Maritime Professional

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Volume 6, Issue 2

TORM

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NOT BUSINESS AS USUAL

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ABS


Dr. Art Sulzer


Eric Haun


TORM

ON THE COVER

As Torm A/S relentlessly pursues the best and the brightest seafarers, the needs of both sides of the equation are changing. Tomorrow's mariners are therefore a product of today's HR strategy. That story begins on page 40.

Image: TORM

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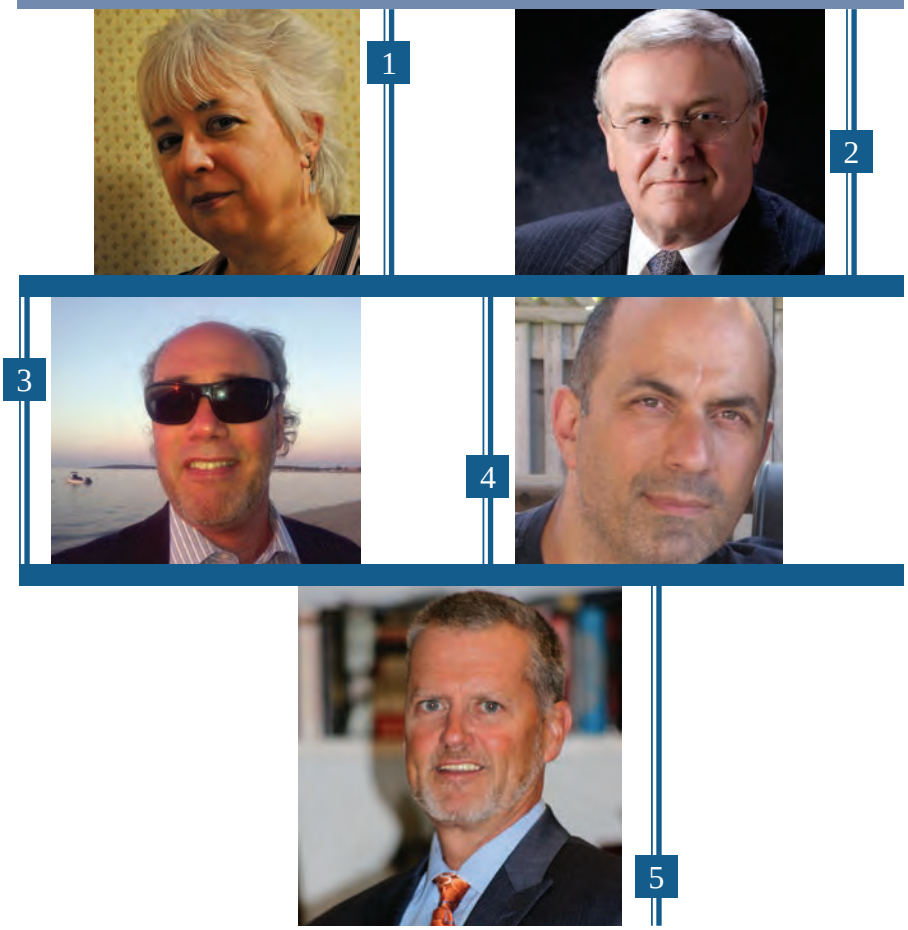

1 **Patricia Keefe** is a veteran journalist, editor and commentator who writes about technology, business and maritime topics.

2 **Peter Lovie** has been in the middle of it all in an unusual succession of Houston based careers with an FPSO contractor, a shuttle tanker contractor, an operating oil company and now as an independent advisor. This article is a collection of quotes and summarizations of his recent, almost 11,000 word paper on the same topic.

3 **Barry Parker** of bdp1 Consulting Ltd provides strategic and tactical support, including analytics and communications, to businesses across the maritime spectrum.

4 **William Stoichevski** arrived in Norway in 1999 to lead a media campaign for Norwegian green group Bellona. He later served as regional feature writer for the Associated Press in Oslo. In 2003, he left the AP to begin building, overseeing and writing for a number of print and electronic energy-industry publications in the Norwegian capital.

5 **Greg Trauthwein** is a journalist with more than 24 years experience interviewing global maritime market leaders.

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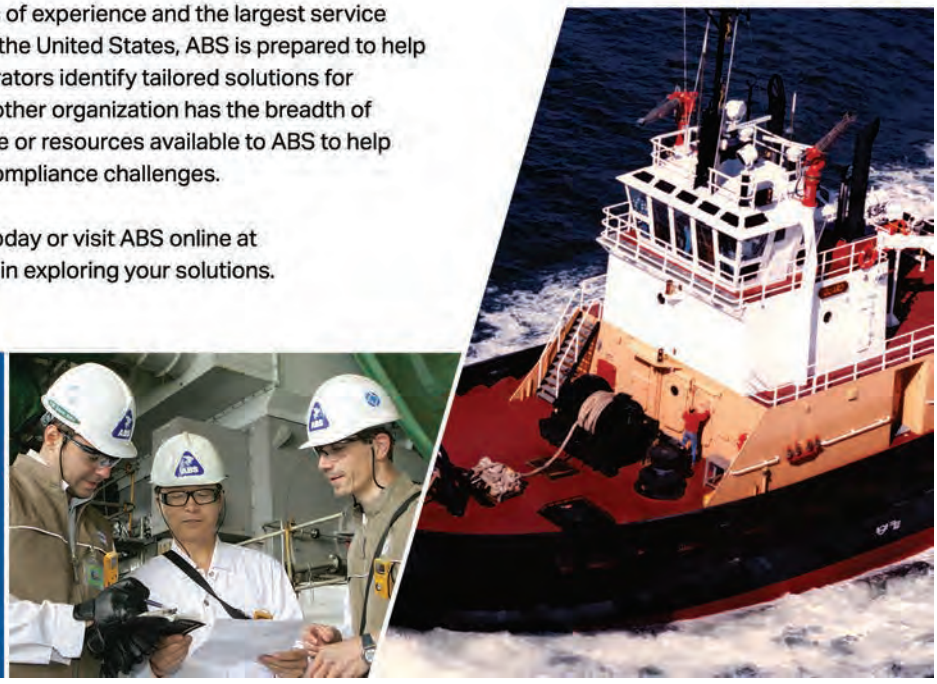

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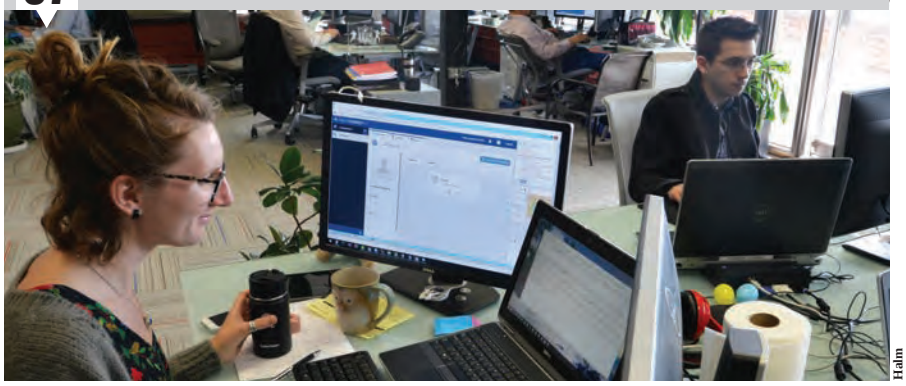

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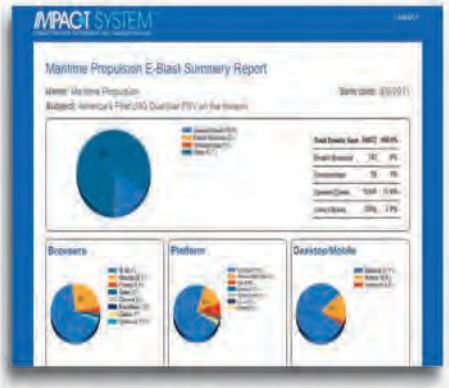

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Editor's Note

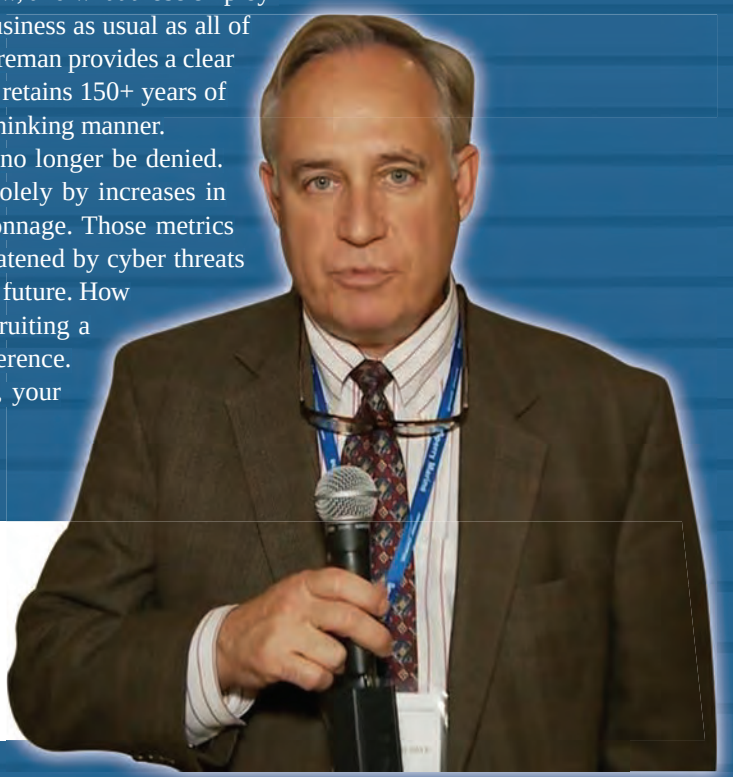
Business as Usual?

One man's ceiling is another man's floor. Singer and songwriter Paul Simon probably said it best, back in the mid 1970's. That was also at least ten years before the bottom would fall out of oil in what was then thought to be the worst oil crash of all time. By 1987, entire neighborhoods in Houston had emptied out and the oil boom that had once carried Houston to international prominence was gone. Today, some analysts think that the current market malaise is just as bad, if not worse. On the other hand, it is still a decidedly good time to be operating oil tankers. With crude oil production still outstripping global demand, even as this edition goes to press amidst a mild recovery in pricing, tankers operators in certain sectors find their tonnage in demand, albeit for different missions than the traditional 'fixtures for transit.' On the U.S. Jones Act side of the equation, the allure of so-called MLP's may have worn off somewhat, but the tanker business here also finds itself in a reasonable place nevertheless.

All of that calls for a robust demand for qualified talent to run these vessels and today's tanker operators find themselves competing for the best and brightest in an 'up' market that is further accentuated by an ever tightening regulatory climate. Hence, recruitment, training and retention take on new meaning, even while other sectors – boxships, bulkers and OSV's in particular – languish in an over-supplied market. At Torm, a Human Resources strategy takes all of that into consideration while at the same time leveraging the past as they look to the future. The story begins on page 40.

Separately, and no matter what the state of the economy looks like for any sector, the arrival of 'big data' is now undeniably upon us, whether we like it or not. Like the global price of oil, technology is having a profound impact on the way we operate our assets, who we trust to do that, where we will find the maritime leadership for tomorrow, and what those employees will look like in the near future. At ABS, it won't be business as usual as all of that unfolds. In the pages that follow, ABS CTO Howard Fireman provides a clear look into the classification society of the future, one which retains 150+ years of legacy missions, but delivers in a much different, forward-thinking manner.

The impact of technology on the global waterfront can no longer be denied. For too long, progress on the water has been measured solely by increases in deadweight tonnage, TEU capacity, length and draft of tonnage. Those metrics remain important. At the same time, 'big data' – now threatened by cyber threats – will no doubt dominate the discussion for the foreseeable future. How shipping firms respond to those challenges, in part by recruiting a new breed of maritime professional, will make all the difference. Is it still 'business as usual' at your shop? I promise you, your competition certainly hopes so.



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BIG DATA THAT COUNTS

TELEMEDICINE SERVICES FOR MERCHANT SHIPPING EVOLVES, BUT SHIPOWNERS ARE SLOW TO EMBRACE THE TECHNOLOGY THAT COULD GIVE IT THAT MUCH MORE VALUE.

BY JOSEPH KEEFE

Shipping out on a Jones Act tanker in the mid-1980's, I found myself experiencing severe abdominal pain during cargo operations in Tampa, Florida. Scheduled to be relieved for vacation once we arrived back in Texas, I kept it to myself. As we undocked to begin that 45 hour sea leg, I began to regret that decision. The next morning, I finally told the Master, who simply deadpanned, "Don't die on me." I replied that I would do my utmost to comply.

I made it back to Texas with some discomfort, signed off the vessel and actually arranged my own cab to the hospital. One kidney scan later, they determined that I had a kidney stone. Eventually, I went home. I was lucky. In 1984, there was no Maritime Labor Convention (MLC) Code and crew welfare ranked dead last as a priority for many shipping companies. Today's seafarers demand Internet, Email and entertainment at sea. They can also benefit from the use of telemedicine services.

Telemedicine Today

Future Care's telemedicine business has grown into contracts with 300 coastal and ocean tugs, and 700 commercial vessels. These services involve handling cases from onset of injury or illness, responding to the Master, providing diagnosis, treatment plans and medical monitoring at sea. The service can entail management of billing and or invoices, wellness programs, ensuring that seafarers get to the right medical professional and in some cases, coordinated repatriation.

Another firm is SphereMD. Founded in 1997, initially providing on board care for merchant shipping in Columbia River deep water ports, it has since partnered with Vigor Industrial to provide comprehensive occupational health and first aid for their workforce. Today, the firm serves all U.S. ports and has customers around the world. The service is slowly catching on. Some shipowners sign on as a function of satisfying MLC requirements while others do it because they care about their people. For those shipping firms who still do not, cost is a popular excuse.

