may be subject to detention until that crew is rested. Meanwhile, that Master will be flown home to be replaced by a Master who can manage the crew rest periods better or, more likely, fill out the logs to make it look like he did.

Collision Course: Operational Realities and MLC

A recent study conducted by the Warash Maritime Academy (UK) and the Chalmers University of Technology (Sweden) simulated the effects of the watch schedules on sea going participants in a controlled environment. The study, Project Horizon, concluded that "the probability of danger at sea will be highest when night watches are combined with prior reduction of sleep opportunities, and exacerbated by passages through narrow or very densely travelled waters, or during reduced visibility."

Coincidentally, these variables aptly describe the California coast around the LA/LB complex and the San Francisco Bay Region. Separately, UK and Maritime and Coastguard Agency (MCA) recently reported that "if the numbers of people fall short of what is required to carry out a task, then workload, fatigue, stress levels and sickness are increased; short-cuts are taken, and the safety culture is compromised by demotivation, low morale and absenteeism. Management efficiencies (in the form of staff cuts) often result in unsafe working efficiencies, a decrease in thoroughness and an increase in the number of mistakes – all made worse due to fewer people having less time to prevent those mistakes developing into something worse."

One commonality exists with the fatigue issue over the many incidents in the years since the Exxon Valdez disaster: studies. For every incident that is attributed to fatigue there is a study. How many studies does the international maritime community need before acting in a meaningful way?

Like the accidents caused by fatigue, it is clear that the new MLC code is on a collision course with the current SOP on many ships. The new code requirements – especially given the realities of ship traffic as described within this article – are inconsistent with how shipping companies choose to do business today. That said; the choices are clear: operators can choose to operate as before with augmented crew billets, they can plan run a slower and less efficient model with current crew numbers or, they can violate the law. There's just no way around it. How we go forward from here will ultimately define what comes next.

Captain Jeff Cowan graduated from the California Maritime Academy in 1975, ultimately earning his Master's license. He served in the merchant marine during Desert Storm and capped his shipboard career by sailing as Master of APL CHINA, in 2009. His ship was one of the first at APL to perform the California distillate fuel switchover and he remains involved in maritime fuel issues.

THE JONES ACT

The Jones Act Debate in Puerto Rico

Urban Legend or a Never-Ending Story?

By Robert Kunkel

The Merchant Marine Act of 1920, a Federal statute regulating shipping between U.S. ports and known in maritime circles as the Jones Act, requires all goods carried at sea between U.S. ports be transported in U.S.-flag ships, built in the United States, owned by U.S. citizens, and crewed by American seamen. Many compare the law's requirements to a "three-legged stool" with all three U.S.-based requirements supporting the other. The purpose of the 92 year-old law and the subject of this never-ending saga is the support of the U.S. Merchant Marine.

To assure there is no misunderstanding, the "crewed by American seamen" is the most important requirement of the statute. Maintaining those seafaring jobs is paramount when considering the diminishing size of the "bluewater" U.S. flag fleet and questioning whether the law actually helps to support the industry within the context of a weak economy. That said, we would argue that the stool needs to balance on two legs as the U.S. build section of the Act should be modified in certain trades of domestic shipping in order to support the U.S. Merchant Marine.

The Cost of the Jones Act

Highlighting those seafaring jobs as the most important part of the law may be selfish. Under the current economic climate, protecting jobs in the United States is a concern in every industry. On April 10, 2012 the United States Government Accountability Office (GAO) confirmed their commitment to examine the Jones Act application to Puerto Rico.

That commitment follows a request to the GAO from the Honorable Pedro R. Pierluisi and the Honorable Gregorio Kilili Camacho Sablan of the U.S. House of Representatives to determine whether the Jones Act negatively affects the Islands' economy.

The results of the examination would seem to be straightforward. A 1999 U.S. International Trade Commission economic study suggested a repeal of the Jones Act would lower overall shipping costs by 22 percent. A 2002 report by the same commission found that repealing the Jones Act would produce an annual positive welfare effect of $646 million dollars on the U.S economy.

Discounting those findings, a 1988 GAO report also determined that the Jones Act cost Alaskan families between $1,921 and $4,821 annually for prices on goods shipped from the mainland.

And, in 1997, the Hawaiian government asserted that Hawaii residents pay an additional $1 billion per year in higher prices for consumer goods because of the Jones Act.

Sunset Waivers?

According to the April 10, 2012 GAO letter, their report should be published by February 28, 2013, ten (10) months after the initial review and three (3) months after Presidential elections. Let's assume the results of this new report targeting the island economy produce similar facts as summarized above. Leaving aside the expense of yet another government report, the solution would be to create a way to lower or recover those costs. Modifying or creating a "sunset waiver" around the U.S. build requirement of the Jones Act to lower construction costs and provide new tonnage, works to achieve that end.

Using the previous economic reports as record, Senator John McCain introduced the Open America's Waters Act in 2010, a bill designed to repeal the Jones Act. McCain insists that the Jones Act restricts shipping and raises costs to consumers in Hawaii, Alaska, Puerto Rico and Guam. Fortunately, the Bill as proposed did not pass Congress. And while I do not support complete repeal of the Merchant Marine Act of 1920, the statute should be revised and adapted to modern times.

Almost 100 years ago, the U.S. and the world itself was a different place. Ignoring those changes will eventually result in complete repeal. Cost and efficiencies will eventually win the debate. There seems no doubt, short of global economic collapse, that transportation activity in Puerto Rico will continue to grow at a formidable pace in the near future. The Caribbean Business report highlighting the San Juan Bay Pilots Association port call tally of 5,632 ships in 2011 and the fact that the calls represented a 4 to 1 ratio of foreign registry to U.S. flag supports that statement. What is lost in the data is true support of our U.S. Merchant Marine would work to reverse the ratio. To reverse it, you need new ships. Waiving the U.S build portion of the Act in this trade sector will provide a catalyst to that movement and a rebirth of coastal shipping.

Drilling Deeper

The shape of worldwide transportation demand is changing and depends on several new factors. Cabotage is no longer the single market that the legislation looked to protect in the 1920's. The market is divided into detailed sectors of trade, ship type, and cargo types each one with its own economics, efficiency and profitability. The U.S. inland waterway market sectors are robust and support all three legs of the stool – ownership, crew and ship construction. The domestic tanker market has grown by over 25 new ships since 2005 and produced nearly 1,000 seafaring jobs in a market where the costs and profitability associated with that trade can handle the construction and operating costs associated with the flag. Unfor-

tunately, that economic effect does not translate to delivered costs of manufactured goods or agricultural products in container ships or Roll on-Roll off vessels. Farmers and shop owners are not Exxon Mobil. For that reason, we have not seen the same delivery of new efficient ships in this sector of the domestic trades. The cost of the asset does not support the efficient delivery of the consumed product.

The world is Flat

The shape of worldwide economic development is migrating back to what is now described as "Compact Patterns." It is fashionable to support local farmers and merchants. The movement is beyond fashionable and "local" and will be redefined as the cost of energy and transportation which will drive manufacturing back to the United States. In worldwide shipping, "Intra Asia" routes or "Intra European" routes are now more profitable than the globalization trend of the twentieth century where all roads lead to China. Europe moves nearly 40% of its cargo by water whereas the U.S. moves only 2%. What is our transportation plan when energy independence in Brazil, Cuba or the United States returns manufacturing back to these locals and "Intra Americas" becomes our trading future?

The problem of highway and rail congestion has been identified in the continental United States as a barrier to increased export activity. The Department of Defense identified the same problem as a National Security issue. After years of research and a National "Marine Highway" program initiated by the U.S. Department of Transportation, the return of coastal shipping as a relief to this congestion was presented as the solution. U.S. build construction costs shelved the majority of the projects – and there are many on the shelf.

American business stands by waiting for Cuba to "open." Where are the U.S

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flag ships that will service the trade? Brazil, Venezuela, Chile were once ports of call for the U.S flag. Those calls have all disappeared as construction costs and operating costs rose. If efficient and economically priced shipping assets are placed into the domestic trades all of these "Intra-Americas" trade routes become available to us again and Puerto Rico will find itself strategically centered in the triangular trade. They maintain the "niche" of being able to trade between U.S ports but only competitive building costs will allow them to move into those surrounding trades in the compact patterns.

The Environmental Argument

Several factors shape the coming changes and so will the rapid changes in transportation technology. Puerto Rico is now part of the North American "ECA" or emission control area designated by the IMO. Unfortunately, the "Bluewater" U.S flag vessels currently operating in the Puerto Rico trade cannot meet the ECA requirements and therefore continue to exceed NOx and SOx emissions limited by the regulations.

"Eco-Ships" and a promise of a nearly 30% reduction of fuel costs through associated emission control is the number one concern of the international fleet. Some believe fifteen year old tonnage will soon be technically obsolete as this new technology enters the market place. The fact that the U.S. Domestic fleet is not broadly engaged in meeting those concerns is disturbing. However, the lack of engagement is understood when considering the cost of construction and facilitating new technologies such as LNG propulsion, fuel cells, or common rail electronic engines when these are limited to a U.S build arena. The lack of engagement because of negative return on investment is another factor when determining the application of a sunset waiver to the Jones Act in this sector as these environmental considerations and restrictions will only become more stringent in the future.

Following the Leader?

Many other countries have abolished their domestic build requirement, yet maintained their Cabotage regulations. Other U.S. transportation modes have learned to balance on two legs. Canada, recognizing the Intra-Americas movement recently repealed their 25% duty to build outside of the country in an effort to move coastal shipping forward and has been rewarded with new construction and ship deliveries under Canadian flag since the decision. We believe the state of the U.S. Merchant Marine demands that we follow Canada's lead and waive the Jones Act U.S. build requirement in this dry sector before it is too late.

Let's offer the three-legged domestic shipping stool a chance to balance on two legs. The result can only be increased investment in the sector, reduced congestion on our coastal highways, cleaner air to breathe, reduced costs to the shippers, more jobs for our seafarers.

About the author: Robert Kunkel, President of Alternative Marine Technologies, is currently serving as the technical advisor to Coastal Connect (www.coastal-connect.com) a U.S. company actively developing LNG propulsion as a maritime component of short sea shipping He is a past Vice President of the Connecticut Maritime Association, Past Chairman of the Federal Short Sea Shipping Cooperative Program and a member of the ABS Special Committee on Ship Operations.

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Profile

MARPRO PROFILE

William Hughes (Will) Watson

President, Advanfort Company Inc.