According to Gerry Buss, President of TeleMedic Systems, a provider of medical hardware and solutions that help medical professionals assist those in remote locations, barriers to this service are quickly going away. "If we go back 10 years, the cost of bandwidth was prohibitive. Very few crewmembers had access. Today, they probably have better bandwidth than many shoreside, at a fraction of the prices being charged a decade ago."

Future Care CEO Christina DeSimone says that cost should no longer be a factor in the decision to engage help at sea. "We now have enough statistics for telemedical services at sea that we can easily see the risk-reward benefit of the shipowner and his crewmembers. A shipowner might spend just $2,000 to $3000 annually to reach out to a telemedicine service; a very small part of the budget."

David Shubin, SphereMD CEO, agrees. "Most owners and P&I Clubs want effective, honest, quality medical care for their crew. They want to have information about the status of the crew members and they don't want to be taken advantage of." Beyond that, he says, "Our deployment and occupational health customers are, as a whole, in the same 'boat' as our maritime clients. They want to comply with the law, they want medical problems solved, safety improved, so that they can focus on their principal business."

The real issue, says both SphereMD and Future Care, resides not in the service itself, but in the technology that is readily available to make it more valuable. But shipping firms, who don't blink an eye streaming World Cup football to an entire fleet, often balk at the onetime cost of medical tools that would enhance service and the health of seafarers.

The Case for Technology

DeSimone thinks that industry is on the right track. "Shipowners have gotten that message – through experience and as a result of MLC. Our company went from being a landside medical case manager of hospitalizations of crewmembers to a service proving telemedicine doctors and nurse advice to Captains remotely." She adds, "75% of our cases are illness care. And most are primary healthcare incidents. So, this is a primary healthcare service."

Shubin would also like to see better technology employed on board today's merchant ships. "I believe the future of maritime medical care, and indeed the future of preventative care, will be through both enhanced screening and primary care that can occur face to face with a physician on a telemedicine platform on board ship," he explained, adding, "SphereMD is currently working to find stakeholders who are interested in the pursuing a new level of crew wellness using these platforms. This kind of action will require a paradigm shift in relation to crew care. I think we are almost there and I am excited to see this type of care emerge."

Touting the delivery of health-related services telecommunications technologies, TeleMedic Systems CEO Gerry Buss points to the *VitalLink3*. A small, lightweight telemedicine device that communicates with medical sensors, VitalLink3 con-

David Shubin,
CEO, SphereMD

Christina DeSimone,
CEO, Future Care

Gerry Buss,
CEO, TeleMedic Systems

Shipping firms who don't blink an eye streaming **World Cup football to an entire fleet** often balk at the onetime cost of medical tools that would enhance service and the health of seafarers.

nects to and control the operation of medical and non-medical devices in many ways; wirelessly, via cellular, or by wired connections such as USB or Ethernet (RJ-45). In a nutshell, the VitalLink3 unit collects data, organizes and then sends the information over a data link to the VitalNet server. It can be configured for a number of medical parameters.

Part of the problem is that equipment kits support telemedicine are typically marketed as (only) emergency response technology. Buss uses the analogy of the fire extinguisher hanging on the wall. "It's a pricey piece of equipment, but you only use it in case of a fire, so this equipment really has to be presented as something that has day-to-day value as opposed to sitting there waiting for 'just in case.'"

The VL3 device in use in a in a hyperbaric chamber located on a vessel in SE Asia operating in support of the oil and gas industry.

Credit: Roger Dennerley

Buss told ***MarPro***, "We provide the tools that use the link to move data to Future Care's doctors as they provide guidance to the vessel in response to a telephone call," adding, "Right now, we're working on some ideas together, and we're hoping to see some interesting things happen later this year. The equipment I have is presently being used in niche markets in the maritime industry, mostly in the oil and gas industry. If someone wants a good contract, they agree to use this equipment as a value added sort of thing. Very similar to the impetus provided by the MLC side of things."

DeSimone agrees that the equipment would make it much easier to do wellness examinations on board the vessel. But, she concedes, one of the reasons that shipowners don't want video because they think video might work against them in a legal scenario.

From internet to remote monitoring of equipment, shipping has come a long way. The use of more and better technologies to support seafarer health at sea should be given the same priority. In fact, someone's life may well depend on it.

MarPro's Future Leaders

Maritime Professional's now popular feature involves highlighting the profiles of today's future maritime professionals. Taken from maritime academies and schools focused on maritime disciplines, these cadets represent a large subset of the future professionals who will one day provide the leadership, innovation and technical expertise for the greater waterfront – here and abroad. Working with those schools and students that chose to participate, these profiles will let readers and employers know who is coming up; it lets the students themselves shine a bit and gives the academies a chance to showcase their best and brightest. The profiles center around five questions for each student – we call it "*five questions in five minutes.*"

Russ Janicki

California Maritime Academy

Major: Marine Engineering Technology
Graduation Year: 2016

CAL MARITIME

Why this school?

Cal Maritime is the ideal size university (small) in a great location (San Francisco Bay area). My older brother Jay graduated from Cal Maritime in 2011, and I visited the school several times watching his successful career develop. When I saw his excellent job placement and that of his peers, I immediately applied.

What keeps you here?

Cal Maritime professors are excellent; mentors with years of experience in their fields. Class size is small and there is lots of hands on learning. My relationship with fellow students and instructors keeps me on track and focused.

What is your major and what career do you intend to pursue?

My major is Marine Engineering Technology with a minor in Marine Science. After graduation I plan to sail as a third assistant engineer and eventually work my way up to chief engineer.

What one thing should prospective employers know about you?

Prospective employers will want to know that I have high standards and can play by the rule book. I am dedicated, proactive, and a great problem-solver.

Tell us about your sea training or internships.

My commercial cruise was aboard the Westpac Express Ferry in Okinawa Japan. The Westpac is a high speed ferry that makes runs between different ports in Japan and Korea. The great crew and unique equipment on the Westpac made for an excellent learning experience. I love Japanese food and was fascinated by the culture.

Kathryn Chaffee

Webb Institute

Major: Naval Architecture and Marine Engineering
Graduation Year: 2016

Why this school?

I suppose I was first drawn by the overall concept of Webb. Webb is nothing if not unique. I appreciated this. Moreover, I was intrigued by the experiences I stood to gain: close interactions with students and professors, a winter at sea, four years of athletic participation, etc. Really though, the concept of a school devoted to ships was enough.

What keeps you here?

The firm belief that Webb is where I am meant to be. Enduring confidence in a decision is a powerful thing. Mine has reassured me even in my late-night, work-ridden moments of doubt. The work brings with it a sense of satisfaction and pride that helps root me as well. To all of this, I would add "a sense of loyalty" and "anticipation of future opportunities." The Webb web of professionals brings a seemingly endless supply of opportunities.

What is your major and what career do you intend to pursue?

I am majoring in naval architecture and marine engineering. For several years now, I have been captivated by marine salvage and emergency response. I intend wholeheartedly to explore this world after graduation.

What one thing should prospective employers know about you?

I have a strong work ethic, an appreciation for quality, and a distinct sense of professional loyalty. I am no stranger to late work nights and am devoted to my work. Organization and quality within a company go a long way with me, and I make sure my work displays these characteristics. On a less formal note, I have a personality and a fear of extensive time behind a desk. An employer would see both things, the second in my enthusiasm for any and all kinds of fieldwork.

Tell us about your at sea training or internships – who did you work for or sail with?

I have worked a total of four internships. Company-wise, I have worked for Nichols Brothers Boat Builders, Maersk Line, Limited, Martin & Ottaway, and Resolve Marine Group. I spent my time with MLL sailing as an engine cadet aboard oil tanker Maersk Peary. I spent a total of ten weeks on the Peary and eight weeks with each of the other companies.

Garrett Magiera

Maine Maritime Academy

Major: Vessel Operations and Technology
Graduation Year: 2016

MAINE MARITIME ACADEMY

Why this school?

After looking at many colleges, Maine Maritime was clearly the perfect fit for me. The small class size and the hands-on training were big selling points. I find the instructors to be personal and approachable. At MMA, students are able to choose whether they would like to be in the regiment or attend as a non-regiment student. Having this option helped to make MMA my top choice. Added bonuses are the abundant in-class and recreational sailing opportunities that the school offers.

What keeps you here?

The opportunities that come with a degree and license from Maine Maritime are invaluable. I have made lifetime friendships and the connections between professors and students are great, not to mention the alumni. Last year, I had been speaking to an alumnus and he offered me a full-time position as a Mate on a 120' motor yacht. Rather than end my schooling early to take that position, I knew having a degree from MMA would further my career in the long run and I decided to stay.

What is your major and what career do you intend to pursue?

I am a Vessel Operations and Technology major. My future career is undecided. The workboat world is what many from my major pursue and it has many benefits. I am a hard worker and would do well on a workboat, but there is an inner calling to the yachting world. I'd like to give yachting a try but I'm really open to any boating experience at this point whether it be yachting or on a workboat.

What one thing should prospective employers know about you?

I am a very dedicated worker and passionate about what I do. I believe in teamwork as previous employers and co-workers can attest, and am willing to do my share to get the job done. On every vessel there is a job to be completed, whether it is climbing into a Tyvek suit to assist cleaning the bilge after a tank overflow or staying late to assist the engineer in changing the oil. I am willing to work to make sure the boat is fully operational.

Tell us about your sea training or internships – who did you work or sail with?

I have worked for several companies. My first co-op was with Boston Harbor Cruises on their fast ferry to Provincetown, Massachusetts. The second co-op I had was with the Block Island Ferry, in Rhode Island on their fast and traditional ferries. My most recent co-op was with Martin Marine on an ATB in the Gulf of Mexico. I have also completed yacht deliveries: I sailed a 38' Sloop from Newport, RI to Bermuda and a 80' Maxi, a high performance racing yacht, which we double handed from Newport, Rhode Island to Norfolk, Virginia in 39 hours, hitting speeds close to 20kts, which is pretty impressive under sail.

Michael Dolan

Massachusetts Maritime Academy

Major: International Maritime Business
Graduation Year: 2019

Why this school?

I have always enjoyed the ocean and wanted to learn about maritime issues so that I could pursue a career in the maritime industry. I chose the Massachusetts Maritime Academy because of the great education it offers through a superior academic curriculum and real life "hands on" training opportunities over four years. Massachusetts Maritime Academy has earned a reputation of graduating top leaders in the maritime industry.

What keeps you here?

The interesting yet challenging academic courses, and as well as competing on the Varsity Lacrosse team. I also have already made some great friends who share similar goals as I do upon graduating MMA. I am confident that I am gaining the knowledge, leadership skills, and "hands on" experiences that will enable me to step into a great job in the maritime industry upon graduation.

What is your major and what career do you intend to pursue?

I am enrolled as an International Maritime Business major. At this point, I am still learning about the many career opportunities that exist so I cannot say specifically what career within maritime business that I want to pursue. I expect my classes and "hands on" training over the next few years will help me specifically identify a rewarding business career path within the maritime industry.

What one thing should prospective employers know about you?

As a highly motivated "team player," I will successfully complete all assignments to the best of my abilities to help my employer achieve its goals and objectives.

Tell us about your sea training or internships – who did you work or sail with?

I worked as a clerk in Washington, DC in the office of the Honorable William P. Doyle, a Commissioner with the U.S. Federal Maritime Commission. Commissioner Doyle is also a graduate of Massachusetts Maritime Academy. I learned about the international side of the business and the regulatory regime covering ocean carriers, marine terminals, beneficial cargo owners (importers), exporters such as our agriculture industry and ocean transportation intermediaries. Commissioner Doyle tasked me with following and becoming a subject matter expert on the forthcoming International Maritime Organization (IMO) Safety of Life at Sea (SOLAS) container weight verified gross mass regulations. I also interacted and met with senior executives and owners of some of the world's largest ocean carriers on matters related to consolidation and vessel sharing alliances. I had the opportunity to attend the reemergence of SeaLand in the intra-Americas trade when the company announced its new direct fruit and vegetable all water service between the Port of Philadelphia in Pennsylvania and the ports of Altamira and Veracruz in Mexico.

MarPro Profile

Boriana Farrar

Vice President/Counsel/Senior Claims Executive Shipowners Claims Bureau, Inc.

It is fair to say that Boriana Farrar could have been a lot of things in life. Along the way to arriving at her current position here in the United States, she's also experienced much, accomplished more and eventually, ended up on the waterfront. How that happened is one of the more interesting careers paths that we've examined in our continuing series of ***Maritime Professional*** profiles. Digging deeper into a journey that took her all the way to New York City from her native Bulgaria, it isn't hard to see why.

As Vice President, Senior Claims Executive and Counsel at the American P&I Club in New York, Farrar handles a variety of P&I and FD&D (Freight, Demurrage and Defense) Claims with focus on personal injury crew and passenger claims, casualties, charter party and contract disputes. Prior to that, she worked at the law firm Hill Betts & Nash LLP. There, as a partner in its maritime practice, she had responsibility for conducting a broad range of litigation in the area of maritime disputes in both federal and state courts.

A Board Member of the Maritime Law Association of United States and a published author – a prolific one, at that – she has penned many law-related efforts. Not one to let grass grow under her feet, Farrar enjoys writing and says that the only way to truly know a legal subject is to write about it. "I am especially fond of the updates on *Benedict of Admiralty for Crewmembers and Passengers* and *History of Cruise Lines.* I actually started updating these during my maternity leave in 2010, which was quite a big project. The updates require extensive research every year, which allows me to stay up to date with new legal developments and really develop a profound knowledge of this area of the law." When not otherwise engaged with her many duties, she also contributes to the Club's *Currents* magazine. One article of note involves the all-important *Franza* decision the 11th Circuit, a case which dealt with medical malpractice on cruise ships.

Sea Passage: The Great Circle Route

On her way the American Club, Ms. Farrar earned a Masters Degree in Admiralty & Maritime Law from Tulane Law School, but that's not where she started out. First enrolling and successfully earning another Master's Degree in International and Comparative Law from the University of San Diego School of Law, she then obtained an internship as a foreign attorney at a New Orleans law firm, Sher Garner. There, working a variety of cases, she found the maritime in particular to be intellectually stimulating. She explains, "As I loved the challenge, my interest in maritime law was born. I decided to specialize in maritime law and obtain another LLM in Admiralty Law at Tulane Law School, which is the best in this field in the country, if not worldwide. I find that the maritime world is very dynamic and still enjoy being part of it."

Once here on the 'waterfront,' she has no intention of going anywhere else. The reasons for that go far beyond just business. "The world of the maritime industry is surprisingly small and generally people know each other," says Boriana, adding quickly, "Reputation is especially important. It is a pleasure to work with people you know for many years and such feeling of intimacy and friendship is not possible with some of the 'shoreside' businesses."

Family Ties: Solid Values

There really isn't any sea water running through Farr's veins or, for that matter, anyone in her immediate family. What she does bring to the pier is a thoroughly international background, having pursued her legal studies not only in the U.S. but also in her native Bulgaria, the UK and the Netherlands. In addition to her native language, she is fluent in English, Russian and German.

She could have worked anywhere. Nevertheless, and only after obtaining a law degree and a masters degree in Bulgaria,

she arrived in the United States to continue her studies. We asked her why. Her answer, perhaps, pushes all of us to remember that we're all capable of doing anything we want to accomplish, if only we put our mind to it. "I was pursuing the American Dream! I believe that America is the only place in the world where anyone, regardless of where they were born can attain success through sacrifice, risk-taking, intelligence and hard work."

That kind of drive and work ethic, however, rarely develops in a vacuum. Farrar's path to success is no different and she is candid about those who guided her from an early age. "I am fortunate to come from a family of exceptional individuals and especially exceptional women. My grandmother was a lawyer and also spoke several languages. My mother is a doctor and has a PhD in immunology. Growing up, I was immensely influenced by them as they instilled a drive for excellence in everything I do." In that environment, anything less than full effort and results were not an option.

Always an 'A' student, Farrar remembers earning a 'B' in a grade school Biology class, the news of which she very reluctantly had to deliver to her parents. At the time, her grandfather – a professor in Dentistry – quietly suggested that a 'B' is actually not a bad grade. "The rest of the family just gave me 'a look.' Looking back, this occurrence appears quite comical, but the point is that mediocrity was not acceptable in our family. I try to follow this principle every day."

Helping Hands Acknowledged

Once out on her own, Boriana received the benefit of many mentors; so many in fact, that there isn't space enough to mention all of them within the pages of this magazine. Judge Steven Plotkin, a Fourth Circuit State Court Judge in Louisiana and also a Fulbright Scholar, watched over Farrar during her first, difficult years in America, with what Farrar describes as "incredible care, wisdom

WISTA members actively help each other to achieve this success and I am fortunate to be part of this wonderful initiative.

Boriana Farrar,
American P&I Club

THE AMERICAN CLUB
1917

I am fortunate to come from a family of exceptional individuals and especially exceptional women. My grandmother was a lawyer and also spoke several languages. My mother is a doctor and has a PhD in immunology. Growing up, I was immensely influenced by them as they instilled a drive for excellence in everything I do.

and warmth." Later, and at Hill, Betts & Nash LLP, Gregory O'Neill, the firm's managing partner and accomplished maritime trial lawyer, took a personal interest in her career. Boriana adds, "He taught me a tremendous amount about the practice of law and life in general."

As a Board Member of the NY/NJ Chapter of Women International Shipping and Trading Association (WISTA), Farrar assumes a shared responsibility for all aspects of operation of WISTA USA. Before that, she served as President of NY/NJ Chapter of WISTA for five years. Her service to the organization that gives women a place to network, a source for mentors, advice, and a voice in the maritime industry, spans many years. Given her early roots, it isn't hard to see why. "WISTA inspires me because I believe in the core value it represents: anyone, notwithstanding of his or her gender, race, age or national origin can accomplish success. WISTA members actively help each other to achieve this success and I am fortunate to be part of this wonderful initiative."

As much as she gives to the organization, the benefits always come back. According to Farrar, WISTA is also the only organization with members from different layers from the industry – shipowners, surveyors, suppliers, lawyers, etc. – from all over the world, presenting unsurpassable networking opportunities. Never one lose a chance to take in all that others around her are willing to share – growing up, in school and in business – the real value of WISTA is also not lost on her. "WISTA is a place where I have found numerous friends and have met incredibly impressive individuals: our President Alexandra Anagnostis and our board and leadership team and so many others."

On the Job

Unlike her previous work as a practicing attorney, Farrar says that work at the Club is equally stimulating, but requires completely different set of skills, especially in terms of claims handling, and the variety of issues presented on a daily basis. Beyond this, she adds, the ability to multitask and take good informed decisions quickly is a key to success; management of the claim and cost evaluation are important, as is understanding of the issues at hand. She adds, "At the Club, my international background fits the international nature of our trade: our members operate globally and we often handle claims around the world: knowledge of different legal systems and language skills is instrumental in providing excellent service of our members."

Recently appointed as the club's Business Development Director of North America, Farrar now balances these responsibilities with her traditional roles. "I am very excited about this new role and I am appreciative for this opportunity. Together with our underwriting department, we need to maintain and further develop business opportunities in North America and the Americas in general. Business development and claims handling go well together and I enjoy doing both," explains Farrar, adding quickly, "Excellent claims service is the best marketing tool."

But, insists Farrar, prevention is the best way to prevent those claims from happening in the first place. And because

the vast majority of maritime accidents involve human error, the American Club therefore immerses itself in the human element of shipping through its Loss Prevention department. There, an impressive library of articles, booklets, poster, animations and e-learning tools provide invaluable materials for club members. She told ***MarPro*** in April, "We have taken initiative to hold educational seminars and work to assist our members to prevent human errors. In the near future, Bill Moore will speak about fatigue in the upcoming seminar in connection with the Silver Bell Dinner in June."

Indeed, when asked to speak about just one case or claim of which she is most proud, the end result boiled down to the advocacy and care of seafarers who might have otherwise fallen through the cracks. "There so many war stories … as a defense attorney we have accomplished many victories. But I want to set aside all legal battles and tell you about a claim which we handled in September 2014. It involved several sick seamen and one of them was in critical condition with very high fever."

The ship was approaching the port of New Orleans. During that that time, an Ebola epidemic in some parts of Africa and the ship's previous port of call (Africa) contributed to a decision by the Coast Guard, who refused to evacuate the crew. Even amidst a high profile event which attracted significant media attention, the crewmember was not getting the medical care he desperately needed.

Undeterred, Boriana and the club rolled up their sleeves and got to work. "We spent hours on the phone with the member, the port agent, the Coast Guard and immediately retained Future care, a medical management company, who provided medical assistance telephonically instructing the captain and the crew how to provide medical care. We continued to call the Coast Guard and insist that medical care to the sick crewmembers be provided immediately. Finally after 30 hours, the Coast Guard boarded the vessel, all in HAZMAT suits."

As it turned out, the critically ill crewmember did not have Ebola, but instead, a deadly strand of Malaria. All sick crewmembers were escorted by Future Care to a hospital where they were treated. The joint efforts of the Club, the member, and Future Care ultimately resulted in all of the seafarers recovering from their maladies. Boriana says simply, (about the critically ill seafarer), "He was 24 years old at the time and we are proud that he is alive."

It is not, perhaps, surprising that someone who values the advocacy of others on her behalf would extend so much to others – on the job, through WISTA, and at home as a working mother. In the tightly knit world of global maritime commerce, Boriana Farrar's efforts therefore aren't easily overlooked. Nor should they be.

FIVE MINUTES WITH

Oyvind Orbak, CEO, Docmap

Please provide an overview of the software solution you offer to the global maritime market.

Docmap AS, a leader within the Marine and Offshore sectors, is the provider of Docmap software solutions for Safety and Quality management. More than 110,000 users and 1,200 vessels are using Docmap to manage their core operations, and the company is present in Norway, Malaysia, Canada, and The Netherlands. Docmap Document Management is specifically designed to meet the needs and requirements for modern HSEQ management for maritime businesses. Docmap is designed to be a highly configurable solution easily adaptable to any kind of organization and fleet structure. It is web based system supporting modern platforms such as smartphones and tablets. The solution consists of four main functional modules:

- ***Document Management***
- ***Incident Reporting and***
- ***Task Risk Assessment***
- ***Audit & Inspection***

All Docmap modules are integrated, ship/shore synchronized and fully web enabled.

When you look at the evolution of the software side of the marine business over the last 20 years, what do you see?

The software supply side is still dominated by smaller companies. For example, the most recent Fraunhofer report states that 83% of software vendors in this sector have less than 30 employees. However – some vendors are trying to build a wider offering with a broader functionality set. The challenge is that ever increasing demands require ever more complex offerings, and this clearly plays in favor of industry specialists. Docmap is consolidating our position as the HSEQ expert while collaborating with expert vendors with complimentary offerings.

Looking at the coming 20 years, what trends do you see evolving today that will effectively shape your business, shape the use of software solution products onboard commercial ships for a coming generation?

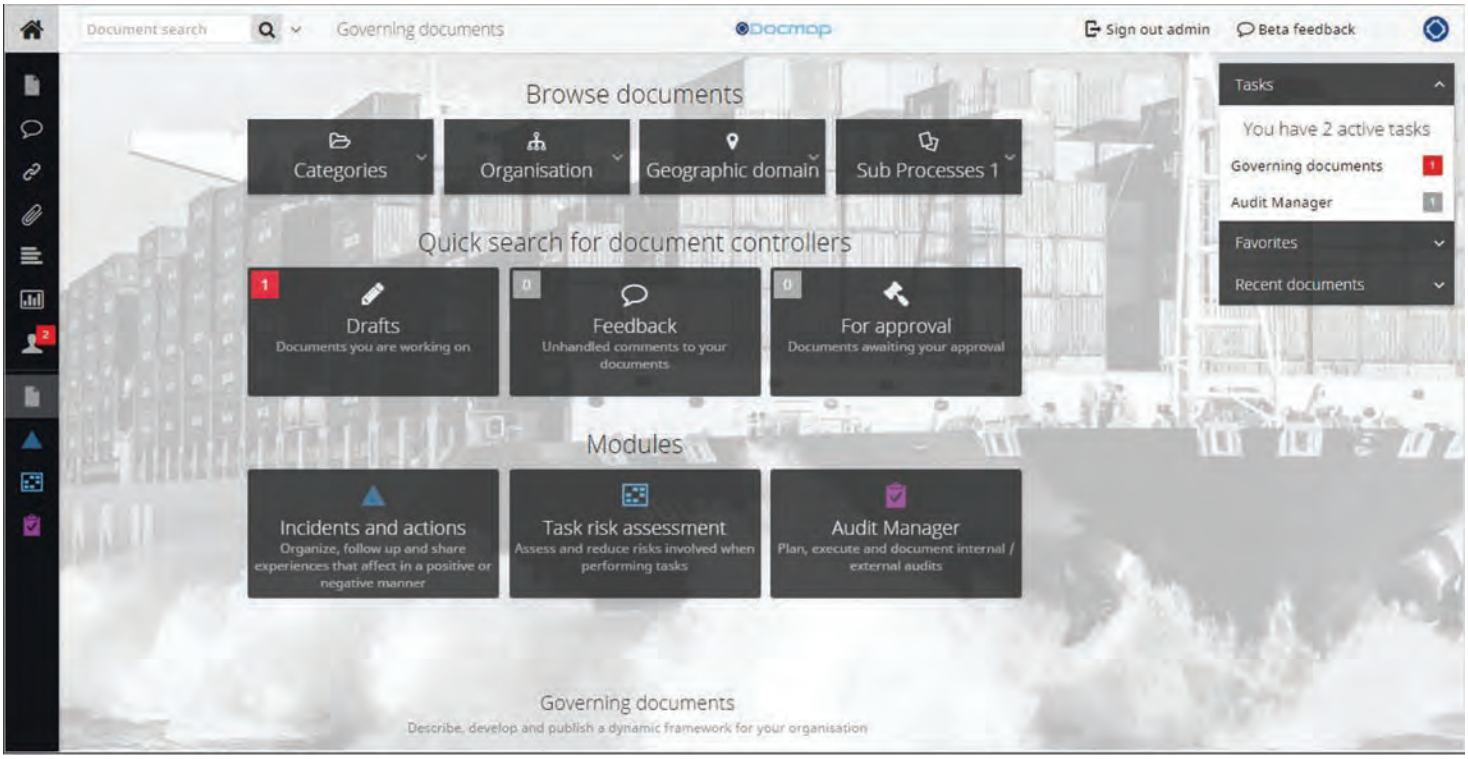
I believe that specialist vendors will increasingly collaborate and some vendor consolidation must take place.

Maritime Markets are typically cyclical, and notoriously conservative in their acceptance of new solutions. Briefly discuss how attitudes have/are changing among ship owners and ship operators toward modern software solutions.

Yes – attitudes are changing – but at a slow pace.

BIG DATA: Many of our discussions today center on "BIG DATA" and its transformative effects on the marine industry. When I say "BIG DATA", what does it mean to you, and what does it mean to the development and positioning of your product suite in this market?

Big Data in shipping means acquiring a lot of data from a lot of sources both on and around the ship and performing real-time analysis on this data in order to find relevant correlations or a deeper understanding that may in turn be used to tune business processes and implement operational efficiencies. For example; weather sensing, re-routing, early error detections, etc. The possibilities are limitless. Docmap may in the future use Big Data analysis tools across our entire client base to provide better insight to our clients within risk assessment and to help clients implement strategies to prevent undesirable behavior. Another example may be the Docmap based on input from the ship itself will make the captain/chief engineer aware of new regulations / deadlines and other issues that are appropriate in the waters that the ship is about to enter.



Similarly, many of our discussions center on environmental matters, more specifically how a deluge of new regulations is dictating what ships can and cannot emit into the environment. How has the push to 'clean up' shipping materially impacted your business?