By Joseph Keefe

William Hughes (Will) Watson advocates a comprehensive, but transparent international approach – calibrated to avoid risks – in the effort to rein the many emerging global maritime security threats. Those who know him best also know that he doesn't say or take any of that lightly. This former Deputy Commissioner of Maritime Affairs and Special Agent with the Office of the Maritime Administrator of the Republic of the Marshall Islands (RMI) also served as that country's delegate to the UN Contact Group on Piracy off the Coast of Somalia (CGPCS). Along the way, he also coordinated counter piracy and anti-terrorist activities as the maritime security liaison at International Registries, Inc. (IRI). Simply put, maritime security has become Watson's passion. His approach to maritime security is one borne of experience, considerable thought and, at the end of the day; excellence. Even after arriving at AdvanFort, Will continues his responsibilities as vice president of government affairs and as governor with the Maritime Security Council, where he represents the maritime industry on the National Council of ISACs (Information Sharing & Analysis Centers). From his early roots in journalism with considerable time spent at a well known maritime business journal, Watson has now become one of the foremost experts on counter-piracy methods and maritime security. His outreach extends into every facet of this industry; from regulatory to commercial, law enforcement and all the way down to the mariners his firm protects.

Maritime Roots, Commercially Focused

Watson's path to Advanfort was a logical one. Based largely on his work at the Marshall Islands flag, Advanfort was looking for someone to take the firm to the next level. Of particular importance, and beyond Watson's obvious maritime security credentials, was the requirement for a chief executive with maritime industry background who also knew the commercial side of the business. Watson told ***MarPro*** in October, "It is important to understand an operator's business model in context with their security needs."

Watson's commercial IRI experience, Maritime Security Council oversight, and contact with many private maritime security companies (PMSC) will collectively serve him well at Advanfort. He adds, "During my time at Marshall Islands Registry, part of my job was to liaise with the various Private Maritime Security Companies (PMSC) that were serving aboard Marshall Islands flag vessels – including, by the way, Advanfort. Through that, I got to review the rules of Force and operating procedures of what are now, many of my competitors. So, arriving here, I'm able to – with the help of our advisors, in-house team and personnel – pick and choose from a variety of strategies. We kept the best and discarded the rest. Also, I spent last three years as the delegate from the Marshall Islands to the contact group on piracy off the coast of Somalia at the United Nations. That's enabled me to meet and work with not only many of the nation states that are involve in these issues, but also most of the NGO's in the industry – everyone from BIMCO, Intertanko, to Oceans Beyond Piracy – and a number of others." Watson's approach is a pragmatic one. He insists, "One of the things I learned at Marshall Islands was how important it was for the flag states to interact with the various PMSC's – and visa-versa. So, we at Advanfort not only endeavor to make sure we meet the requirements of regulatory needs but also use 'best practices' at all time. The two go hand in hand and are not mutually exclusive."

Many Hats

On board at Advanfort since August, Watson jokes that he can't seem to be able to hold a job. But, his CV is ample proof that this is far from the case. For his new employers, his intimate knowledge of the challenges industry faces because of piracy also reflects his team as a whole. "Very few of our competitors have the extensive experience in the maritime commercial world that we do. We believe that a big part of doing this job is about knowing how to interact with the Master and the crew. Hand in hand with this is a respect for the seafarer."

At Advanfort, Watson oversees a business plan which, in a very short period of time, he has helped to shape. He explains, "We are a broad spectrum, full service security provider. We do security for ports, terminals oil & gas facilities – in other words, a full range of commercial clients. Right now, of course the biggest focus is on counter-piracy methods. Our model is different than many other companies, for a variety of reasons. First and foremost, we own and operate our own fleet of what we call our operations support vessels. They look like patrol craft, but they really are is a series of platforms on which we can position are PCAST Teams and their firearms and munitions. This facilitates boarding and disembarking in international waters which allows the vessels to avoid deviating in any way."

Four of the five vessels are today strategically positioned around a high risk area. One is in the Red Sea, one in Fujairah or Oman – moving back and forth, as necessary – one is down off of Madagascar, and one off Sri Lanka. Watson explains, "In this way, we cover where vessels would be entering or leaving the high risk area from any direction. We keep anywhere from 20 to 30 personnel on board at all times, with all

> We are a broad spectrum, full service security provider. We do security for ports, terminals oil & gas facilities – in other words, a full range of commercial clients. Right now, of course the biggest focus is on counter-piracy methods.

their equipment and a well-secured armory. This, along the way, saves clients a lot of money and we can react quicker to emerging problems than most."

What's Next: an always changing landscape?

While piracy seems to be the number one maritime security issue today, Watson's focus is anything but fixed on one target. "We see Central America, Africa and the Middle East as logical target markets because in those ports, in many cases, port security is lacking. Because we are already active internationally, we have the experience to deal with these quasi-military entities who welcome our expertise – especially where we are able to interact so closely with the commercial maritime community."

When Watson isn't traveling to one of Advanfort's many, far flung offices, he can be often found visiting Advanfort's Maritime Operations Center (MOP). Operating 24/7; 365 days per year, the watch floor located in the Herndon,VA headquarters monitors shipping, piracy threats weather, sea state and a myriad of other variables. He explains, "These issues and conditions affect not only our operations, but that of our client operations, as well." The center employs sophisticated software and the latest tools and a variety of tracking systems. Watson adds, "All of our teams – whether on our boats or on board the ships – carry their own SATCOM – so we can communicate with our people, independent of the ship. One of my goals – it is my hope – that none of our teams actually ever has to fire a shot in anger at a pirate."

Maritime Security, the Watson Way: Necessary, Legal & Appropriate

"I'm proud to say that in the four years we've been in business – and partly as a function of our rules of engagement – we've never had to fire directly at pirates. Warning shots, yes; exchanging gunfire, no."

Watson insists that Advanfort's procedures are modeled with regard for international law, and the nation states that they operate around and in close proximity to. He adds, "Internally, our chief of analysis in the company is a former ONI analyst. We have a close working relationship with them. Our Board of Advisors oversees our business plan. This, and through our in-house counsel, we endeavor to make sure that everything that we do is consistent with international and U.S. laws. We even try to do our bunkering and provisioning at sea outside the 12-mile limit. But, we also have licenses and permits with some coastal states so that we can call on their ports, if need be."

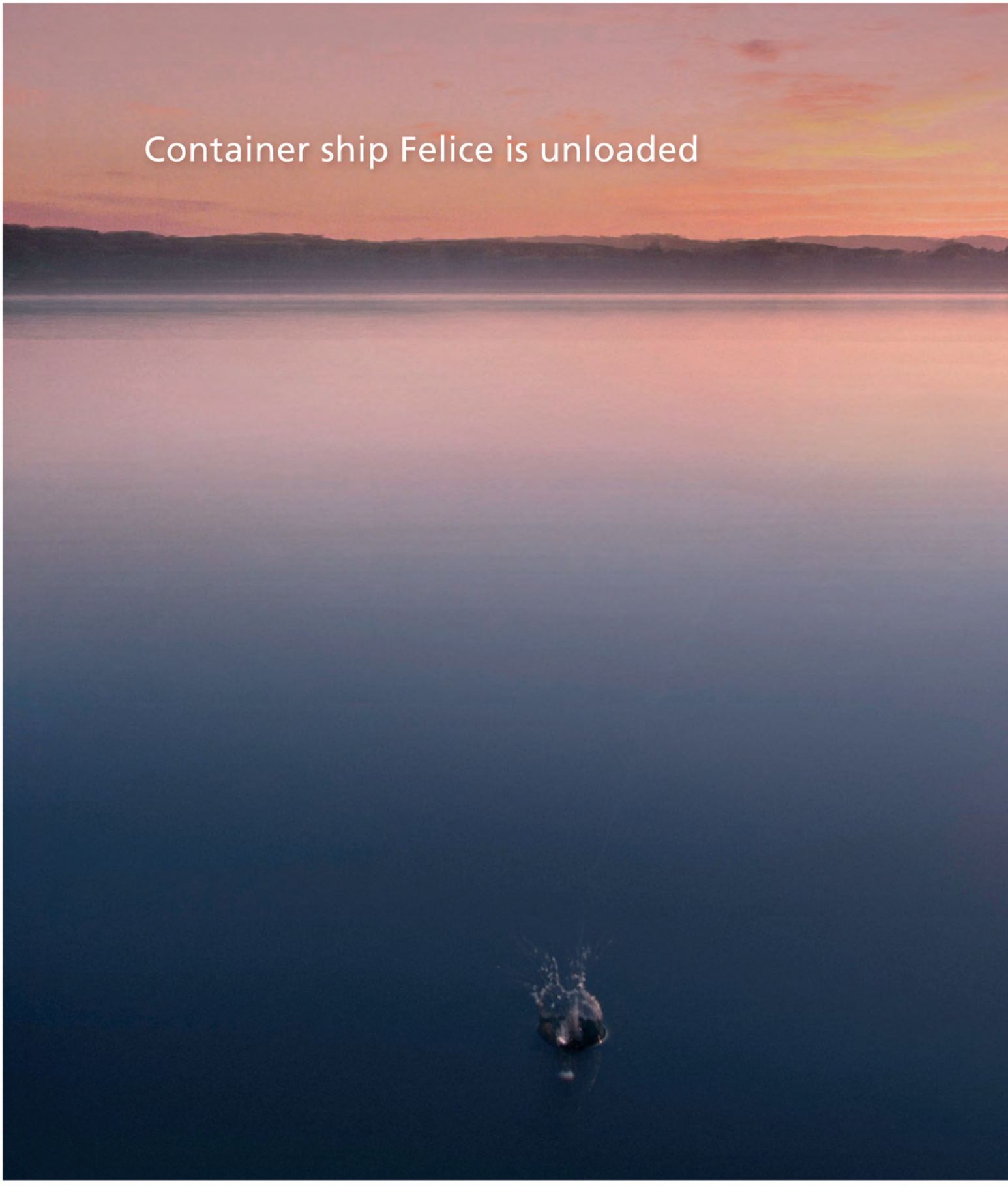
It is important to stay on top of emerging trends, says Watson. "Right now, pirates will 'ping' a vessel to see if an armed team musters and shows weapons and if so, they move on to a softer target. They are worried. Their tactics are changing." And, while counter-piracy efforts are working and taking their toll on the pirates, he concedes at the same time that there is an enormous cost to industry. Mitigating some of that cost, he says , are the insurance underwriters. "Some are actually providing cost benefits to client vessels that embark armed teams. So, if an owner decides to transit a high-risk area, his rates are going to go up but they don't go up as much as they would without an armed team on board. Hand in hand with that is our threat and risk analysis that we perform on each vessel before ever embarking a team."

The Bottom Line: Excellence in Practice

The bottom line for Will Watson when it comes to anything that he attempts is excellence. He, like everyone else, is waiting ISO roll out their qualification standard for PSMC's. In the meantime, Advanfort is moving forward with an in-house quality program; the AdvanFort Quality Assurance Program. Beyond that, Watson has sought certification for their standard operating training procedures from the National Maritime Law Enforcement Training Center. And, he adds, "We've applied for and been granted a membership in the Maritime Security Council – this required a review of our standard operating procedures. We're reaching out for anyone who will bless our procedures and corporate governance to ensure and to prove that we are, if not the best, among the best in our field."

Watson's impressive work history includes time spent as a journalist, with the Maritime Security Council, the IMO and a major flag state. We asked him in October: What's the biggest difference between those jobs and being President of Advanfort? He laughed and replied, "Well, this is the first job where I've had to go out and buy 100 semi-automatic weapons at one time." More seriously, he adds, "We're serving an important need. It's sad that it has come to the point where we have to do this, but it's a necessary part of the mix. And if we have to do it, then we should do it correctly. It's why we've instituted our quality assurance program. We reward excellence and we want to be excellent." Never content to be the armchair executive, Will also continues to serve on the Advisory Board of the National Maritime Law Enforcement Academy; the Administrative Board of the Apostleship of the Sea (AOS - USA); the Maritime Working Group steering committee of the U.S. State Department's Overseas Security Advisory Council (OSAC); and is a member of Oceans Beyond Piracy Working Group. He has lectured at the International Maritime Law Institute, the U.S. Merchant Marine Academy and the Maritime Institute of Technology and Graduate Studies (MITAGS). Actively involved in the Council of American Master Mariners and the Propeller Club, his outreach to the maritime industry he serves is remarkable. It's not hard to see why Will was tapped for the Advanfort position. Already having put his unique stamp on this sector of ocean commerce, his best and most important work may be yet to come. That's good news for just about everyone – except the bad guys.

Imtech



Last week the captain of the MV Felice had planned a two-day maintenance stop in Cadiz. Imtech Marine managed to complete the entire job in less than 6 hours, including an inspection round and some preventative repairs. Yesterday evening, the ship had already entered her home port Liverpool, where she was unloaded this morning. Meanwhile Captain Henry North seized the opportunity to spend some quality time with his son Alex.

Imtech Marine's global network and services expertise will advance your business in any situation. Find out more at www.imtechmarine.com/services.

Imtech Marine

ENJOY PROGRESS

MLC

(Image courtesy PPM News Service)

Maritime Labor Convention Arrives

MLC means worldwide social standards for all flags in maritime navigation; coming into force in August 2013.

By Peter Pospiech

Do you remember the expression, "Getting Shanghaied?" In seaman's nomenclature, the unique language stood for the practice of forced recruitment of sailors for navy ships. In European and North American ports alike, all throughout the 18th and 19th centuries, so-called "press gangs" and armed ship's companies combed waterfronts and bars and took by force all they could get. The practice was not limited to naval ships; crews of merchant ships were also known to have been completed in this way. Numbed by alcohol or knocked out, kidnapped on board, holed up below deck and brought topside only once the ship had reached open seas, these early seafarers endured working and living conditions on board ship that quite often led to their deaths.

In Eugene O'Neill's classic play entitled "The Hairy Ape," the maritime industrial environment is portrayed as dirty, toxic and dehumanizing. Set in the early 1920's, O'Neill's descriptions probably weren't far off the mark. Those days and conditions – some of which still exist today – helped to propel the Maritime Labor Convention (MLC), which from August 2013 will enforce uniform international social standards for seafarers.

The new MLC standard follows another international minimum standard for the safety on board merchant ships, implemented in 1914, shortly after the RMS TITANIC catastrophe: the International Convention for the Safety of Life at Sea (SOLAS). This early version prescribed numbers of lifeboats and other emergency equipment along with safety procedures, including continuous radio watches.

The actual SOLAS Convention dates from the year 1974. In addition, the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW-Convention) was adopted in 1978. Following all of that –but no less important – is the signing on 23 February 2006 of the Maritime Labor Convention (MLC) at Geneva, Switzerland. As ratified by the general conference of the International Labor Organization (ILO), the MLC establishes minimum requirements for most aspects of working conditions for seafarers; including but not limited to, conditions of employment, hours of work and rest, accommodation, recreational facilities, food and catering, health protection, medical care, welfare and social security protection.

As one of the most broad-reaching social conventions ever ratified, it also remains somewhat of a mystery to some vessel operators and flag states.

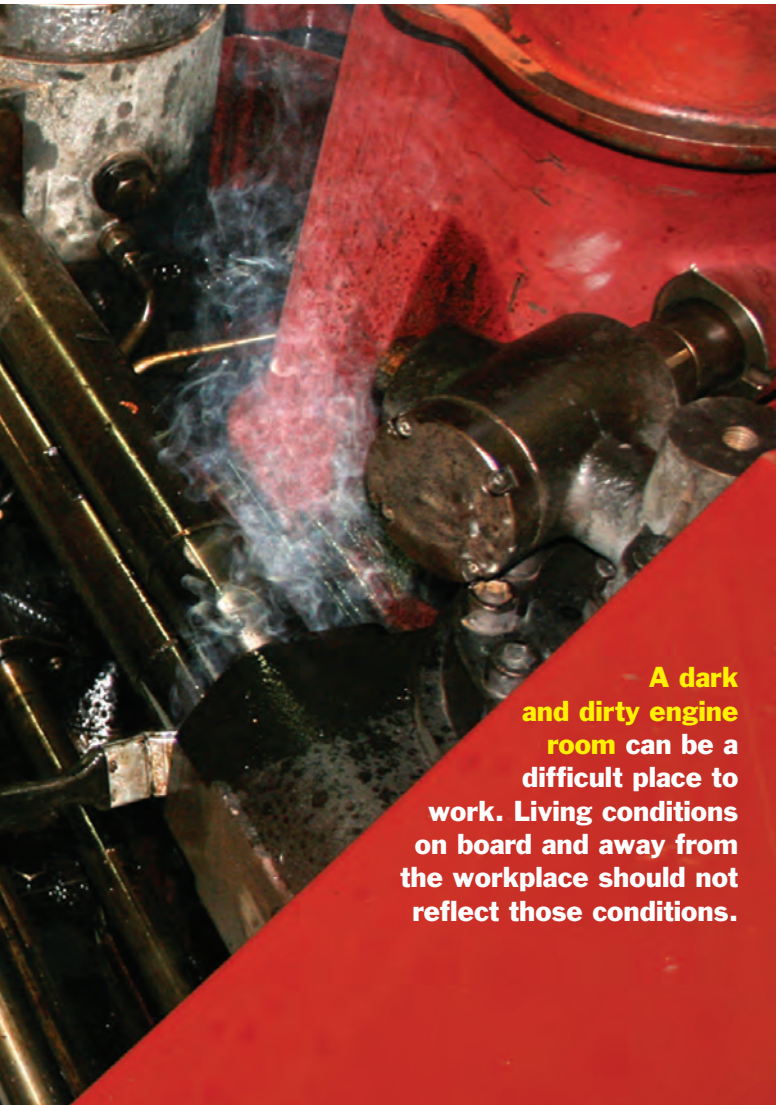
image courtesy: PPM News Service

Structure of MLC

The MLC is comprised of three separate, yet interrelated parts; the articles, the regulations and the code. The articles and regulations comprise the core rights and principles as well as the basic obligations of ILO members ratifying the convention. The code contains details for the implementation of the regulations, consisting of Part A (mandatory standards) and Part B (non-mandatory guidelines).

Adopted unanimously in 2006, there were two requirements still to be met before it could come into force. The ratification by Russia and the Philippines fulfills the requirement that at least 30 ILO member countries ratify the Convention. The other requirement – that ratifying countries representing 33 percent of the world's gross shipping tonnage - was met in 2009.

In August 2012, the ILO received the 30th ratification of MLC, fulfilling the last condition for the first global standard that spans continents and oceans. It will go into effect in August 2013. Until then, some 55,000 seagoing vessels from 500 GT on upwards – excluding traditional, navy and fishing vessels – will have to obtain certification. A total of 30 signatory countries now represent nearly 60 percent of the ship-



A dark and dirty engine room can be a difficult place to work. Living conditions on board and away from the workplace should not reflect those conditions.

ping tonnage. Effectively, this means that seafarers working on more than 50 percent of the world's international shipping will be covered by the new Convention.

Each State is tasked not only with ensuring that ships flying its flag meet the 'decent work' requirements set out in the Convention, but also with certifying that those ships comply with the requirements relating to labor conditions. This certification will also facilitate inspections of ships. The necessary inspections on board the ships will be performed by the administration of the flag state, or can be delegated to recognized organizations; for example, Germanischer Lloyd and/or other classification societies which are now ramping up to manage the demand.

Ratification & Compliance

The Convention places great reliance on the system allowing for inspections to be carried out by other countries, known as Port State Control. There is also a mechanism which records seafarers' complaints, as well as a reporting mechanism which spots failures no matter where a ship travels.

The maritime labor inspection and certification system takes concrete and specific action to address serious problems that arise because of the inability of some countries to ensure that their ships meet international standards. To its credit, the maritime industry as a whole has already been active in implementing the MLC since adoption and in some cases, often is well ahead of the legal process for national ratification. The MLC will be valid for a period not exceeding five years, with an intermediate inspection after half the validity period has elapsed.

The Flag States of Liberia, Marshall Islands, Bahamas, Panama, Norway, Bosnia and Herzegovina, Spain, Croatia, Bulgaria, Canada, Saint Vincent and the Grenadines, Switzerland, Benin, Singapore, Denmark, Antigua and Barbuda, Latvia, Luxembourg, Kiribati, Netherlands, Australia, St Kitts and Nevis, Tuvalu, Togo, Poland, Palau, Sweden, Cyprus, Russian Federation, Philippines have already ratified this Convention. Notably, Germany works together with its social partners VDR (Verband Deutscher Reeder = Association of German Shipowners), the union ver.di as well as Germanischer Lloyd on the implementation of the Convention.

Under the MLC, 2006 every seafarer has the right to:

- ***A safe and secure workplace that complies with safety standards***
- ***Fair terms of employment***
- ***Decent working and living conditions on board ship***
- ***Health protection, medical care, welfare measures and other forms of social protection***

The Appendices to the Convention

The appendices to the convention include two sample documents: a Maritime Labor Certificate and a Declaration of Maritime Labor Compliance (DMLC). The certificate will be issued by the flag state (or a Recognized Organization authorized to carry out inspections) to any ship flying its flag once the flag state itself or the RO (Recognized Organization) has verified that the labor conditions on board comply with the national laws and regulations implementing the convention. Certificates will be valid for five years subject to periodic inspections.

The declaration is attached to the certificate. Part I, drawn up by the competent authority (flag state), summarizes the national laws and/or regulations that implement the list of 14 basic criteria derived from the MLC standards. Part II, drawn up by the shipowner or the ship manager responsible for the operation of the ship, outlines the measures taken to ensure that the national requirements stipulating the implementation of the convention will be adhered to on board between inspections. The list of 14 mandatory inspection areas to be checked at foreign ports – or whenever an inspection occurs – can be found in the appendices to the convention. Compliance with the mandatory conditions must be confirmed by the flag state for the ship to retain its certification.