This is where Docmap helps out: New regulations and requirements mean more reporting. Docmap's solutions make sure reporting is easy and efficient.

Every business has its challenges. What do you consider to be your company's biggest challenge to being efficient and profitable in this sector, short term and long term?

The number one challenge to acquire talent. People are the most important factor to our success.

Have you introduced (past six months) or do you plan to introduce (coming six month) any new technology/solutions in this sector? If yes, please explain the product and its significance to the maritime community in detail.

A part of the Docmap 8 release is the brand new Task Risk Assessment module designed with the seafarer's workplace in mind to efficiently and easily perform risk assessments onboard vessels and to implement necessary mitigation strategies for risky tasks.

Tomorrow's Tankers: Technology, Talent & Training

The Holy Trinity of tomorrow's tankers involves more than just Worldscale rates, double hulls and logistics. It also might not come with all the usual suspects.

By Barry Parker

Shipping is becoming more complicated. Like all businesses, technology is being infused at a rapid rate, but the waterfront has always been slow, if not reluctant to adopt new equipment, techniques and practices. Today's operators have little choice but to get on board the technology train, lest they be left behind in an increasingly complex and automated supply chain. They'll need help, when they do.

With the technological complexity of vessels viewed as an industry wide challenge, ABS CEO Chris Wiernicki recently opined, "… industry will require talent with non-traditional skill sets such as systems and data engineers from non-traditional sources and a culture that blends traditional and non-traditional talent." That will arguably be easier said than done. That said; unlike the long-suffering drybulk and container trades, the tanker segment has the financial wherewithal to make the requisite investments in both technology, and talent.

Techie Talent: Home Grown or New Hires?

According to Simon Frank, Vice President and Head of Global Marine HR in TORM A/S, "… the smartest people

THE VLCC ANTIGONE, OPERATED BY EURONAV
Credit: EuroNav

– and that's perhaps a provocative quote – are sailing in the tanker trades or liquid cargo segments." They are already the most expensive, as well. He adds, "That's where the benefits, wages and best working conditions are." Separately, consultants McKinsey & Company, in their seminal article *"Winning the Battle for Technology Talent"* bemoan the high cost of hiring tech-savvy professionals from the outside, versus going with in-house personnel. They offer that: "… the first imperative in winning the war for technology talent is to develop and retain the team you have."

Hiring practices for tanker operators don't differ significantly from any other shipping sector, apart from the fact they typically earn higher wages and therefore attract the top candidates. After recruits have settled in, they are trained to operate increasingly complicated technologies. Yet, the booming tanker market comes at a time of wholesale changes in maritime technology. The twinned concepts of "The internet of things" (where many devices and sensors are linked) and "Big Data" (where better decision-making is the result of potent analytics applied to reams of data from these devices, sensors and from other inputs) now routinely finding their way into presentations at industry events.

In a keynote presentation at the March 2016 Connecticut Maritime Association event, Chris Wiernicki said, "…. risk-based, data-centric, cyber-influenced decision-making is defining a new absolute value of talent…" When talking about new categories of maritime officers, and company leaders, he adds, "New technologies are being developed and applied at faster speeds than we've ever seen to meet regulatory and operational demands."

Looking back, hiring practices have been unchanged regardless of economic considerations. Traditionally, employees have been hired through established sources, and been trained as technology has evolved. But going forward, the potential influx of 'systems and data engineers' prophesied by ABS and others could possibly involve another, more expensive source. Or, will they come from within the ranks, as recommended by McKinsey? One way or another, as long as the tanker economics look good, hiring, training and retaining appropriate talent will happen. If the tanker market heads south, all bets are off.

LOOKING BACK, HIRING PRACTICES HAVE BEEN UNCHANGED REGARDLESS OF ECONOMIC CONSIDERATIONS. TRADITIONALLY, EMPLOYEES HAVE BEEN HIRED THROUGH ESTABLISHED SOURCES, AND BEEN TRAINED AS TECHNOLOGY HAS EVOLVED. BUT GOING FORWARD, THE POTENTIAL INFLUX OF 'SYSTEMS AND DATA ENGINEERS' PROPHESIED BY ABS AND OTHERS COULD POSSIBLY INVOLVE ANOTHER, MORE EXPENSIVE SOURCE.

Reading the Tealeaves

At the same time that the tanker sector is facing an unprecedented upheaval on the technology side of the equation, it is also being challenged by its volatility. Throughout the spring of 2016, owners of large tankers were experiencing a sharp rise in hires- best expressed by the time charter equivalent (TCE) of $/tonne rates agreed with the big charterers. Hire numbers, as represented by the TCE, were all over charts between $45,000/day up to $85,000/day. Researchers at Poten & Partners, a New York brokerage, weighed in through an Opinion piece entitled *"Reading Tanker Tealeaves"* earlier this year.

Discussing forecast oil movements from the International Energy Association (IEA), the broker said "In recent years, the tanker market benefited from

KIM ULLMAN,
PRESIDENT AT CONCORDIA MARITIME
Credit: Concordia

a significant build-up in inventories as oil supply outstrips demand. Unfortunately for the tanker market, this trend is expected to reverse in 2017." Another consultant, UK-based Maritime Strategies International (MSI) says, "…the shape, and descent of rates to 2018 remains a consistent feature."

MSI provided additional color, advising clients that fleet supply, going forward, is a worry, saying, "… deliveries, driven by the larger sizes in both the crude and product sectors (VLCCs, Suezmaxes, LRs) will jump in 2016 and be sustained at high levels over a two to three year period." On the demand side, they cite several key drivers. Specifically, whether major oil exporters and North American producers might curb their output, what the health of the global macroeconomic environment will look like, and whether sustained low prices might stimulate demand.

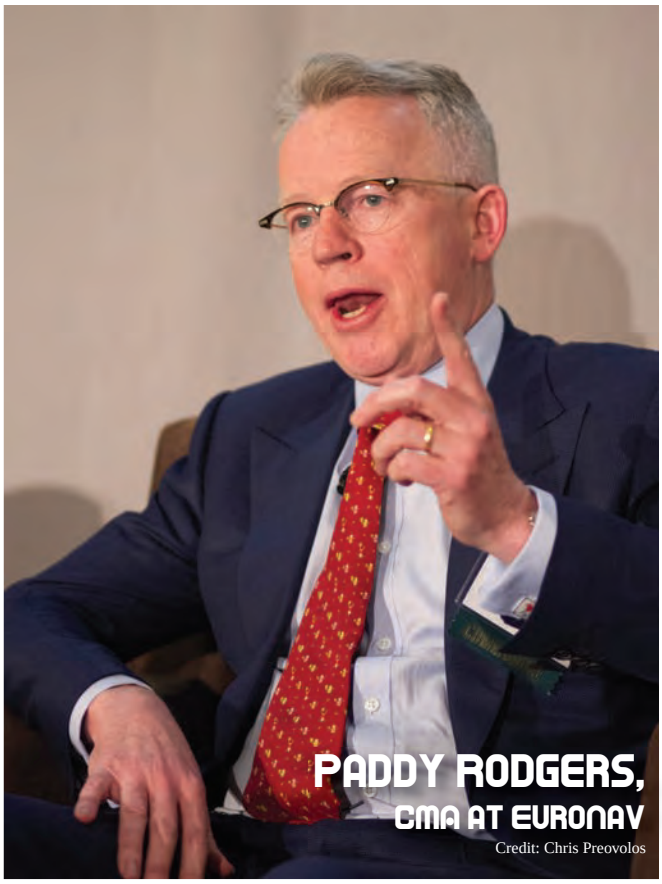
Another consultant, Drewry, offers a dramatic visualization (see GRAPH 2) of why 2015 was so strong, and why future years might not be. Capacity utilization, where supply and demand intersect; drives market strength. Quite simply, tanker demand (with the surge in oil being purchased for both consumption and storage) nearly exceeded the available supply of vessels.

"THE SMARTEST PEOPLE – AND THAT'S PERHAPS A PROVOCATIVE QUOTE – ARE SAILING IN THE TANKER TRADES OR LIQUID CARGO SEGMENTS."

– SIMON FRANK, VICE PRESIDENT AND HEAD OF GLOBAL MARINE HR IN TORM A/S

Tanker Firms Train for the Future

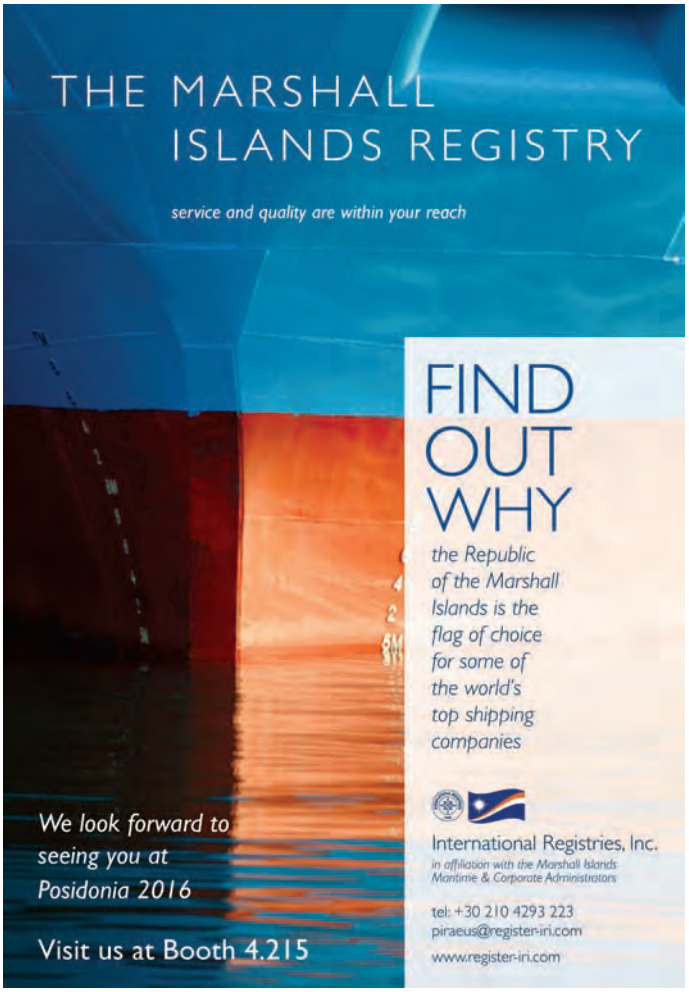
Ongoing training is a big part of the story at Euronav, a large Antwerp-based owner of 55 vessels comprised of VLCC's and Suezmaxes. Mr. Nikos Kolouris, Fleet Personnel Manager, when asked about training practices, told ***MarPro***: "Roughly 50% of crew is recruited directly by company's crewing departments and 50% indirectly through company's appointed manning agents. The company also recruits cadets directly from maritime schools." Once aboard, "There is a close cooperation with selected third parties accredited training centers and a number of training seminars are offered in-house," he continued, adding, "The company offers specific training depending

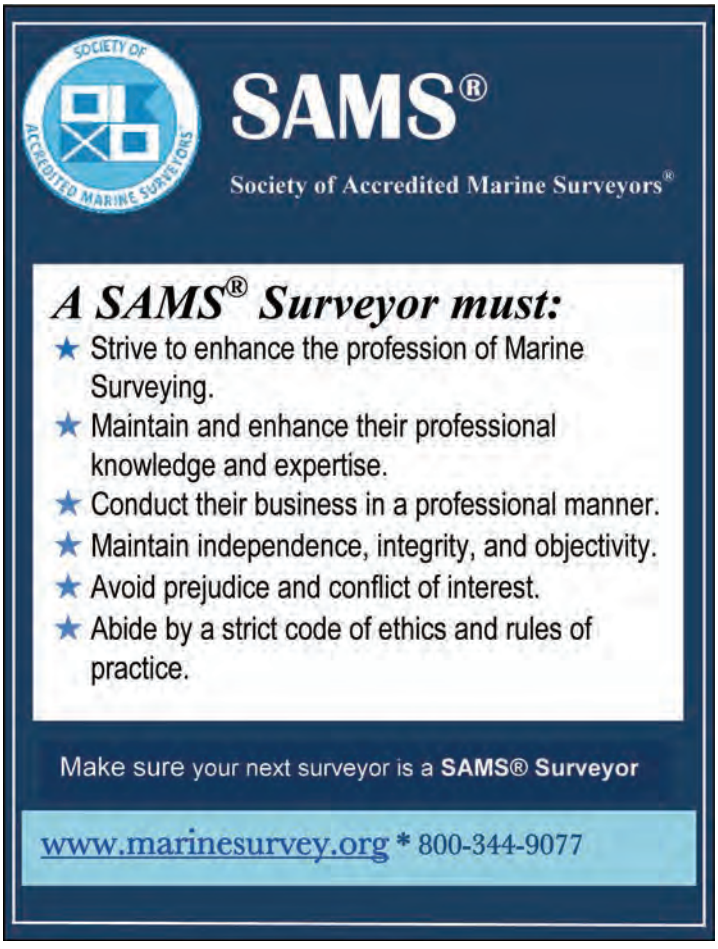


on specific type of engine and or equipment."

Mr. Kim Ullman, President at Concordia Maritime, another large tanker owner (13 vessels, mainly Panamax sized product carriers) also elaborated on recruitment of talent for the tanker sector, saying that an important objective of Concordia's ongoing training is to "…ensure they are competent to operate the advanced equipment now found on board our vessels…." Mr. Ullman, a long-time executive with Stena Group companies, augments Concordia's internal and externally contracted training with several manufacturers of the equipment they use for specific training on plant, machinery, and automation systems.

Tanker companies are thinking about technology, though many are reluctant to discuss its impact on hiring practices. A spokesperson from Euronav, when asked about whether the company's recruiting practices have responded to changing technologies, told MarPro, "Euronav is strongly investing in this area. But as this is still in the initial phase, it is too soon to take a position on this matter." When asked about how interconnections between in-house systems with those of charterers are impacting staffing practices, the company firm replied, "It is indeed a fact that the linkages among systems from charterers to the ship owners (at least to a considerable level)





EDDIE VALENTIS,
CHAIRMAN & CEO,
PYXIS TANKERS

appeared in shipping life almost concurrently with the booming of information and technology systems as well as communications in the marine industry. The direct contact with charterers (both ashore and on board) tends to become a standard practice on various levels in the company and in some cases through data exchange."

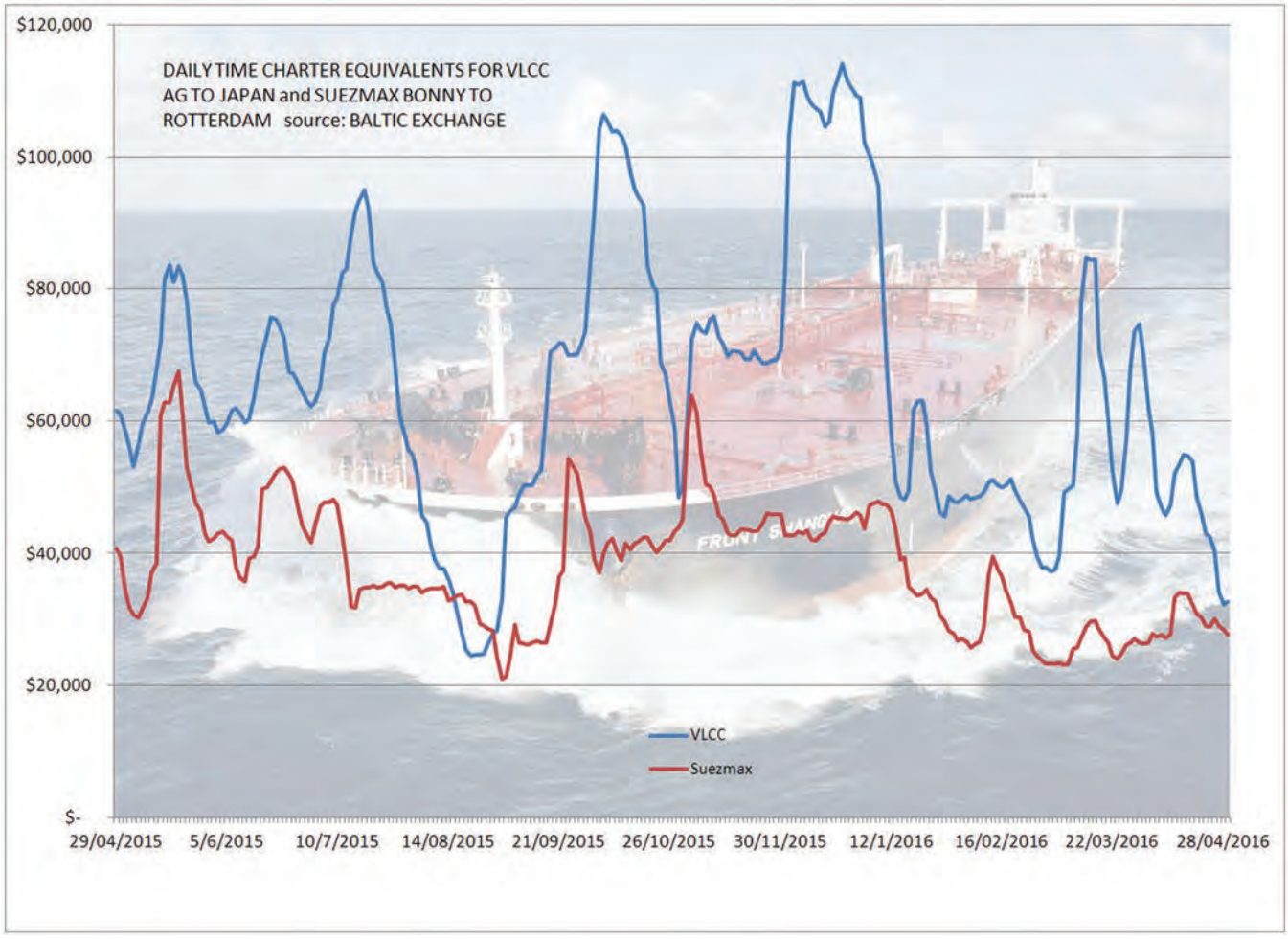
Euronav also noted the need for competencies beyond the "data engineers" that ABS had highlighted; the spokesperson explained, "Adding to that the amount of data exchanged as well as the need for data validation and production of several performance or key performance indicators Euronav couldn't do anything but exercise its 'reflective evolution.'"

Eddie Valentis, the Chairman & CEO of Pyxis Tankers (Nasdaq: PXS) – a recently listed specialist in the product tanker sector – told ***MarPro***, "Our hiring and training of crewing is handled by a leading technical manager, International Tanker Management, but we review all personnel decisions and monitor performance of all seafarers. We continuously discuss HR matters, policies and procedures with the manager. In addition, it is our desire that vessel officers be technology savvy so that Pyxis can remain at the forefront of regulatory and commercial initiatives."

New Technology – New Normal in HR

For Euronav, whose VLCCs trade in the Tankers International pool, the bottom line is that new technologies have indeed shifted recruiting paradigms. The company tells ***MarPro***, "In this

GRAPH 2

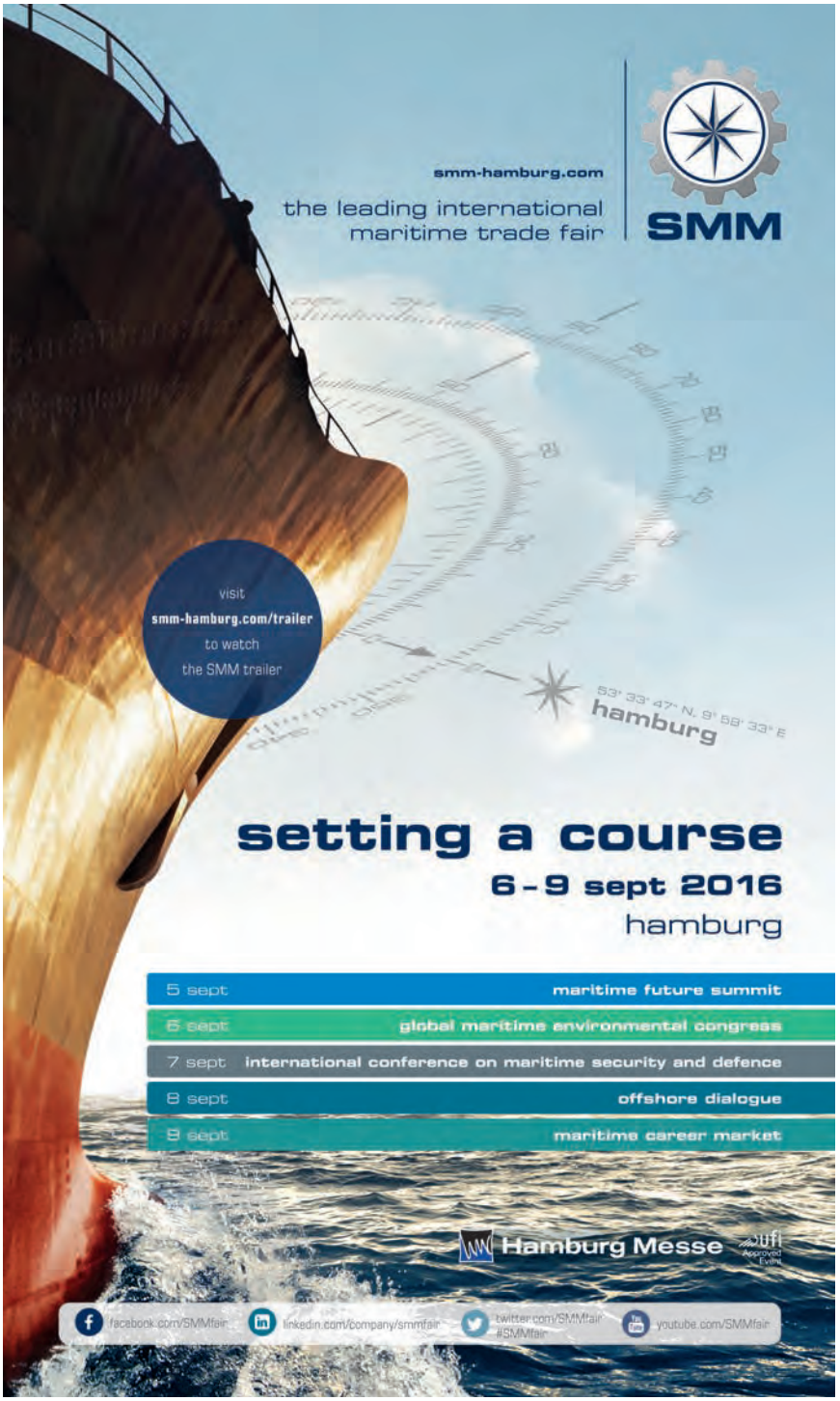


respect, apart from the so called 'traditional' competencies that were previously evaluated, new competencies (not necessarily standalone) are brought into the picture for the most appropriate hires and or promotions."

The McKinsey team offers suggestions that transcend all types of business, including the tanker sector. "In addition to all the traditional people-management levers (competitive compensation, rewards for success, effective coaching, and so on), we found that leading organizations employ a range of other approaches to develop and retain technology talent." Specific strategies include rotating high performers, making training less technical, ensuring exposure at senior levels in-house while also allowing external exposure, and nurturing technical passions.

Top maritime communications executives are thinking about mechanisms for implementing these suggestions from McKinsey, and those of other Human Resources thought leaders. As that happens, for example, Transas CEO Frank Coles wants to create a platform that provides a community for key stakeholders to enable a change in attitude to ship operations, navigation and thereby improve safety and safe operations. "The vision is for all sectors to share data, and enable one another to make better decisions, better operations and better training. Ship operations would be a coordinated evolution, with ship and shore based operations centers working together, on shared information platforms, the ship and office would also work in a community where the ship traffic control would enable better coordination of traffic movements, with decision based tools to enable direction of traffic."

The vision is just one part of that company's THESIS, or *Transas Harmonized Eco System of Integrated Solutions.* Coles explains, "We are talking about training to enable the master/chief to come ashore and have the skills to be the operator ashore. We are not talking about cross discipline between engine and navigation but between ship and shore." That vision predicts a future ship's officer with many skills, interchangeable with his or her counterpart ashore, as well as being fully conversant with technology. And that might just describe tomorrow's tanker officer: technology driven, properly trained, and appropriately talented. Actually, tomorrow may be just around the corner.



Admiral Paul Zukunft

Commandant of the United States Coast Guard

People Are Most Important

By Greg Trauthwein

The Commandant of the United States Coast Guard has a lot on his plate: Enacting the USCG strategy in the Arctic; Helping to stem illegal drug flows; Thwarting the growing cyber security threat; Working to ensure Rights of Navigation in several global hot spots … the list goes on. But when talk turns to his top priority, Admiral Paul Zukunft does not hesitate to name 'people' as one of his highest priorities … more succinctly, the attraction and retention of an increasingly diverse, intelligent and skilled workforce to drive the United States Coast Guard through the next generation.

Stuff

If you talk about the U.S. Coast Guard, talk can quickly turn to 'stuff,' as USCG commandeers fleets of maritime and aerial assets employed to keep U.S. waterways safe, navigable and secure. A big part of Admiral Zukunft's job is ensuring that the U.S. Coast Guard is adequately funded and directed to acquire the systems and products needed to accomplish myriad missions for the coming generation. In this regard, Admiral Zukunft professes optimism, pointing out that the Coast Guard acquisition budget in 2016 doubled: the best acquisition budget ever for the nation's fifth, uniformed military service.

With this portion of the operation in check, he stresses the importance of people to the Coast Guard's continued success. "What I can't take my eye off the ball on is the most critical element: people," said Admiral Zukunft in an interview last month. "We must continue to invest in our human resource capital, not just recruiting, the training, but more importantly, the retention of that work force, as well. You can have all the great tools in the kit, but if you don't have that human resource capital, it could be a potential train wreck for us."

While the level of talent entering the Coast Guard is at an all-time high, Admiral Zukunft maintains that real success comes in not simply finding good people, but keeping them;

"You can have all the great tools in the kit, but if you don't have that human resource capital, it could be a potential train wreck for us."

– Admiral Paul Zukunft,
Commandant, United States Coast Guard

All images courtesy USCG

a trick made increasingly difficult when the private industry companies come calling.

"The talent that we are drawing to the Coast Guard today is nearly unprecedented," said Admiral Zukunft. (Our Coast Guard Academy) is now at its most diverse point than it's ever been in the history of the Coast Guard. The last two classes came in with 40 percent women, 33 percent under-represented minorities, their SAT scores, their GPA, their athletic capabilities, and their hunger to serve our nation is like I've never seen before. So as far as bringing talent into the Coast Guard, that is a great sign."