Benefits for Ratifying Countries

No ship will be at a disadvantage because its country has ratified the MLC, 2006. In fact, the convention contains a "no more favorable treatment clause" stipulating that ships from all countries, irrespective of their ratification status, will be subject to inspection in any country that has ratified the Convention, and to possible detention if found to be non- compliant with the minimum standards of MLC. On the other hand, ships from ratifying countries will benefit from a certification system that avoids or reduces the likelihood of lengthy delays caused by inspections in foreign ports. The DMLC and ML Certificate are prima facie evidence of compliance but even a certified vessel, can be subject to a port state control inspection if grounds exist. Non-certified vessels, on the other hand, can be inspected at any port.

GL supports the maritime industry

Olaf Quas, Head of Department Global Practice ISM/ISPS/MLC, 2006 with Germanischer Lloyd, emphasizes the importance of ensuring compliance with the requirements of MLC, 2006 well in advance: "We encourage shipowners to begin assessing their compliance with the MLC as soon as possible." To help shipowners and ship managers prepare for the first round of inspections, Germanischer Lloyd offers a comprehensive ILO certification package. GL's self-assessment tool and on-board gap analysis assists shipowners in identifying necessary improvements and recommended modifications to comply with the convention.

The job of going to sea has never been an easy one. It has always been dangerous.

image courtesy: PPM News Service

As soon as a Flag State has completed Part I of the Declaration of Maritime Labor Compliance and authorized Germanischer Lloyd to conduct inspections and certification to MLC on its behalf, Germanischer Lloyd can provide its pre-certification service to ensure certification readiness before the official effective date of the Convention. GL's MLC PRE CERT offering, a pre-emptive voluntary statement of compliance, will guarantee a smooth transition to the Maritime Labor Certificate once it becomes mandatory.

Getting Informed

To help all parties involved in the compliance process, GL Academy offers seminars and workshops for shipowners, ship managers and yards. In addition, GL in-house presentations can deliver concise information to companies about the upcoming Convention and its potential impact on internal procedures. Beyond this, GL has developed a comprehensive E-Learning tool for the MLC 2006 in CD form. GL´s E-Learning Tool touches on all relevant aspects of the MLC 2006. It explains, step by step, every single regulation of the convention. Olaf Quas, GL's Global Head of Practice ISM/ISPS/MLC 2006, explains: "We developed this e-learning tool to help individuals prepare themselves and where the main topics of the MLC 2006 are explained in a few words. This tool has been built with both the crew on board and shore based personnel in mind, but its portability and ease of use will be especially helpful for personnel who cannot easily visit a training seminar."

No Universal Interpretation

It is the responsibility of the ratifying member states to ensure global implementation and enforcement. While most flag states will likely delegate the inspection and certification duties to Recognized Organizations (ROs) or classification societies, the ultimate responsibility remains with the respective flag state.

There is no universal interpretation of MLC. Rather, it is up to each signatory country to transpose the MLC requirements into national law, thereby establishing its own interpretation and form of implementation. The flexibility provided for by MLC 2006 will therefore result in a variety of interpretations. Flag state administrations can resort to guidelines specifically developed to help them implement their ship inspection and certification duties.

MLC is here. Mandatory compliance is also just around the corner. Beyond compliance, however, is the real reason for implementing every aspect of the convention to the letter. We're clearly in no danger of reverting back to Eugene O'Neill's dark description of the 1920's waterfront, but there is much to be done to bring mariners fully into the 21st century in terms of basic, minimum standards of living and work. MLC will be the vehicle to deliver that metric.

image courtesy: PPM News Service

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BeastBox

TWIC Lives

Edited by Joseph Keefe

In the decade since 9/11, Port Authorities and Terminal Operators have been slow to adopt the technology necessary to read the biometric data contained in the Transportation Worker Identification Credential (TWIC). That said; when SSA Marine and LVS Consulting, in partnership with TRL Security Systems and Cogent (a Division of 3M) recently announced the deployment of the first of its kind TWIC System in Long Beach, CA, the puzzle of producing TWIC readers that actually work may have finally been solved. SSA Marine recently demonstrated the operational capabilities of the new TWIC system – the "BeastBox" – for the Marine Exchange and the Port of Authorities of Long Beach and Los Angeles.

TWIC

The Maritime Transportation Security Act (MTSA) requires that individuals needing unescorted access to MTSA-regulated Facilities and Vessels must first obtain a TWIC. To obtain a TWIC Card, an individual must meet certain eligibility requirements and pass a security threat assessment conducted by the Transportation Security Administration (TSA). Individuals are then issued a tamper-resistant credential containing the cardholders biometric fingerprint data, which provides a conclusive link between the card and the individual cardholder. The final piece of that equation involves a TWIC card "reader" at the marine terminal, something that has proven to be an enormous headache. It has also led to vociferous calls by many to end the so-far ineffective and exorbitantly expensive program. That's because a reliable and robust solution has unfortunately eluded terminal operators and the federal government. Until now.

Early Efforts

SSA Marine successfully re-engineered the Port of Oakland's first attempt at TWIC in 2005 and again in 2006. After an individual circumvented the perimeter of the Port, stowing away on a ship heading to the Far East for the 5th time in less than a year, it was suggested to the Coast Guard that the stowaway could teach everyone the finer points of circumventing access control, however the Captain of the Port didn't find humor in this suggestion and directed the Port Stakeholders to find another solution instead. Stakeholders eventually settled on the Embedded Chip Number Card Program facilitated by the Pacific Maritime Association (PMA). The pre-TWIC PMA Embedded Chip Number Card Program era (August 2006 - February 2009) was considered a notch above what "Fast Pass" is today.

In October of 2007, SSA Director of Maritime Security Curt Campbell was asked to manage the TWIC Program for his company. Campbell then sat down with Ray Bell, the former head of CISCO Engineering, and owner of IT based network companies Smart Pipes, Silver Spring and Grid-Net (the company who partnered with GE to build residential 'smart' meters). Together, they sketched out the whole system; even down to the Multiplexer transmitters and receivers needed as an option for Terminals that failed to recognize the powers of light speed.

> "...the final piece of that equation involves a TWIC card "reader" at the marine terminal, something that has proven to be an enormous headache. It has also led to vociferous calls by many to end the so-far ineffective and exorbitantly expensive program. A reliable and robust solution has unfortunately eluded terminal operators and the federal government. Until now."

Campbell continued to dedicate himself to finding a successful solution for the TWIC program that would exceed all expectations. In the months to follow, he became the newly elected chairman of the West Coast Maritime Terminal Operators Association's Subcommittee, which focused its initial efforts on a Regional TWIC Database for the Ports of Long Beach and Los Angeles. Eventually, however, the Regional Database discussion went back on the shelf.

In April 2009, the final rollout for TWIC implementation took place on the Port Complex of Long Beach and Los Angeles. The TWIC Card in effect would become a "Fast-Pass." Port Authorities and Terminal Operators would spend the next several years submitting Investment Justifications (IJ's) while lobbying for Port Security Grant Funding, to build-out TWIC Systems that supported a Biometric configuration, as per MTSA design.

Challenges and Solutions

In October that same year, SSA's Prototype Project encountered the first of several obstacles in the design phase, one of which was the absence of the "TWIC Card Reader Final Rule" leaving the selection of "ICE List" approved card readers up to the individual Grant recipients. Intense lobbying by TSA and the NMSAC TWIC sub-committee's plethora of card reader manufacturers pushed hard for Proximity Card Reader Technology. According to Campbell, implementation of a biometric technology solution based on a Proximity Card Reader Interface was not feasible for the Prototype Tests. No regional database existed at the Terminal level, and Prototype participants were ill-prepared to build a database, one trucker at a time.

Early Prototype Projects stalled because they couldn't compress the National TWIC Database into regional files by uploading the database out to the participants. As it turned out, 70 percent of TWIC Cards over 3 years old were broken and Proximity Card Readers don't work with broken cards (antennas) and trying to encourage Truckers to renew or replace their TWIC, while the Maritime Industry was in the "Flash Pass Era" was an impossible task.

Since Proximity Card Readers need an antenna and a local database to function, the Pilot Projects were arguably doomed from the start. In the end, building the Prototype Systems around TSA's timelines became a matter of guesswork. To this day, no one knows what to expect in the TWIC Card Reader Final Rule.

Because of the ambiguous nature of USCG Policy when it comes to the MTSA, implementation of the Final Rule will likely be left up to the discretion of the Terminal operator. As long as the Facility Security Plan covers every possible contingency and the TWIC System meets the minimum standard at all MARSEC Levels, Port Authorities and Terminal Operators will be able to adapt to anything that supersedes "Flash Pass." That being said, anything less than a Biometric configuration for Priority 1 Ports would be considered a massive failure. The positive side to the "minimum standard outcome" is that 2.5 million people have been vetted against the FBI's Criminal History Database and the Terrorist Watch-List. 10 years after 9/11 – and for better or worse – the TWIC Program has become the foundation of Port Security in every corner and waterway of the United States.

In 2008 and when SSA's TWIC project fell short of expectations, Campbell brought in LVS Consulting and TRL Security Systems, who helped make the system pass muster with the Federal Auditors; a required step in projects of this nature. He challenged TRL Systems to take his conceptual design and build a system that could not only verify the identity of thousands of TWIC card holders, and also ban certain individuals from future entry. After months of strategy meetings with TRL's Security Division, Campbell turned TRL loose. Later - in November 2011 - 3M Cogent's recent addition to the ICE List, the newly developed MiY Biometric Access Control Reader, was vetted and employed to form a part of SSA Marine's fully automated system. From this consortium, the "BeastBox" was created.

> "...the BeastBox provides off-the-hook throughput speed, while integrating policy and strategy into technology that includes a biometric contact card reader interface with pin, facial recognition card reader HD CCTV cameras, and Voice Over IP."

Meet the "BeastBox"

Housed in stainless steel, the BeastBox is robust and designed for the hardened maritime environment. Using a "2 is 1 and 1 is none" philosophy, there are no less than 2 BeastBoxes built in to each access control location. At turnstiles, this reduces the bottlenecking during "surge periods" and "shift changes." Throughput speed is a key metric and the additional BeastBoxes offset heavy foot traffic and provide a backup system in the event of failure. With high readers for truckers and low readers for everyone else, terminals can optimize gate moves in a single trucking lane. As truckers and pedestrians insert their TWIC into the card reader, the system records each transaction, while authenticating the individual cardholder against the TSA cancelled card list granting access to the terminal. In the event of an "Access Denied", "Biometric Mismatch," or "Card on Cancelled Card List," the system registers the discrepancies simultaneously releasing an audible alert in the Guard Shack, while sending out an "Automated Email Notification" that activates the FSO's cell phone or computer. In addition to the transaction report on the watchmen's flat screen monitor, closed circuit television (CCTV) captures and records video of the TWIC, the cardholder, and the area surrounding the access control entry point. Turnstiles are especially tricky, and CCTV does an especially good job of catching pedestrians, who attempt to 'piggy back' their way in, or pass a TWIC Card back to another individual, who does not have a TWIC in his or her possession.

The BeastBox is designed for every possible configuration including an emergency override positioned in the guard shack that can shut down the Inbound Turnstiles instantly during a breach of security, or in the event of an active shooter scenario. The HD CCTV card reader camera and facial recognition cameras uses Genetec software that provides cutting edge archive video retrieval technology, the icing on the cake. Supporting access control upwards of 3,500+ gate moves and 1,000 pedestrians daily, the system is configured for the most complex aspect of access control, pedestrian turnstiles and trucking lanes. Beyond this, the BeastBox provides off-the-hook throughput speed, while integrating policy and strategy into technology that includes a biometric contact card reader interface with pin, facial recognition card reader HD CCTV cameras, and Voice Over IP.

In fully automated Biometric Mode for example once a cardholder is authenticated the system fires the turnstiles, green lights or gate arms in less than 4 seconds. In Card Only Mode, it fires those same mechanisms in less than 2. In Flash Pass Mode – the slowest of all configurations – throughput speed hinges on the ability of the watchmen to press a button to allow access.

By creating its own database, the BeastBox eliminates the need for "Database Enrollment," an enormous advantage from a future cost perspective. Campbell says, "What we've created here is unique. When a TWIC transaction (including first-time attempts) takes place at our gates, the BeastBox automatically captures all of the required elements and fields from the TWIC Card needed to support a well-rounded database. This data is reflected in Transactions Reports on both a flat screen monitor located in the guard shack and the FSO's workstation, automatically distributing the data into several different formats that are easily retrievable." Transaction Reports then provide the time and date of the transaction, the cardholder's name, TWIC card number and a jpeg image of the cardholder, which reflects elements specific to the card. And, because TRL was able to capture the jpeg image off the card without having to dive in to the Pin Code, it allowed SSA to eliminate the need for pre-registration of the Card prior to terminal entry. Campbell adds, "This affords us another way of implementing a 'Local/Global Banning Strategy' which keeps individuals who violate our safety rules off our Terminals and assists the USCG during investigations, random screenings, or during Facility Security Inspections. This also helps us during Bomb Threats and when exercising the Emergency Action Plans from an accountability standpoint."

Networking, Connectivity and Economy of Scale, too

While network-to-network connectivity between Terminal Operators can exist between sequel capable servers to cross-deck-data across the Port Complex, the cost of adding

Centralized Command & Control

an Enterprise System to the infrastructure is more of a Port Authority Initiative and doesn't serve the individual Terminal Operator. Campbell explains, "When we have an issue with a cardholder at one Terminal in Long Beach that same individual is normally banned from all of our other operations. However, these types of events are so rare that, rather than banning the individual by linking all the servers, we simply pick up the phone instead." Security breaches need to be discussed between FSO's and FSO's, who should regularly interact with the BeastBox to become one with the system. By providing a negative transaction report out to other FSO's, they can sniff out the bad guys in a microsecond, because the system populates itself almost instantly.

The BeastBox can be strategically and ergonomically placed to ensure the safety of truckers and pedestrians during the TWIC authentication process. By incorporating other Terminal Operating Systems (TOS), such as "Clean Truck" into one box (the BeastBox), this further reduces conflicts at the trucking lanes. Full automation allows terminal operators, port authorities and other entities to operate from one centralized location, reducing threat interface, eliminating exorbitant costs, all while exceeding the expectations of the MTSA.

At SSA, TWIC is not a Four Letter Word

Curt Campbell is the Chief Architect of the "Maritime Security Program" for the largest privately held American Stevedoring Company in the World, SSA Marine. He also stepped up to create a working prototype of what could become the model for all other terminals and port authorities who have the need for a robust TWIC Card reader that fulfills the original intent of the MTSA. Where others moaned about the lack of suitable readers for millions of TWIC cards, SSA and Campbell simply went and devised a unique system of their own.

It's been said that 'necessity is the mother of all invention.' It therefore shouldn't surprise anyone that a marine terminal operator would ultimately be the driver for what looks like the first ever workable TWIC solution. In doing so, SSA may have saved the federal government from having to shutter a program that has cost the taxpayers plenty, with little to show for it (so far). For now, TWIC Lives.

Ballast Water Technology Overview

By Joseph Keefe

The U.S. Coast Guard is (finally) moving towards certification of BWT systems. This can take the form of an Alternate Management System (AMS), which gives a five year temporary window for flag approved systems, or permanent type approval. USCG Type approval will require (a.) that biological laboratory testing has been done AND (b.) shipboard tests as well. Applications for approvals will take about 60 days to get a verdict. If you've passed the testing, then type approval is possible. If not, technologies will need to go the AMS route. And, it is important to note that once a ballast water management system has been approved by the Coast Guard and made available for certain classes, types or a specific vessel, then vessels will no longer be able to install AMS in lieu of type approved system(s).

The five-year period is designed to provide the BWMS manufacturer time to obtain USCG approval. Any vessel using an AMS must still comply with the terms and conditions of the U.S. EPA Vessel General Permit (VGP). The proposed 2013 VGP already contains discharge limits similar to the IMO D-2 standard.

The state of California has identified as many as 63 different vendors who are hawking BWT solutions. Separately, the EPA recently assessed 51 individual BWMS to show the diversity of treatment approaches. Most are at early developmental stages (only 15 to 20 have been tested onboard). Those evaluated with sufficient rigor to permit a credible assessment of performance capabilities were narrowed down to four – (*) actually five – categories of BWMS:

- **Deoxygenation + cavitation**
- **Filtration + chlorine dioxide**
- **Filtration + UV (& Ti O2) (*)**
- **Filtration + electrochlorination**

The BWMS listed above have been demonstrated to meet the IMO D-2 discharge standard and will likely meet USCG Phase 1 standards. This represents an important achievement in the ability of these systems to remove live organisms from ballast water. In this report, the ballast water treatment game has been distilled down into four categories, with one commercial technology from each category used as an example. The choices are many, there is no silver bullet and what may work for one class or size of vessel might not work for another. Take a took:

Alfa Laval

Experience

PureBallast was among the first ballast water treatment systems to receive Ballast Water Type Approval. Operating under real-life conditions since 2003, PureBallast provides ballast water treatment that is 100% chemical-free, in contrast to "chemical-free" systems that produce chemicals during the treatment process. With a broad track record, and with global reach and staying power, Alfa Laval's corporate priorities are "marine."

How it Works

The PureBallast treatment process is based on a patented form of advanced oxidation technology (AOT), developed in cooperation with Wallenius Water. Treatment occurs in a closed chamber known as a Wallenius AOT unit, in which radicals are generated. These radicals are potent yet exist for only a few milliseconds, which means they neutralize microorganisms but are incapable of leaving the treatment system. A 40 µm mesh filter is used during ballasting operations. This blocks the intake of larger organisms, but also reduces the amount of sediment in the ballast water tanks. The number of AOT units is determined by the system's flow rate, with individual units handling a flow of 250 m3/h. The performance of the AOT units is safeguarded by an automatic Cleaning-in-Place (CIP) system, which circulates a biodegradable solu-

tion to prevent seawater scaling within the AOT units. This solution is reusable and is replaced once annually when its pH level becomes too high. The automatic cleaning cycle occurs after each operation. The filter is also rinsed once ballasting is completed. A flow meter regulates the certified flow rate and records the volume of ballast that been treated. The water then continues through the AOT units, which treat the water to IMO established limits before it enters the ballast water tanks. The deballasting process is the same as ballasting, but bypasses the filter system (which is cleaned via automatic backflushing). Outgoing ballast water passes through the Wallenius AOT units to eliminate any regrowth of microorganisms that may have occurred.

Effect on Ballast Tanks

PureBallast requires no chemical additives and generates no chemicals in operation, which means its self-contained process is harmless to the ballast water tanks.

Advantages

According to Alfa Laval, the use of radicals has advantages over other prominent treatment technologies. The spread of radicals is not affected by the presence of particles, which means treatment is still effective when the water has high sediment content. The radicals actually break down cellular membranes, destroying microorganisms rather than rendering them unable to reproduce. As a result, the potential for damage at the deballasting site is eliminated. Alfa Laval counts among its biggest strengths low power consumption, smaller physical footprint, and lower maintenance costs. For crude and product tankers that have potentially explosive areas, Alfa Laval can supply an Ex version of the PureBallast system, designed for Zone 1, group IIC and temperature class T4. PureBallast requires no extra holding time in the ballast water tanks, so there are no delays when ballasting or deballasting.

Scalability, Sizing, Vessel Types

A single PureBallast system can handle flow rates of 250-3000 m3/hour. If more capacity is required, even higher flow rates can be achieved by installing multiple systems in parallel. Sold to all vessel types, container vessels, RO/RO and pure car/truck carriers account for about one-third of all units sold. For Alfa Laval, the 250 to 2,000 m3 per hour sector is strongest target market.

www.alfalaval.com

The Company
Alfa Laval

The Tech
Filtration + Oxidation + UV

The Skinny
Alfa Laval has achieved IMO Basic and Final approvals as well as Type Approval from DNV; 330 units sold; 100 systems commissioned and/or installed.

Approvals

Alfa Laval has achieved IMO Basic and Final approvals as well as Type Approval from DNV.

Reference list

Alfa Laval has sold 330 units with about 100 systems commissioned and/or installed.

Hyde Marine

Experience

Following extensive research, Hyde produced its first system in 1999 and subsequently installed its first system on the M/S Coral Princess in 2003. Notably, the Hyde system was the first accepted into USCG STEP program in October of 2008.

Approvals

The Hyde GUARDIAN Ballast Water Treatment Systems have IMO Type Approval for capacity from 60 to 6000 m3/hr. A Type Approval Certificate has been issued by Lloyd's Register on behalf of the UK Maritime and Coastguard Agency to confirm compliance with Guidelines contained in IMO resolution MEPC.174(58). Other certifications include ABS, Dutch Flag State, Russian Maritime Registry of Shipping, DNV (Hazardous Area Certification) and DNV EC-Type Examination Certification.

How it works

Hyde's GUARDIAN features a two-stage process; stacked disk filtration to remove sediment and larger organisms, and a UV disinfection unit to kill or inactivate smaller plankton, bacteria and other pathogens. During ballasting, water is processed through both filter and UV stages. All captured solids and organisms are discharged during backflushing to the location they entered. During de-ballasting, the filter is bypassed and water flows only through the UV system before discharging overboard. Hyde GUARDIAN system and ballast operation data are automatically logged and Hyde provides

www.hydemarine.com

The Company

Hyde Marine

The Tech

Filtration / UV (70%)

The Skinny

Hyde GUARDIAN has now been installed or specified on over 160 ships (200+ systems). Commonly in use in the cruise, parcel tanker and container markets, about one-third of those units are in service or commissioned.

HG150 pictured on board New Construction Offshore Service Vessel

guidance on the design/installation of sampling ports in accordance with IMO G2 Guidelines.