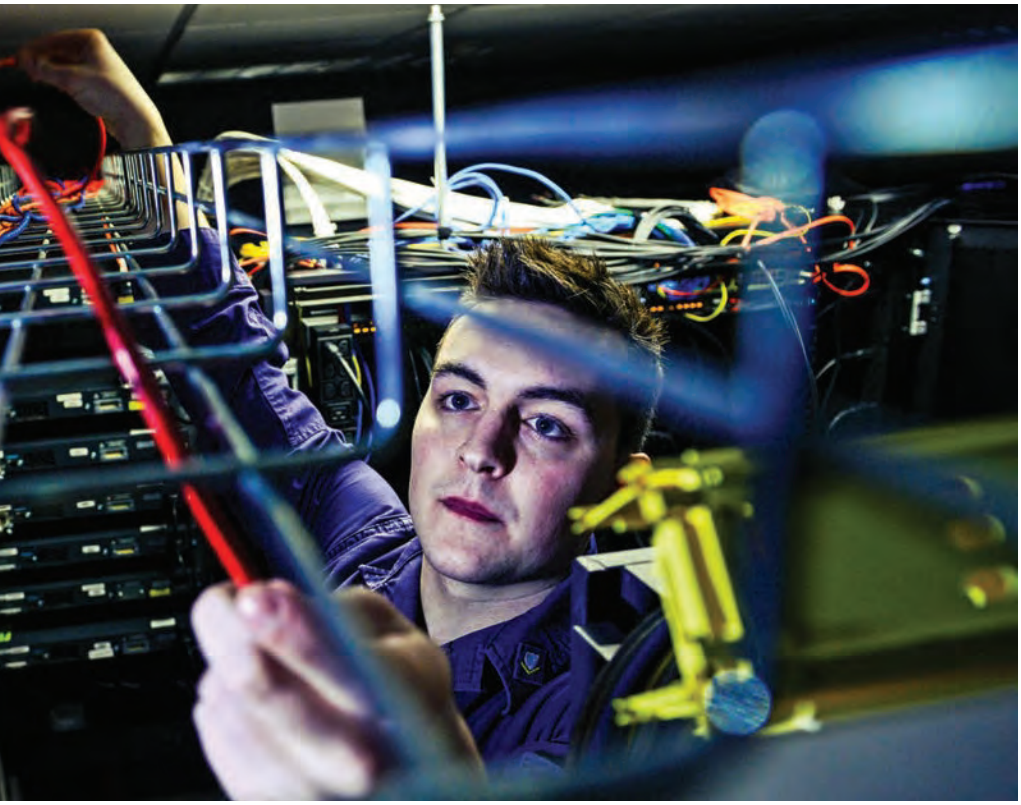
Keeping Them In

While the modern Coast Guard has seemingly become more adept at attracting top talent, Admiral Zukunft said that simply is not enough, with holding onto top talent for the duration of their career the goal. "We are going for the top 10 percent, not the bottom 5 percent, and it should come as no surprise, Silicon Valley is going for that very same percentile," he said, noting that the uniformed services are prime poaching grounds for private companies. "If they can't find it in our high schools and colleges, then they'll look to the uniformed services – folks with background clearances, tremendous work ethics, integrity, and they'll be more than happy to hire them out from under us. So how do you retain these folks … how do you build that brand loyalty? I go back to some of my initial foundational experiences as a junior officer, (experiences) that caused me to say, 'I am all in. This is what I will do for the rest of my life or as long as they let me serve in the Coast Guard.'"

That is the conundrum: getting that same level of commitment, that sense of belonging that isn't as much about a paycheck as it is about that commitment; that sense of accomplishment that you can only get by serving in the Coast Guard. "Because I can't get in a bidding war with mid-grade, enlisted members against the private sector that may double or triple

On an average day, the Coast Guard:

Conducts 45 search & rescue cases	Conducts 14 fisheries conservation boardings
Saves 10 lives	Seizes 874 pounds of cocaine and 214 pounds of marijuana
Saves over $1.2M in property	Conducts 57 waterborne patrols of critical maritime infrastructure
Interdicts 17 illegal migrants	Conducts 24 security boardings in and around U.S. ports
Escorts 5 high-capacity passenger vessels	Screens 360 merchant ships for security threats prior to U.S. arrival;
Conducts 105 marine inspections	Completes 26 safety examinations on foreign ships
Services 82 buoys and fixed AtoN's	Investigates 14 commercial marine casualties
Investigates 35 pollution incidents	Facilitates movement of $8.7B worth of goods on the Nation's MTS



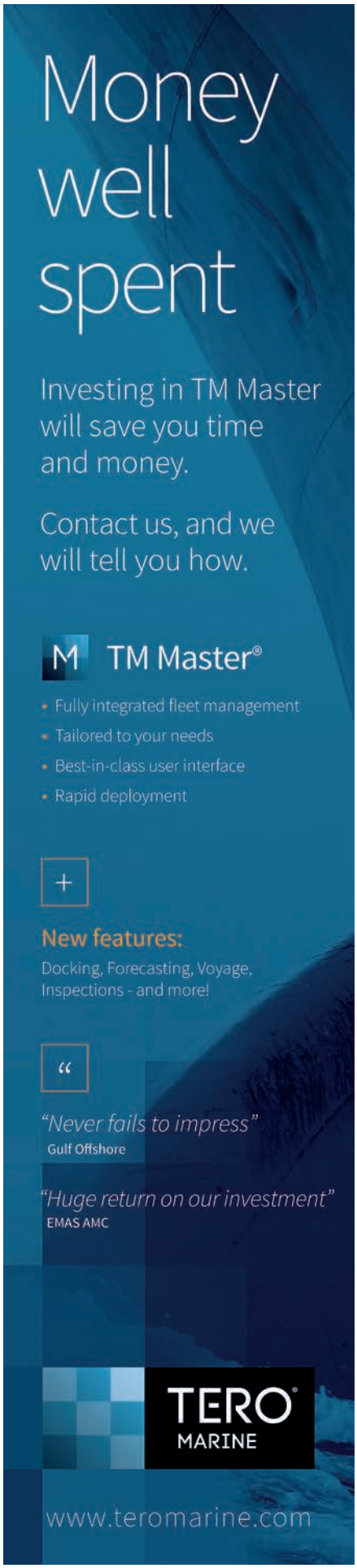
what someone may make in today's Coast Guard," said Admiral Zukunft.

One key to keeping good people is a change in lifestyle, namely reducing the amount of moving of people from post to post. "We are a workforce of itinerant workers. I think I've moved 21 times since I've been in the Coast Guard. So when I start looking at our female commissioned officers, and it's great that we have great numbers coming into our workforce, but at 10 years of service, we lose nearly 50% of them. And so what are the dynamics that cause our female officers to leave the service?," asks Admiral Zukunft. "Can you have it all? Can you have two successful careers, can you raise a family, and can you do that leapfrogging all over the country every two to three years? And so one thing we're doing is that maybe we don't move people as often as we do."

That reward is geographic stability.

"There used to be a stigma (with not moving as much) … we used to call it "homesteading," said Admiral Zukunft. "There are actually benefits to not moving people as often. One, it helps the family. Two, we work hand-in-hand with the communities in which we serve, especially across the emergency response community. And three, it saves a lot of money: money that we don't have to move people." He said the benefits and savings really start to pile up if you add in money saved in recruiting and training. "So that's really the essence of the human capital strategy – we need to be a more specialized workforce."

So with all of the talk surrounding the Coast Guard's 'stuff,' – including its new Offshore Patrol Cutter and the recapitalization of the heavy icebreaker fleet – the real key to its future is much simpler. "Oftentimes we say it's about acquisition, about buying the new stuff; I've been very optimistic about our ability to acquire new things, but that's just hardware," he insists, adding quickly, "What really makes it all work is the people and the quality of those people, as well. At the end of the day (it is how) you remain that employer of choice. And I am a little biased, but I think the Coast Guard is a pretty darn good place to make your legacy."



Cyber Security

WAKE UP CALL

Image: © SOCP Information Systems Security Awareness CBT. To obtain your free copy of the ISSA CBT, please contact the SOCP at programadmin@socp.us

Mariners Urged to Get In Front of Growing Threat

By Patricia Keefe

Before any vessel gets ready to head out to sea, shore-based personnel and onboard crew run down a lengthy list of safety, compliance and regulatory checks, all part of a standard risk management exercise. What's often not on that list is an invisible, but looming risk that if ignored, could leave ships off course, off schedule or even dead in the water, thanks to infected computer systems, phony or corrupted charts and blocked communications signals.

Cyber crime has come of age in the maritime sector. Observers like Futurenautics claim the maritime industry is actually "overexposed" when it comes to cyber risk management. From modern vessels virtually run by massive doses of technology and limited crew, to older ships chugging along with out-of-date and insecure applications, all are vulnerable in their own way to the stealth threats to shipping security and safety. The seeming lack of awareness among companies, if not their crews, has many government, security and industry organizations very concerned, and very anxious to help the industry get out in front of this looming problem.

> **"It has to start with the leadership first – if they aren't willing to effect change – you can't educate employees."**
>
> – Michael Crean, CEO, Solutions Granted, and Bluetide Communication's security partner

The last two years has seen a flurry of activity around cyber security. With zero funding, the U.S. Coast Guard pulled about 80 personnel with the necessary security and IT credentials out of other units to form the U.S. Coast Guard Cyber Command. Last August, it released a Cyber Security strategy paper, which provides a framework and a 10-year plan designed to reduce risk to the maritime cyber critical infrastructure.

Industry alliances, including BIMCO, CLIA, Intertanko, Intercargo, ISC and others, recently published "The Guidelines on Cyber Security Aboard Ships," a blueprint for companies seeking to aggressively address cyber security. Separately, Insurers Marsh & McLennan Companies published a cyber security report targeted at educating executives, while Futurenautics surveyed 3,000 crewmen on their experiences with cyber attacks. Last December, International Association of Classification Societies (IACS) leadership added cyber security as the third pillar of its oversight, alongside hull and machinery, and talked about creating a cyber system safety framework.

Where's the Fire?

What could possibly happen to a vessel out in the middle of the ocean? A lot, actually, thanks in part to the industry's increasing reliance on technology. A look at the incidents reported so far – ranging from fake charts and invoices, to drug smuggling, to compromised rigs and ship systems – is just the tip of the cyber iceberg lying in wait for a modern-day unprepared Titanic, worry security experts.

The attacks run the gamut, employing phishing, social engineering, malware, viruses, worms, denial of service, keystroke capture, skimmers, Trojans, ransomware, signal jamming, identity, manifest and corporate data theft, cargo diversion and smuggling, phony bills, etc. While SATCOM vendors like KVH and Bluetide Communications enable clients to block web sites, divvy up and even physically separate internet bandwidth to meet business, personal and entertainment demands, it's not enough to bar the cyber door. One unsettling truism is that hackers are always a generation or two ahead of their victims.

Crew data, financial data, cargo manifests and high value cargoes are all at risk. Fake invoices are said to be epidemic in the bunker fuel sector. From a safety standpoint, protecting and backing up your electronic navigation systems and GPS signal will be key.

A wide range of players, from criminal syndicates looking for money; to political or environmentalist hacktivists bent on making a statement or stopping a company's activities; to corporate and nation-state espionage that seeks to steal information and cripple economies; and even just lone wolves looking to build street cred or test their skills, are all in on it. And they don't need to be particularly sophisticated. Attacks can be outsourced to hackers for hire, the new career path on the dark side.

Your Own Worst Enemy

It might surprise some, but the cyber security community sees employees both as a bigger problem than technology, and the key to success. The SANS Institute, a bellwether provider of security training, has a program devoted to "securing the

"It's like Capt. Obvious from Hotels.com – If you are not thinking about how to train folks, making sure your systems are secure and constantly reevaluating – if you are not doing all of this, then you are taking on an unwarranted level of risk."

– Kim Hall, CLIA Director of Technical & Regulatory Affairs for Operational & Security

human." Unintentional or accidental incidents are actually more of a threat than deliberate sabotage or outside perpetrators. This is no minor issue when crew connectivity to the outside world is now 'de rigueur' for recruitment and retention.

"You have a better chance of securing technology than educating and making sure humans do the right thing," observes Kim Hall, CLIA Director of Technical & Regulatory Affairs for Operational & Security. In one case, as a vessel was getting ready to go to sea, the first mate decided to listen to some music. He plugged his unbeknownst to him infected player into the ship USB port, unleashing an infection. The ship had to cool its heels in port for two days waiting for a technician to come and fix the problem. It's why the U.S. Navy and Coast Guard banned personal USB flash drives. Some companies seal up USB ports on ship computers to prevent such accidents.

But sometimes the problem is the technology itself. It doesn't matter how old or new your ships' systems are – nothing is safe. The more automated a vessel is – the more the bridge operates as the proverbial "brain" of the ship – the more susceptible the entire operation is to malfeasance. Autonomous ship operators of the future will have to deal with issues when something goes wrong. Not everything can be handled or discovered remotely.

The technology issue facing older vessels is more critical, and correcting it urgent. Running applications that were never meant to be networked or linked to the internet, it's not uncommon to have wide open back doors, created to enable remote monitoring and repairs but with little thought given to criminal egress. And, many applications were written on operating systems that are no longer supported, and hence, no longer secure. And patching solutions can aggravate the problem.

Pressure to Act is Building

Emil Regard, Managing Director, BlueTide Communications, which recently debuted Security-As-A-Service for remote network monitoring and security, says "There are only two kinds of computers: Those that have been hacked, and those that will be hacked." Ask any major government agency, financial center, retailer, healthcare giant or insurer. Nothing, and no one, is safe.

The majority of insurance policies that cover ships and ports include cyberattack "Exclusion Clauses." For now, most insurers focus on creating awareness and working with clients to help them get started on battening down the cyber hatches.

Allianz educates clients by speaking on topics of cyber threats and through educational papers. "The U.S. is about to launch a 'Know the Facts' series on cyber to help our brokers (and subsequently clients) understand current exposures, risks, and coverage issues. This will be a quarterly feature," says Emy R. Donavan, Head of Commercial Cyber, North America, Allianz.

Some insurers are looking into offering some level of policy protection. Allianz is finalizing a cyber security policy that will offer coverage for liability associated with data breach, costs of complying with regulatory requirements, digital asset replacement costs, cyber extortion and other coverage. "Coverage at this time is only available for larger clients with a reasonable level of risk management around cyber threats. We will be launching a mid-market initiative later in the year, but that will still require some basic cyber hygiene responses on the application," says Donovan.

Regulatory Sword

If that doesn't get your attention, then the specter of more regulation might. That's because, at some point, taking steps to implement a cyber security program might become a necessary part of proving seaworthiness. Capt. Andrew Tucci, Chief, Office of Port and Facility Compliance U.S. Coast Guard, thinks the level of regulation, although nothing like the typical IMO iron-clad directives, will be more akin to what industry has done with safety management.