The Hyde GUARDIAN uses a high intensity ultraviolet (UV) treatment as a means of disinfection. The UV chamber is designed for minimum pressure drop, maximum retention time, and compatibility with the marine operating environment. The medium pressure lamps produce a polychromatic output across the entire spectrum of the germicidal curve and have an expected service life of up to 8,000 hours.

Reference List

Hyde GUARDIAN has now been installed or specified on over 160 ships (200+ systems). Commonly in use in the cruise, parcel tanker and container markets, about one-third of those units are in service or commissioned. Delivered to a wide range of ship size and type (60m3 up to 5000m3), Hyde has been specified in some smaller research hulls. About 15% of their orders are for retrofits.

Caveats

The trade-off with this system is the larger filter(s) which provide better performance. This balances the smaller UV footprint. Increase in physical footprint is linear, as the unit increases in capacity, up to 1300 m3/hr. Older tankers and larger vessels needing retrofitting might cost more.

Advantages

According to Hyde, their depth filtration method increases removal efficiency and solids holding capacity while maintaining low pressure drop and a high flow rate. The filter is unique in its patented, self-cleaning design. When a preset differential pressure is reached, the fully automatic backwash starts by starting a backwash/booster pump. The unit's power footprint – according to Hyde – is reasonable and the absence of chemicals gives a cost advantage. No hydrochlorination (hydrogen build-up) is used, so this could be added to cost of other systems. Also according to Hyde, a non-chemical ballast water treatment technology can help to mitigate many risks associated with Ballast Water Management.

N.E.I.

Experience

Founded 1997 to provide environmental compliance services to the major oil and power companies, in 2002, N.E.I. began development of a de-oxygenation ballast water treatment system – the Venturi Oxygen Stripping (VOS). In 2007, N.E.I. obtained the world's first IMO Certification-Liberia.

How it Works

Venturi Oxygen Stripping (VOS) is a physical process, which removes Dissolved Oxygen (DO) from the ballast water during intake only (no retreatment is required during discharge). VOS does not require any filtration or active substances, and does not require changing ballast pumps due to flow restrictions. VOS leverages a highly efficient Stripping Gas Generator (similar to an Inert Gas Generator) to produce a very low oxygen gas (Stripping Gas). This gas is introduced to the ballast water via a Venturi Injector (VI). The VI generates extreme cavitation/vacuum in-line, creating a bubble emulsion in the ballast water. Within ~10 seconds, more than 95% of the DO is stripped out of solution, and simply vented to atmosphere. Any species dependent upon oxygen is suffocated, treating many controlled species within an hour. However, the oxygen levels are high enough to prohibit anaerobic life. Many organisms are treated during the venturi phase of treatment itself (due to the sheering forces intrinsic to the cav-

itation process).

Advantages

VOS achieves 100% efficacy with no filters, no chemicals and no UV radiation. Also, according to NEI, VOS is the only BWTS capable of providing a positive ROI, realized from the combination of corrosion protection, removal of sacrificial anodes and the elimination of standard IGG's (tankers only). Through the 95% reduction in DO, and maintaining a permanently inerted environment, oxidation of structure and coatings is virtually eliminated. VOS treatment can facilitate the complete removal of cathodic protection. This is accomplished with no filters and no active substances. Because the VOS process does not reduce ballast pump capacity (as filters do), it does not have any upper limits on ballast capacity, therefore supporting any ballast pump capacity. VOS is currently Type Approved with a Treatment Rated Capacity (TRC) of 6,800 m3/hr.

No active substances are introduced to oxidize structure and coatings, there are no chemicals to haul or release into the environment. The VI is an Intrinsically Safe device, and has flexible installations options.

Type Approvals

N.E.I. and the VOS process is Type Approved by the Republic of Liberia, the Marshall Islands, Malta, the Netherlands, and the Republic of Panama (representing 45% of world tonnage). N.E.I. is a member of the U.S. Coast Guard's STEP program, and has been reviewed by the U.S. Environment Protection Agency. It has been successfully tested by the Coast Guard approved Maritime Environmental Resource Center (MERC). Because of this, NEI says they will skip the Coast Guard's AMS certification process and move directly to the full type approvals.

Caveats

This technology does not yet scale down for smaller vessels. Very short sea passages (settling time is often needed for this process) may present small delays in ballast discharge.

www.NEI-marine.com

The Company

N.E.I.

The Tech

Cavitation / Deoxygenization

The Skinny

VOS equipment has been installed on Bulkers, Tankers, and Containerships. A total of 58 systems have been sold to date; specifically, 21 Installed (3 vessels not yet commissioned), 18 commissioned vessels, And another 37 booked, but not installed yet.

Reference List

VOS equipment has been installed on Bulkers, Tankers, and Containerships. A total of 58 systems have been sold to date; specifically, 21 Installed (3 vessels not yet commissioned), 18 commissioned vessels,

And another 37 booked, but not installed yet (contracts in place). www.NEI-marine.com

Severn Trent De Nora

Experience

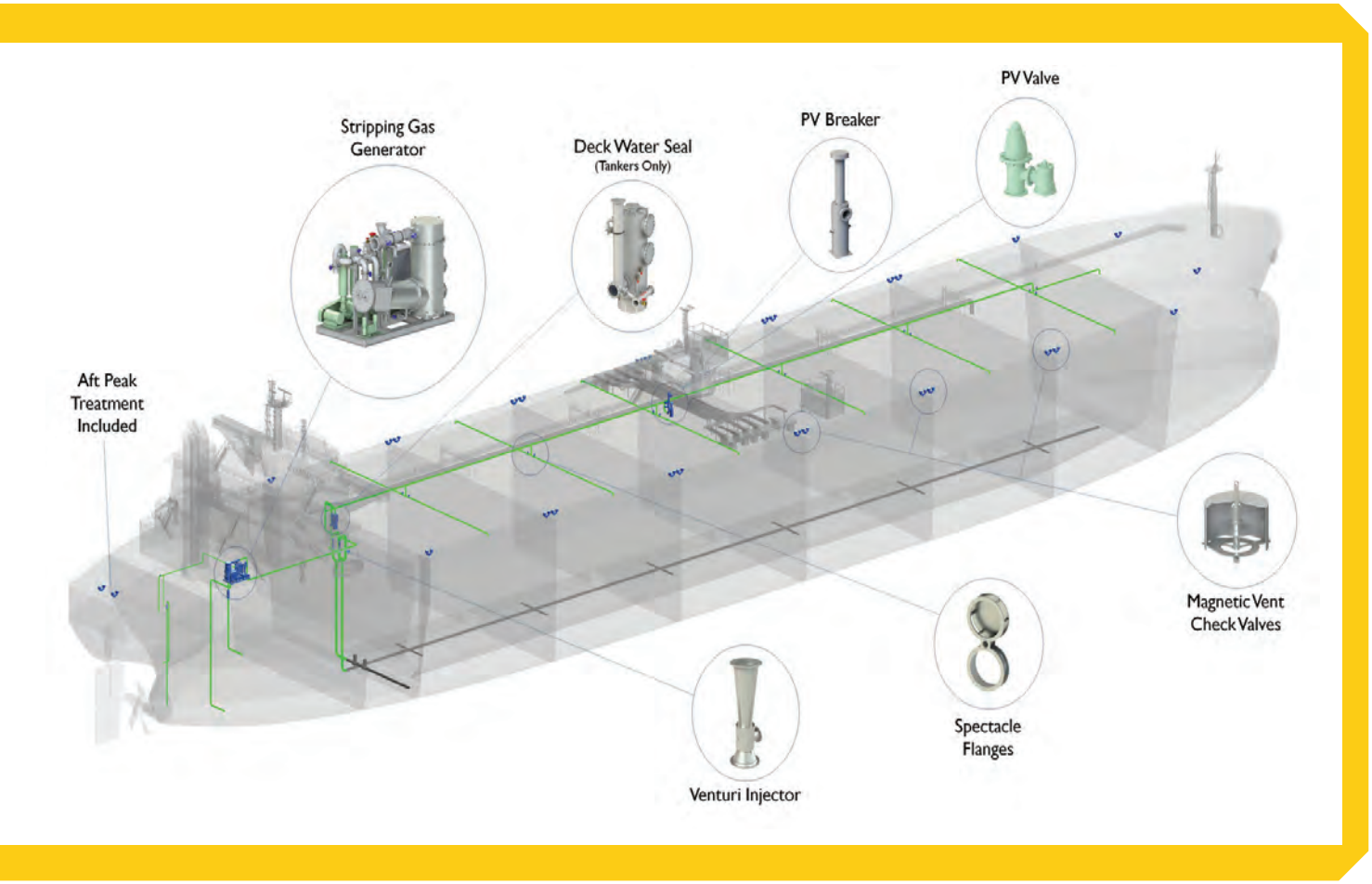
Severn Trent de Nora has been in the ballast water treatment business since 1999. A STEP program participant, it has additionally been involved with all manners of water treatment for 40 years. A large, well-established company, it also has global reach.

How it Works

Electrolytic ballast water treatment systems typically pass the entire ballast flow stream through the electrolytic cells. The BALPURE system diverts a slip stream from the main ballast line or from a source of heated sea water from the discharge side of the sea water/fresh water central cooling systems on motorships or from condenser discharges on steam ships to the electrolyzers to generate a disinfecting solution in situ and on-demand to treat the ballast water. This slip stream approach allows the unit itself to make use of available existing locations remote from the main ballast lines and gives the design engineers flexibility over how the unit is located on board.

Advantages

The system can take advantage ship's "waste heat," in order heat the slip stream. Using a residual biocide is final piece of puzzle to combat regrowth. Not all chlorination systems take this into consideration. The ability to split the U.S.-built



BALPURE system into small sub assemblies minimizes requirements for other equipment relocation and additional engineering/ship re-designs – allowing small available spaces to be used in various machinery/engine spaces. Final fitting, installation, commissioning and testing can be accomplished at sea or quayside. In situ sodium hypochlorite-based ballast water treatment systems share common treatment principles. Not all are capable of performing in extreme cold water conditions. Electrolytic technology functions optimally above 15°C seawater feed. The technology does not function at all below 5°C. Warmer supply water temperatures significantly reduce the power demand for the electrolytic process (90% of the power consumption). The advantage of the BALPURE slip stream treatment approach is that this stream can be easily heated from low pressure steam, electric heaters or thermal oil systems to significantly improve the hypochlorite production rate, extend the life of the electrodes, and reduce power consumption.

Approvals and USCG certification

BALPURE received IMO Type Approval in July 2011. BALPURE has type approval from Bureau Veritas as well as a certificate of design assessment from ABS, with type approval applications in process with several other classification societies. Formal submittal to the U.S. Coast Guard (USCG) for the designation of its BALPURE ballast water treatment system as an Alternate Management System (AMS) has been made. If accepted, the Type Approved ballast water treatment system could be used onboard vessels in US waters.

Caveats

Vessels traveling in primarily fresh water environments would need to carry brine in order for the system to work correctly and the colder the temperature of the seawater, the more heat would have to be applied. Severn Trent de Nora therefore does not market the technology to "Lakers." The manufacturer is looking at designing a smaller system to accommodate smaller market vessels.

www.severntrentdenora.com

The Company

Severn Trent De Nora's

The Tech

Filtration/Chlorination

The Skinny

Severn Trent De Nora has installed/sold 18 systems over the past 15 months since receiving IMO Type Approval in July 2011. 5 have been installed. All of the contracts have been for new builds.

Impact on tank coatings

A corrosion testing program undertaken by GL Noble Denton for the BALPURE system was completed in March 2011. Seawater treated by the BALPURE system with higher than normal levels of free chlorine showed no measurable effect to the normal life of ballast tanks, coatings and associated fittings. Letters of confirmation from two paint/coating suppliers attest to the non-corrosive nature of the BALPURE, which is approved for use on these coatings up to a residual concentration of 8 ppm.

Scalability, Sizing, Vessel Types

BALPURE systems are available to treat up to 5,000 m3/hour of ballast water flow with custom units available to treat higher flow rates up to 20,000 m3/hour. BALPURE is targeted for larger tankers, bulk carriers, and LNG vessels with higher flow rates /larger capacity to take advantage of the lower per MT operating /investment costs. The space footprint on intended vessels is not large – a BP-5000 with 10 times the capacity of a BP-500 requires just 2.5 times the space required. BALPURE has been sold across many different vessel types ranging from bulk carriers, to VLCCs, offshore barges, pipelay vessels and LNG carriers.

Reference list

Severn Trent De Nora has installed/sold 18 systems over the past 15 months since receiving IMO Type Approval in July 2011. 5 have been installed. All of the contracts have been for new builds. www.severntrentdenora.com

The Time for Talk – Almost Over …

"The IMO convention will likely be ratified within one year's time. It is time for ship owners to start installing." That's the take of Per Warg, Business Manager for Alfa Laval's PureBallast ballast water treatment system. Another vendor told ***MarPro*** (on background), "By the time most get around to buying and installing systems, the price will have gone through the roof." While it is hard to say if either one is right, one thing is certain: the long road to a BWT standard and subsequent type approval for technologies is at an end. Shipowners who do not act quickly may find that they will pay too much for system(s) that are not readily available. Yet, it's clear that suitable technologies exist and are now available. Hundreds of systems have been sold into the market. Tens of thousands more will follow. You have to comply. When will you do it?

FINANCE

Maritime Mergers & Acquisitions

New rules burdensome for some companies while at the same time creating opportunities for others.

By Harry Ward

Two critical factors are driving change across all segments of the maritime business today: new regulations and environmental issues. Costly and complex new requirements will shape the course of mergers and acquisitions activity as some companies struggle and others act to capitalize on the challenges posed by rapid change.

A wide range of environmental concerns related to the marine industry have been debated with increasing momentum in recent decades. Several of the more prominent issues have recently coalesced into laws and regulatory mandates that have already begun to impact maritime businesses significantly. A diverse set of rules such as ballast water treatment requirements and power plant emissions standards have begun to affect operators of the largest petroleum tankers down to the smallest workboats. When added to a number of other safety-related mandates – such as electronic charting and towing safety requirements – the net effect of new rules has begun to impose a burden on some companies while creating opportunities for others.

Regulatory changes are a time-tested driver of mergers and acquisitions activity across all industries. As new rules change the playing field, new competitors emerge and financially strong companies seek to acquire both rising stars and their less agile competitors. But beyond actual legal mandates, overall attitudes toward environmental sustainability have begun to shape the product and service offerings of major marine and offshore players.

Winds of Change

Offshore wind power has been growing steadily in recent years as governments establish renewable energy quotas and support alternative energy projects with subsidies. Marine companies offering an array of equipment and services to the offshore wind segment have been expanding both organically and through acquisition. Italy's ***Prysmian Group***, a world leader in cable systems including subsea power cables, recently agreed to acquire ***Global Maritime Systems Energy Limited (GME)*** for approximately $69 million to leverage GME's specialized capabilities including the installation of inter-array submarine cables between offshore wind turbines.

Earlier in 2012, ***KV Ventus BV***, a subsidiary of offshore rig builder Keppel Corporation, acquired a 49.9% stake in ***OWEC Tower*** for about $11 million. OWEC designs innovative offshore wind turbine foundations that enable faster project delivery and reduced installation costs. In the vessel operation segment, Rotterdam-based ***Offshore Wind Services BV (OWS)*** in March announced its acquisition of ***Welsh Offshore Wind Power Marine Services***, a provider of offshore wind crew transfer, accommodation and data solutions for an undisclosed sum. Though subsidies for wind power are on the decline in the US and Europe, new projects in the Asia-Pacific region and Central and South America are expected to pick up much of the slack, and total production from offshore wind is expected to grow almost tenfold by 2020 to more than 50 gigawatts of power output, so we expect more cross-border M&A activity in this arena in coming years.

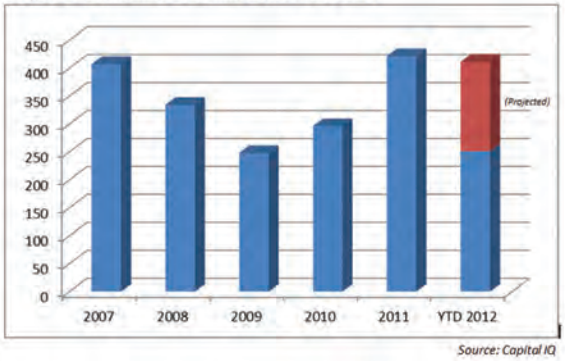
Oil and Gas Still Dominant

Despite the growth in wind power, the business of offshore oil and gas production dwarfs that of alternative energy, and it is a business that remains very sensitive to environmental and other regulatory effects. The infamous Deepwater Horizon spill in 2010 brought immediate changes to worldwide offshore energy markets as new drilling projects in the US Gulf were reduced dramatically. Beyond the operational impact, a renewed focus on spill prevention and cleanup generated mar-

Figure 1: 5-Year Maritime Public Company Index Trends

Source: Capital IQ

Figure 2: Worldwide Maritime M&A Deal Count



Source: Capital IQ

ket activity for related products and services. Marine geotechnical leader ***Fugro NV*** acquired England's ***EMU Limited***, a $26 million consultancy specializing in marine environmental survey and analysis, to expand its offshore environmental service offering. In February 2012, marine-heavy private equity group ***JF Lehman & Co.*** picked up three oil spill response divisions from ***Seacor Holdings*** for $97 million in cash. Another private equity player got in on the environmental equipment side, as UK-based ***Phoenix Equity Partners*** bought ***Gall Thompson Environmental (GTE)*** for about $118 million, or 7.4 X EBITDA. GTE is a global market provider in the supply of safety-critical "marine breakaway couplings" to the offshore oil and gas industry.

The increased attention to subsea engineering and monitoring solutions has generated financial activity in an interesting market subsegment: Remotely Operated Underwater Vechicles (ROV's) and Autonomous Underwater Vehicles (AUV's). These two closely-related equipment categories enable the engineering and installation of more environmentally-friendly structures and pipelines, as well as ongoing subsea ecosystem monitoring. A number of transactions taken place in the segment in the past year, as depicted below:

- Oceaneering International acquired subsea pipeline inspection and engineering company AGR Field Operations for $240 million in December 2011.
- Bluefin Robotics acquired ROV developer Hawkes Remotes in late 2011 (undisclosed terms).
- Houston based FMC Technologies completed its $281 million acquisition of ROV producer Schilling Robotics in April 2012.
- American Moog, Inc. acquired Scottish ROV/AUV equipment provider Tritech International Limited in 2012 for about $33 million. Tritech's trailing 12-mo revenues were $19 million.
- Oaktree Capital took a 62.5% stake in Scotland-based Integrated Subsea Services (ISS), a provider of specialist diving and ROV services to the offshore industry.
- Teledyne RD Instruments bought BlueView Technologies, producer of compact high-resolution acoustic imaging and measurement equipment deployed on AUV's.

The long list of subsea transactions continues to grow and the market will likely continue to strengthen as drilling picks up along the Gulf Coast and worldwide offshore production remains robust.

Safety First

Marine safety requirements have been slowly tightening, and a few new requirements will force many maritime companies to spend time and money to bring their fleets into compliance. A couple of marine safety-related deals recently include ***JF Lehman*** portfolio company ***Drew Marine's*** acquisition of marine safety and signaling-focused ***Chemring Group PLC*** for about $51 million; and Canada's ***Survival Craft Inspectorate's*** purchase of the ***RocLoc*** cruise ship evacuation product line from ***Mad Rock Marine Solutions***. In the near future, "Subchapter M" rules in the US will require tug operators to enhance their safety plans and equipment, creating opportunities for consulting firms and safety product providers. Also look for electronic charting and display (ECDIS) mandates to phase in worldwide, likely driving equipment deals in bridge technology.

Trends and Outlook

In a more general sense, different segments of the maritime industry have experienced divergent financial performance over the past five years. All companies were hit to some degree by the financial crisis, but since that time the mostly energy-related inland/offshore segment has performed better than both the bulk and containership sectors as shown in Figure 1. The graph clearly shows the prolonged troubles in the bulk industry and that trend was reflected in the divestiture of ***United Maritime Group*** divisions this year, with three major subsidiaries selling to different buyers.

Overall M&A activity has leveled out in 2012 after a post-financial crisis recovery in 2010 and 2011, and seems to be on track for a similar number of deals this year as last. The data in Figure 2 reflects marine, ports, shipbuilding and marine equipment deals, and shows an overall deal flow that has returned to pre-crisis levels. The importance of Europe in worldwide maritime operations and finance make market forecasting difficult as the EU continues to struggle with debt and currency issues, but the driving factors of regulation and environment will ensure a compelling level of deal flow, regardless of the economic direction in 2013.

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.

The McLean Group
INVESTMENT BANKING

TECHNOLOGY

Compliance and Efficiency via High-Tech Partnerships

By Joseph Keefe

ABS Partners with ESRG, integrates NS5 Enterprise Fleet Management Software with ESRG's OstiaEdge technology, greatly enhancing Data Management and utility.

The Intelligent Ship, made possible with sophisticated IT systems, may be closer than you think. In fact, it's already here. In September, ABS announced a partnership with Engineering Software Reliability Group (ESRG), a provider of data analysis and remote monitoring technology. The partnership is intended to improve service offerings in real-time data management and analytics to the marine and offshore industries. According to ABS Nautical Systems President and COO Karen Hughey, "The future of operational optimization and regulatory compliance in the marine and offshore industries lies in the ability to collect, analyze and act upon real-time data gathered from operations around the world."

For its part, ESRG brings more than 12 years of reliability and maintenance experience monitoring and analyzing US Navy ships. Their OstiaEdge software, a shipboard real-time analytics application, addresses environmental, fuel, energy and maintenance issues at both the vessel and fleet level, as well as all levels of management. According to ESRG, the information can improve operations by enabling automated data collection for a number of areas, including environmental compliance reporting energy management, maintenance and monitoring.