One of the biggest stumbling blocks to manage the risk is that "we don't know what the threat is," according to Capt. Michael Dickey, deputy commander, U.S. Coast Guard Cyber Command, noting that the hacking community's attack methods are constantly evolving. Hence, the maritime community needs to advance flexible guidelines for best practices and program frameworks. The industry-driven "Guidelines on Cyber Security Onboard Ships" is one such effort. One size won't fit all ships, and cyber security experts agree, it is imperative that future regulations be constructed as a "living document," so companies can morph their security, keeping pace with trending threats.

"There are enough regulatory documents in the shipping world now,'' exclaims Philip Tinsley, BIMCO's maritime security manager. Hoping to update the Guidelines several times annually, his working group is planning to address training, and build in a reporting facility where breaches can be documented. Gathering data is "key to being able to progress," says Tinsley. BIMCO also wants to add a clause to vessel contracts that will show an owner has addressed the issue.

"You can't hack a sextant."

– Capt. Michael Dickey, Deputy Commander, Coast Guard Cyber Command

However laggard it may be, the maritime industry actually has an ace up its sleeve when it comes to building cyber security plans. First, shipping companies excel at risk management. Second, with hundreds of years of safety culture at its back, safety management programs are in place on most

Credit: BIMCO

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"There are only two kinds of computers: Those that have been hacked, and those that will be hacked."

– Emil Regard, Managing Director, BlueTide Communications

vessels. The best practices for managing the cyber threat are straightforward, and akin to the thinking and steps that go into building an SMS. And who hasn't rowed that boat?

It's Complicated

And yet cyber risk management is a little more complicated than that. Gideon Lenkey, director of technology for EPSCO-Ra, which recently launched a full suite of managed cyber security network services, says there are companies that employ best practices and pass regulatory audits – and yet their security is bad. "They are compliant, but they are a soft target." Conversely, he cites companies that were not technically complaint, but their security practices were good. "I would hate for someone to think things are under control because they have met some minimum business practices."

"And if you think you are safe because no one has ever heard of you, that's no protection at all. The worst mistake someone could make perhaps is to somehow convince themselves, 'I have no risk,'" says the Coast Guard's Tucci.

Kim Hall, CLIA Director of Technical & Regulatory Affairs for Operational & Security, points out that it is not enough to secure individual systems or personal devices. "Looking at cyber security as a separate system ignores that it is part of an interdependent and interconnected system." A good security plan must look at the entirety of the system and where parts interface internally and externally, including to third parties.

And yet a new study, "Tone at the Top and Third-Party Risk" conducted by Ponemon Institute LLC, found that while companies understand the third party security risk, it is rarely a primary risk management objective – a costly error. "In the past 12 months, organizations represented in this research spent an average of approximately $10 million to respond to a security incident as a result of negligent or malicious third parties."

Start at the Top

Cyber risk is not an IT issue. Managing the cyber threat is also difficult, not because the proven, technical solutions aren't there, but because the best laid plans mean nothing if nobody's following through. "It has to start with the leadership first – if they aren't willing to effect change – you can't educate employees," says Michael Crean, CEO, Solutions Granted, and Bluetide Communication's security partner.

"[Cyber risk] is a board-level governance issue which requires the engagement of the full executive leadership team to address. Effectively managing cyber risk today ... requires a comprehensive, multi-dimensional approach that looks at people, processes and vendors – and includes response and recovery plans in addition to prevention tactics," said John Drzik, chairman, cyber risk working group, for insurers Marsh & McLennan Companies, in that organization's "Cyber Risk Handbook 2015."

Coincidently, one of the top concerns coming out of a cyber security roundtable hosted by KVH Industries at CMA Shipping 2016, was complacency by ship operators. The panel identified a need for training, contingency plans for dealing with a cyber attack, and a set of best practices for minimizing risks.

Once executives are on board, it's time to pull in the crew. Creating awareness involves more than giving employees a heads up that cyber crime is heading out to sea. It's letting them know that a successful infiltration is only a click away, that they themselves can inadvertently be the ships' own worst cyber enemy.

Another option is to takes the "What's in for me" tack. One of the best approaches is to educate from a personal and family impact. The idea is to teach them how to protect their personal data and identities online, how to keep viruses and malware out of their computers. You talk to them about creating multiple, strong passwords; about how not to click on links, download or open email from sites or people they don't know. Then, you throw in, "Oh by the way, these same tips will help keep ship – and you – safe, as well,"

A New Light

Creating awareness and correcting behavior that can create vulnerabilities is paramount. But there's more to it than that. All crewmembers have to add the cyber threat to the way they think about risk management. Unlike most safety violations or physical acts of crime, cyber attacks aren't visible. You won't see the launch of a denial-of-service attack or malware wending its way through your computer network. And while people

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"There's always someone somewhere doing something they shouldn't, so why chance it?"

– Philip Tinsley, BIMCO Maritime Security Manager

Group	Motivation	Objective
Activists (including disgruntled employees)	• Reputational damage • Disruption of operations	• Destruction of data • Publication of sensitive data • Media attention
Criminals	• Financial gain • Commercial espionage • Industrial espionage	• Selling stolen data • Ransoming stolen data • Ransoming system operability • Arranging fraudulent transportation of cargo
Opportunists	• The challenge	• Getting through cyber security defences • Financial gain
States State sponsored organisations Terrorists	• Political gain • Espionage	• Gaining knowledge • Disruption to economies and critical national infrastructure.

Table 1. Motivation and objectives

will respond quickly to correct a safety violation, they are a lot less likely to say anything if they see a shipmate plug a personal device into the ships' USB port, or flip to a web site while working on a ship's computer.

This means also avoiding being lulled into a false sense of security by technology that appears to be working. For instance, false or corrupted charts can lead a ship dangerously off course. "We need to tell people to get up out of the chair with a pair of binoculars and go look over the side every once in a while," says Capt. Dickey. There is also a movement afoot to return to decidedly non-technical back up plans – paper documentation and charts, and the century old art of navigating by the heavens. "You can't hack a sextant," quips Dickey.

It doesn't help that crews can be comprised of multiple nationalities and languages, says Lance M. Savaria, managing director/partner, EPSCO-Ra Ltd. Or that the ships themselves are mechanically and technologically unique – even two of the same class of vessel owned by the same company doing the same job will have differences. Training and the actual security plan, must be customized for each particular vessel.

Protect, Detect, Assess & Respond

This is no time to panic. There is plenty of agreement on the steps to take and a wealth of free sources for guidance. Whether you buy into the theory that cyber security is just another branch of safety management, or a unique area of concern, the same steps used to build a SMS program on board apply here, with a few twists. The blueprint includes:

- *Self-assess the ship's cyber "hygiene."*
- *Locate and address vulnerabilities, install appropriate cyber defense technologies as appropriate, keep ship and crew technology as separate as possible.*
- *Secure an outside assessment and audit, including penetration testing*
- *Implement a policy that covers acceptable use of allowed personal and ship technology, that encourages incorporation of a cyber threat into any problem assessment, that supports and encourages crew to report possible breaches.*
- *Make the crew cyber risk aware and provide training on safe and responsible use of technology, what anomalies should raise a flag, and provide regular risk updates and drills.*
- *Disseminate your policy and safety measure to your vendors and other third-parties with the potential to infect your networks.*
- *Encrypt or use secure channels when communicating sensitive data to port authorities or shore-based offices.*
- *Formulate a process for recording, reporting and dissecting actual and near misses. Consider sharing the data anonymously with industry groups trying to track attack trends*
- *Write a contingency plan and build in resilience.*

After you've done all that, it's important to stay vigilant. As Hall likes to say, "It's like Capt. Obvious from Hotels.com – If you are not thinking about how to train folks, making sure your systems are secure and constantly reevaluating – if you are not doing all of this, then you are taking on an unwarranted level of risk." And as Tinsley notes, "There's always someone somewhere doing something they shouldn't, so why chance it?"

Famous and Mundane Breaches and Attacks ... at a Glance

What could happen? Oh, what a computer virus, hacking for hire or $30 jammer could do:

- In 2008, the DOD banned the use of removable storage devices in an effort to halt the spread of a computer virus wending its way through the DOD network. Though the ban was later relaxed to allow government-procured and owned devices, **civilian flash drives remain verboten by the U.S. Navy and the U.S. Coast Guard** because it is impossible to track how they are being used, and there is no way to know whether they are infected – a recipe for impending disaster.

- In 2010, **malware overwhelms underway off-shore drilling rig in Asia,** forcing a prolonged shutdown. Reportedly the lack of cyber security expertise onboard is the main reason it took a week to identify the cause and fix.

- In 2011, **pirates hack into ship servers** to identify vulnerable shipments, later boarding it with bar code readers to find the targeted cargo.

- In 2012, **a foreign military compromises "multiple systems"** onboard commercial ship contracted by U.S. TRANSCOM.

- In 2012, over 120 ships, including major Asian Coast Guard vessels, experience **malicious jamming of GPS** signals.

A little less accidental, *investigators looking into a shipping accident in the U.K. discovered the crew had* **disconnected the ship's black box and used it to download a movie** *before reattaching the device.*

- **Nation-state cyber attacks are not uncommon;** though so far tend to target land-based systems. These include: A computer virus that in 2012 targeted Iranian oil companies, forcing much of the oil infrastructure offline, including Iran's Kharg Island oil terminal, which handles 80% of its oil exports; a believed-to-be retaliatory 2012 virus attack, said to be the largest ever, on Saudi Aramco, Saudi Arabia's national oil company, which supplies 10% of the world's oil, wiping out or destroying the hard drives of at least 35,000 PCs, and costing the company months of work and barrels of money before it could get its delivery tracking and billing system back on line; and Stuxnet, the U.S./Israeli-created virus used to destroy centrifuges in an Iranian nuclear facility in 2010. On an ongoing basis, the North Korean government routinely jams critical GPS signals from at least a 50-mile radius and may be pushing it to 100.

Cyber con artists are fleecing shipping companies *with realistic scam billings after hacking into financial systems. Once the bill is paid, they disappear, forcing the company to eat the loss and ante up again - to the real supplier.*

- In 2013, European authorities announce **drug smugglers hacked cargo tracking systems in the Port of Antwerp** to locate and retrieve their illegal goods. The two-year operation hired hackers to infiltrate computers controlling the movement and location of containers. Malicious software and key-logging devices were used in the plot. No one noticed until containers started to vanish.

- In 2014, **a seven-hour GPS signal disruption took a key U.S. port offline**, shutting down multiple ship-to-shore cranes for several hours.

- Typical of how insiders can inadvertently muck up the works, a mate on a vessel heading out to sea, plugged his low-on-battery smart phone into a UBS port on the bridge. **The resulting malware infection erased or corrupted all the charts on the ECDIS system** of the ship's systems, costing an additional two days in port waiting for a fix.

Sources: USCG's Cyber Strategy white paper.

One TORM

– Afloat, Ashore – *and Everywhere in Between*

TORM's Leadership Philosophy is the basis for its focused marine recruitment and human resources strategy. Rich in history, forward-thinking in its approach, the firm leverages both as it comes together in One TORM.

By Joseph Keefe

Simon Frank is Vice President and Head of Global Marine HR in TORM A/S. Beginning his maritime career with the Royal Danish Navy; he has seen and experienced marine operations first hand in myriad settings, all over the globe. Later, he joined Rohde Nielsen in Denmark as crew manager before serving at EMS Shipmanagement and then, as Head of Maritime Personnel at Lauritzen Kosan. Simon's crew management experience includes working with a large range of nationalities, different ship types, and in implementation of crew management systems.

Simon's employer is equally experienced, with a history of operating commercial tonnage for more than 125 years, dating back to 1889. Because TORM is a pure play product tanker company and one of the world's largest carriers of refined oil products, manning issues might seem to be less complicated than a firm which dabbles in more than one sector. That's not necessarily true. At TORM, navigating the tricky world of marine human resources boils down to leadership. In this edition, Simon Frank gives us a unique, inside look at the human resources strategy at one of the world's largest tanker owners.

TORM's Leadership Philosophy

According to Simon Frank, the TORM Leadership Philosophy is shaped by three overall dimensions: Performance, Relations and Personal Leadership. And, honoring that structure means that the company needs to have a strategy of having everything under one roof. "We need to control every aspect of our place in the industry," explained Frank, adding, "From a marine HR perspective, we are over the last year in the process of introducing a concept we call 'just culture.' It's directed at creating the right balance between performance-related communication, and also fair and open, non-blame communication. This is about training our seafarers in having robust conversations, addressing performance issues, and addressing our system. Within this open approach, we are not afraid to openly discuss challenges, and we have systems in place that can address training needs."

All of that sounds good in 2016, but before the conversations can be had and performance challenges addressed, ship operators need to find the right personnel. That task is as challenging as it has ever been, in part because what is now important to seafarers isn't necessarily the same thing that they wanted only a decade prior. Addressing that metric, Frank says, "The mechanisms have changed over the last ten years – especially in the tanker industry. Salary is not so much discussed anymore – salary is a given. And if you are professional and top market performer, you will naturally have a salary that matches the market. We don't spend much time discussing wages with our seafarers. Instead, we discuss other topics that are more important today, and these topics typically are welfare on board – very much including connectivity with internet access. That's extremely important today."

Even more important, insists Frank, is the need to provide good quality quarters, and making sure there is the possibility for mariners to get ashore. Beyond this, says Frank, the contract length, especially for the ratings where seafarers can be embarked for the longest basis – up to nine months – is becoming an important aspect of retaining the best and brightest. "That's the next thing that's going to be under some kind of pressure. That 9 month stay will likely be reduced to 7 or 8 months for ratings in the future. We constantly discuss employment conditions with our seafarers. We're not trying to comply with a certain document. Instead, it is much more important for us to be able to react when we have these discussions with our seafarers directly. Contract length will definitely be the next the next pressure point."