ABS Nautical Systems brings its NS5 Enterprise software to the mix, and the integration of NS5 Enterprise and OstiaEdge will bridge fleet management with the maintenance and operational management aspects of vessels and offshore units.

Hughey adds, "This will provide owners and operators the ability to make decisions with data and analysis they can trust. The partnership brings tremendous opportunity for marine and offshore operators to better manage key fleet data and improve upon the larger classification experience."

Established in 2000, ESRG enables industrial asset owners and equipment manufacturers to reduce downtime as well as operations and maintenance costs by using real-time, smart analytics to automate compliance reporting, optimize fuel and energy consumption and implement automated condition based maintenance strategies.

Until now, their primary thrust on the maritime side of the equation had been monitoring systems and analyzing data from U.S. Naval vessels.

ESRG's OstiaEdge SmartShip

According to ESRG's Rob Bradenham, ESRG's largest customer at present is the United States Navy, providing experience in all types of navy hulls. ESRG monitors all manners of equipment performance, but has particularly deep roots with the Navy's gas turbines. Bradenham explains, "Algorithms in the software predict failures and provide a 'stoplight,' enabling shore-based leadership to have a real time view of performance. As many as 7,000 data points per second are sifted and analyzed."

Software can assess different engines and systems and then prioritize maintenance routines. But, ESRG has installed and validated the technology with commercial entities – primarily in the offshore and oil & gas industries. The ESRG software, scalable for commercial use and interfaced with ABS NS5, ultimately provides a turnkey solution for operators.

ESRG monitoring creates value by reducing maintenance cost on at least one series of USN vessels; sometimes as much as $70,000 per hull. And, according to Bradenham, this would translate into similar efficiencies for commercial entities. He explained, "Many failures to equipment occur directly after it has been opened up for inspection. If you can reduce the number of times a piece of equipment or engine has been opened, you not only save maintenance costs, but you also prevent other problems from occurring."

ESRG's biggest value so far has been the monitoring of fuel consumption and emissions, providing proven savings in plant configuration and helping vessels and fleets operate in a more fuel efficient manner through better data which in turn allows better decision making. And the automation of certain reporting functions will eventually facilitate anticipated regulatory requirements but also eliminate the need for time consuming manual data entry.

Today and of particular relevancy to emerging trends in the commercial marine markets, ESRG monitors more than 50 gas turbine engines. For marine operators operating or contemplating the switch to dual fuel engines, the technology is especially attractive. With engine makers touting reduced maintenance costs and increased servicing intervals, the means with which to verify that metric is especially important – both for operators and regulatory bodies alike.

For example, Harvey Gulf Marine has (separately) indicated that they intend to not only monitor the performance of their new dual fuel engines on their latest series of newbuilds, but they will also transit that data via SATCOM to shoreside managers for analysis.

In part by using performance data gleaned from monitoring systems, they hope to drastically reduce maintenance costs and unneeded "open and inspect" procedures. In a nutshell, the monitoring system analyzes trends and can predict failures; not by replacing control systems, but augmenting these features to make them more efficient.

The monitoring system has a low space footprint and is laptop loaded, provides a ship-based focus of energy performance and environmental compliance, including out-of-parameter alerts and drill-down capabilities by system and report. If desired, it can be connected by satellite to shore, supporting both same-vessel and combined-vessel views – providing visibility into energy performance, usage comparisons, alerts and non-compliance trends between ships across the fleet.

ESRG's Bradenham adds, "Sometimes remote monitoring is just not enough. Some operators will say, it's great data, but what to do I do with it." In these cases, ESRG also offers expertise and analysis from experienced operators.

All of this analytical power can be made available to both the crew and to shore-based engineers in ship-based or enterprise editions. And, now, in connection with and integrating data into the ABS NS5 platform, the system becomes that much more powerful.

With easy-to-read dashboards, alarms for out-of-parameter performance and powerful 'drill-down' analytics, OstiaEdge SmartShip gives crews and shore-side superintendents a comprehensive environmental and energy software platform that includes:

Analytics:	Benefit:
Energy Management	Calculates performance parameters helps masters to create optimum speed and engine use profiles.
Ballast Management	provides ship and shore with real-time history of ballasting activity.
Fuel Switching	cross-matches data, validate speed/position where switching took place.
Oily Water Separator/ Bilge Monitoring	collects data on OWS run-times, flow-through volumes and results, with output on time and vessel location.
Emissions Management	calculate emissions output to verify in real-time, NOx, SOx, hydrocarbons, O2, CO, CO2, and particulate matter emissions output.
Daily Compliance Reports	provides automatic report generation capabilities.

Mutual Benefit: ESRG, ABS and … the Customer

The opportunity to partner with ABS on the integration of the OstiaEdge product into the NS5 Enterprise fleet management system creates unlimited upside for ESRG. Primarily catering to U.S. Navy and government accounts at present, this firm now enjoys the global outreach that can be provided only by a classification society such as ABS. ABS, in turn, benefits from the use of more and valuable, real time monitoring data which can be incorporated directly into their NS5 operating platform. Together, the value of both systems is greatly enhanced.

Continually evolving to meet industry needs, NS5 Enterprise has a versatile design that allows all users – from senior management to crew members – 24/7 access to relevant data from their overall business landscape. The partnership with ESRG is part of that evolution. With the integration of ESRG's monitoring software, even more real time data will be available for retrieval and integration into the operator's business plan, maintenance schedules and a myriad of other functions. Fernando Lehrer, Vice President of Product Development at ABS Nautical Systems calls the partnership a "traffic IT system that looks at real time data." Simply put, the new system bridges fleet management with the maintenance and operational management aspects of vessels and offshore units.

NS5 culls the operational data related to consumption and integrates it into the NS5 system. The program eliminates manual data compilation. Lehrer adds, "This lets the engineroom crew get back to performing physical operations on the vessel." The software will help with environmental compliance issues, because monitoring of energy consumption will be electronic, not manual. Reports for the classification societies, flag and the Coast Guard are populated automatically. Fer-

> "... of particular relevancy to emerging trends in the commercial marine markets, ESRG monitors more than 50 gas turbine engines. For marine operators operating or contemplating the switch to dual fuel engines, the technology is especially attractive. With engine makers touting reduced maintenance costs and increased servicing intervals, the means with which to verify that metric is especially important – both for operators and regulatory bodies alike."

nando Lehrer adds, "The partnership efficiently facilitates the exchange of information. In the real world, a spreadsheet is okay for class reporting, but the software does so much more." The ESRG module has its functionality integrated into NS 5 and imbedded with ABS branding, but it could stand alone.

NS5 and ESRG as One

As a combined package, the classic definition of NS5 and ESRG can be described as "a Single Source Point of solutions for IT, helping with data mapping." Supporting and running in conjunction with the NS5 Fleet Management Software, OstiaEdge SmartShip facilitates the management of all maintenance-related activities centrally. Through NS5, ESRG monitoring data integrates seamlessly, providing shoreside managers with pass-through alerts and drill-down functionality to the individual alert level – all available directly through fleet management software system. Arguably, this represents the last step technology-aided management tool for the commercial ship operator. In the current challenging financial, regulatory and operational climate, it comes not a moment too soon.

STATISTICS

Status of Classification Society Recognition, ACP Participation, and Authorizations Delegated by the U.S. Coast Guard

The U.S. Coast Guard has entered into formal agreements – covering the delegation of certain statutory survey and certification functions for U.S. flagged vessels – with classification societies under the authority of Title 46, United States Code (3316). Delegated functions, relating to Coast Guard commercial vessel inspection, may include the authorization to issue international convention certificates and participation in the Alternate Compliance Program (ACP). These functions performed by, and statutory certificates issued by, authorized classification societies will be accepted by the Coast Guard.

The wide range of tasks being performed by "class" on behalf of the Coast Guard has a wide-reaching impact on shipping. The partnership – and shared trust – between the U.S. Government and these organizations is therefore important. All of the classification societies listed enjoy membership in the International Association of Classification Societies (IACS). IACS makes a contribution to maritime safety and regulation through technical support, compliance verification and research and development. The vast majority of commercial ships are built to and surveyed for compliance with the standards – issued as published Rules – laid down by Classification Societies. More than 90% of the world's cargo carrying tonnage is covered by the classification design, construction and through-life compliance Rules and standards set by the 13 Member Societies of IACS.

Class Society Status	ABS	DNV	LR	GL	BV	RINA	ClassNK
Recognized (46 CFR part 8, subpart B)	✓	✓	✓	✓	✓	✓	✓
Alternate Compliance Program (46 CFR part 8, subpart D)	✓+	✓+	✓+	✓+			

Authorizations	ABS	DNV	LR	GL	BV	RINA	ClassNK
Tonnage							
ITC (46 CFR 69, subpart B)	✓	✓	✓	✓	✓	✓	✓
U.S. Regulatory (46 CFR 69, subparts C & D)	✓	✓	✓	✓	✓	✓	✓
International Load Line Certificate (LL Protocol)	✓	✓	✓	✓	✓	✓	✓
Cargo Ship Safety Construction Certificate (SOLAS)	✓	✓	✓	✓		✓	
Cargo Ship Safety Equipment Certificate (SOLAS)	✓	✓	✓	✓		✓	
Passenger Ship Safety Certificate (SOLAS)						✓	
High-Speed Craft Code Cert., Permit to Operate High-Speed Craft							
Int'l Oil Pollution Prevention Certificate (MARPOL 73/78, Annex I)	✓	✓	✓	✓		✓	
International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk (IBC Code)	✓	✓	✓				
Int'l Cert. of Fitness for Carriage of Liquefied Gasses in Bulk (IGC Code)	✓	✓	✓				
International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate) (MARPOL 73/78 Annex II)	✓	✓	✓				
Certificate of Fitness for Transport & Handling Hazardous & Noxious Liquid Substances in Bulk on OSVs (resolution A.673(18), as amended)	✓	✓	✓				
Compliance w/MARPOL 73/78 Annex III (Packaged Harmful Substances)	✓+	✓+	✓+	✓+			
Verification of Compliance with MARPOL 73/78 Annex V (Garbage)	✓+	✓+	✓+	✓+			
Intn'l Air Pollution Prevention Certificate (MARPOL 73/78, Annex VI)	✓	✓	✓				
Safety Management Certificate and Document of Compliance (ISM Code)				✓		✓	
Mobile Offshore Drilling Unit Safety Certificate (resolution A.649)	✓	✓	✓				
Compliance for Ships Carrying Dangerous Goods (SOLAS reg. II-2/19)	✓	✓	✓	✓			
Cargo Gear Certificates and Registers (46 CFR Parts 31.10-16 & 91.25-25)	✓	✓	✓	✓		✓	

✓ - denotes authorized | ✓+ - denotes ACP vessels only

Revised: 10/9/12, by LT A. J. Giordano (source USCG)

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