TORM operates a large and modern fleet of product tankers that come in various sizes. Deciding which mariner goes to which vessel is more complicated than segregating personnel according to experience on a particular sized vessel. For

TORM at a Glance …

Founded: 1889	Type Fleet: Product Tankers	Headquarters: Copenhagen, Denmark
List: Nasdaq Copenhagen	Smallest Ship: 35,000 DWT	Offices: Houston, London, Manila, Mumbai, Singapore
Number of Ships: 78	Largest Ship: 110,000 DWT	Number of Seafarers: 3,000.
No. Externally Managed:3	Flag: 99% Singapore, Danish	Office / Shoreside Personnel: 275

> "This is about training our seafarers in having robust conversations, addressing performance issues, and addressing our system. Within this open approach, we are not afraid to openly discuss challenges, and we have systems in place that can address training needs."
>
> – Simon Frank, Vice President, Head of Torm Global Marine HR

TORM, the process instead involves creating history for each seafarer with a smaller pool of vessels. He explains, "Professionally, we wouldn't have a problem to send people from bigger to smaller vessels and back again. From a professional, technical and educational perspective, our people are appropriate for all sizes of vessels within our fleet. More important, for planning purposes in the Philippines and in India, where we have the majority of our seafarers, we are in the process of trying to connect individuals to one or two particular vessels of the same type, that they will share their time on."

The goal, says Frank, is to develop situations where there is history, more responsibility taken, and ultimately, more accountability taken. That, he said, translates into leadership. "We want to create smaller pools of seafarers for a smaller number of vessels. So, this is what we're trying to plan this year, while also at the same time reaching out to our seafarers, selling it as a 'win-win' situation. It brings people closer to the vessels, creates more job satisfaction, but it also benefits TORM in how we operate our ships."

Leveraging the Diverse & Multi-Cultural Workplace

With offices located in Houston, Manila, Mumbai and Singapore, the TORM company culture is quite diverse. Beyond looking at qualifications and establishing a track record for mariners in smaller pools, TORM also looks carefully at the cultural makeup of each vessel, both in terms of nationalities and which roles are filled by a particular mariner, and why. Frank explains, "We have a large number of seafarers from India and the Philippines. And, we have several vessels where we have full Indian crews and some that have full Filipino crew. Some have Indian officers and Filipino ratings. We do have a formula and we stick to it. Additionally, we have a smaller number of Danish and Croatian officers. Our pool then contains only four different nationalities. It's just right for the size of fleet that we have.

Frank further emphasizes the need for managing the seafarer mix on board multi-national vessels, adding, "I formerly worked in a big ship management company where the nation-

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ality combinations were almost out of control. That leads to many more challenges on how you combine your crew on board. There are combinations which don't work as well as others. There are guidelines as to how you should put together a crew. And, there's the whole situation of how do you approach the cultural differences. We have specific steps in addressing that."

The acquisition of OMI in 2007 marked the biggest increase in fleet size ever for Torm. OMI was a quality firm in its own right – with quality seagoing personnel. Nevertheless, there were challenges in melding two potentially different seagoing and management cultures into one cohesive firm. Not everyone was convinced that it could be done, says Frank. The oil majors, in particular, were concerned.

Simon Frank wasn't at TORM when the merger came about, but he stresses the positive aspects of the larger, combined firm. "It was, for sure, a challenge," but he adds, "The key point was to bring together two different cultures and try to take the best of both to form a joint set of procedures where we collectively benefited to the maximum extent. Looking back to the challenge that we had at the time of the merger, we are now in much stronger position with more knowledgeable workforce – ashore and on board, combining two very good and professional companies, now under one roof."

The Human Element

One area of crew management that has gotten a lot more attention over time is the area of 'vetting the human element.' That's much more difficult than it sounds. Even sophisticated commercial vetting programs such as RIGHTSHIP, and industry organizations like BIMCO have yet to crack the code. But, that doesn't mean it isn't happening. One such scenario where it has become more common is during tanker vetting inspections, by oil majors and SIRE, and others, too. TORM's Frank is very much aware of it.

"One thing that has changed the last few years is that the vetting superintendents are very much addressing the junior officers on board. They expect the juniors on the bridge to be able to perform in front of a vetting inspector, and to perform the tasks under his domain. To keep up with that development, we have been training our junior officers in understanding the vetting element of the job. These vetters are introducing a lot of improvements by addressing procedures to us, and we are in a continuous effort to stay ahead of all of it. Here at TORM, we are in a good place with that, because we have good procedures in place. We perform well as a group during vetting, but vetting helps us to adjust our procedures from time to time."

Along with all of that, TORM in the past year introduced an advanced vetting training course for their officers – senior and junior ranks. Beyond this, like many other companies, TORM conducts regular internal audits of their vessels to keep them operating at a high level. Frank adds, "It wasn't too long ago that vetting was a matter between the Captain and the Chief Engineer. That has changed."

The Best & the Brightest

According to Frank, there is one aspect of his job that is made easier by the narrow focus of the TORM fleet. That adds up to better access to quality seafarers. "When we look at our fleet, all in the same segment really, that's a positive for us. We have a good idea of what type of people that we are looking for. I don't know if it is any easier for us to recruit than say a bulker company, but if you look at India for example as being a major player in the seafarer's market today and you look at tanker wages and bulk wages, you will find that tanker wages are 30 to 40 percent higher.

Frank's experience has always been that the best and the brightest naturally gravitate to the tanker industry. He adds

carefully, "So, the smartest people – and that's perhaps a provocative quote – are sailing in the tanker trades or liquid cargo segments. That's where the benefits, wages and best working conditions are. So, it's not necessarily a 'TORM thing' but that's where our ships are situated, that's where we need to recruit. There is a dividing line in the market today, where the first tier of seafarers, the best professionals, are chosen for the higher paying companies which naturally are the tanker operators. That includes of course LNG and LPG. And, in terms of marine HR, in my experience, the chemical trades are where you see the hard core professionals; the top of what I've seen in my time in HR."

Determining who is the 'best and brightest' has always been a goal of shipping companies everywhere. In the American Jones Act trades, the use of simulator assessments is now commonplace at most quality companies, especially when the possibility of promotions to senior positions comes up. TORM is no less enthusiastic about that effort, but Frank says TORM goes about it in a slightly different manner. "We don't always use a simulator assessment. For the Master's promotions, we do include a simulator assessment in our process. For the most part, we depend on professional assessments and a test that is aligned to the job description and job profile. We are also in the middle of a large TORM leadership program which has an element of self-assessment, incorporates feedback from superintendents, and there is a '360' test environment that's included, as well."

One TORM: Globally Aware, Internally Controlled

Where some operators trust their operations – technical and/or operational – to third parties, very little of that is in place at TORM. The firm's fully owned process, from top to bottom, is, in Frank's estimation, the key to success. "That's the right strategy if you want to optimize and own your operation, controlling costs, income, all these things benefit from a fully controlled operation. It is difficult to do that with a ship management company."

There are exceptions to any rule and TORM is no different. In Croatia, for example, TORM utilizes a manning agency, but this extends to less than 10% of their seafarer pool; approximately 150 Croatian officers. Frank explains further, "This is a manning agent that we have been working with for more than 12 years. Many of our procedures are standard in their office. It's not only a manning agency; it's more like a partner for us. Apart from that relationship, however, the seafarer pools are managed in house."

Across the globe, a 100% TORM manning office operates in Manila, and a full service Mumbai office – with superintendents, insurance, and support functions – services the India market for TORM. In Manila, the main focus is manning – but all seafarers being dispatched from that office are only for Torm ships. "That gives us a very strong position there to develop our own people and then retain them," says Frank.

Globally, TORM has taken over about 12 ships in 7 or 8 months, the most aggressive growth that the firm has seen the OMI acquisition. True to his word, Frank is watching over the intake of new talent closely. "During this period, I'm interviewing all new recruits to senior positions. I'm impressed with the type and the quality of the people that we are able to attract. For the top level of seafarers, it is clear to me that we are able to put our TORM name and image into the market and be able to attract and retain well qualified people. That we run a full TORM operation from start to finish is one of the reasons that we can do this."

*Images courtesy: TORM

The Future of Class

ABS's FutureClass, a vision for tomorrow's maritime classification, starts with an integrated structure, forward thinking technology and a CTO – Howard Fireman – who brings them all together.

By Joseph Keefe

It can be argued that the maritime world was and still is one of the slowest businesses on the planet to adopt new technologies and apply them in practice. ABS, founded 154 years ago in 1862, started out as an international classification society devoted to promoting the security of life and property and preserving the natural environment through the development and verification of standards for the design, construction and operational maintenance of marine and offshore assets. Over more than 150 years, that hasn't changed. How all of that gets accomplished certainly has.

Enter Howard Fireman, ABS Senior Vice President and Chief Technology Officer, who joined the organization in 2013. Fireman is responsible for directing the society's technology resources and overseeing Rule development initiatives, including their strategic alignment with ABS operating divisions. But the ABS CTO aims to accomplish much more than that.

According to the latest Guidance Note of Cyber Security Principals, put out under Fireman's watch, ABS recognizes that automation methods – and increasingly, autonomy – have penetrated nearly all aspects of shipboard and platform systems. Because these systems control multiple aspects of asset, ship or platform operations, they become integral parts of system and operational safety. This aspect of the ABS drive to ramp up its technology game has Fireman's attention, but it is only one layer to a much larger IT onion.

People: But Not the Usual Suspects

Fireman holds a Bachelor's and Master's Degree in Naval Architecture and Marine Engineering from the University of Michigan. He also received a Master's Degree in Technical Management from Johns Hopkins University. He joined ABS from the U.S. Navy, where, among other roles, he served as Chief Naval Architect and Director of Surface Ship Design and Systems Engineering. In other words, the perfect fit for ABS – but perhaps not for reasons one might think.

"When Chris (Wiernicki) and Bob (Somerville) approached me, it was not so much because I'm a ship designer by trade. It wasn't about designing vessels, it was about the fact that I used to be a client, so they knew a lot about how I was built as a person," says Fireman, adding quickly, "but the regulatory world was upon them and clearly they thought, I guess, they wanted to bring an outsider in. And so I was the guy chose."

"It boils down to the fact that the next generation of talent we need to lead our industry looks very different because the needs of our industry are changing." That's what ABS CEO Christopher Wiernicki told listeners in Stamford, Connecticut in March. Howard Fireman agrees, but adds a word of caution. "I believe it is going to change. One of the things that we cannot forget is our core – our core is about safety. Offshore structures, structural integrity – that is something we can never forget."

Drilling deeper, the classification society employee of the

*All images courtesy of ABS

future may or may not resemble that which has populated the ranks of ABS for generations. According to Fireman, ABS now looks for talent not only at the traditional sources – state maritime academies and Kings Point – but also at places like MIT, the University of Michigan, Texas A&M, Webb, UC Berkley and others. And, he's adamant that he's talking about people for ABS, not just the technology groups.

Echoing those sentiments, Wiernicki told CMA listeners, "… I want to talk about people – not about technology or regulations – because at the end of the day, it begins and ends with people. People move industries, people drive change, make a difference – not technology or regulations." Hence, when Howard Fireman says that new recruits "still want to be surveyors," in the future, they'll need to be that and a whole lot more.

Fireman continues, "You can start your career being a mariner, but then you can get the subspecialty experience when you're ashore and do other things. And so I think there's going to be a hybrid approach. I think, yes, there may be some folks that are more traditional, but we need to marry them with the maritime professionals, otherwise you run the risk of creating a product that no one wants."

Stovepiped Data & People: No More

In April of 2015, Wiernicki asked Fireman to become the Chief Technology Officer. At that point, Fireman controlled the corporate technology function, product development and additionally was still head of Nautical Systems. Howard Fireman refuses to characterize all of that coming under one hat as a 'watershed moment,' but he admits, "I can now bring it all together. I can bring all these different tributaries into one big river."

Today, Fireman's two key focuses are the ABS Technology department, which oversees Rule development and all R&D for the company, as well as ABS Nautical Systems (NS). That alignment of the two groups under one executive was made because ABS sees NS as a foundational piece for much of the Future Class initiative. In a nutshell, Future Class will be condition-based, continuous and risk-based, with elements that touch both data and cyber security.

Before assuming his current duties, Fireman served as ABS Vice President, Operational and Environmental Performance. With those responsibilities under his domain, it's probably a good thing that Fireman has, by his own reckoning, had as many as 11 different careers within one. He explains, "I was all over the place. I lived on ships, I worked in shipyards, I did research in engineering." Bringing ABS Nautical Systems and ABS not only closer together, but also working as a team, was a key goal of Fireman from the beginning.

"When I took over, it was its own division. There were five divisions in ABS. If you go to our website, there's only four now. I talked to Chris and I said I wanted to be a part of it; I wanted to be really integrated with corporate." Next, Fireman brought together a number of ABS technology teams, then existing in a somewhat stovepipe fashion, and brought them under one roof. At one time in different buildings and floors, they now sit on one floor at ABS.

"All these departments – the OEP team, the Asset Integrity Management team, etc. – it's all in a very creative environment. There are no offices – no one has an office. It's a very open, collaborative, innovative environment – totally different feel than if you walked around another floor of the building." Fireman points to Nautical Systems, Asset Integrity Management, and Operational Environment Forms, who now sit in one space. "Because those arms are subject matter experts, there's a total linkage between what they now do."

ABS and Fireman have clear goals as to what they want to accomplish in this way. "NS was mainly more of a pure software group. Now, I wanted to take the benefit of the fact that I had the operational control of these three groups, use the subject matter expertise of the guys that know everything about regulations, and everything about asset integrity management, and let those functional people help the product managers build the product specification." Today, when ABS

On the future of class: **"I believe it is going to change. One of the things that we cannot forget is our core – our core is about safety. Offshore structures, structural integrity – that is something we can never forget. But the future is changing. Look at drones. Could you have a conversation with anybody even five years ago about drones, and how drones could impact inspection survey? No. Are we working on it? Absolutely."**

– **Howard Fireman,** *ABS Senior Vice President and Chief Technology Officer*

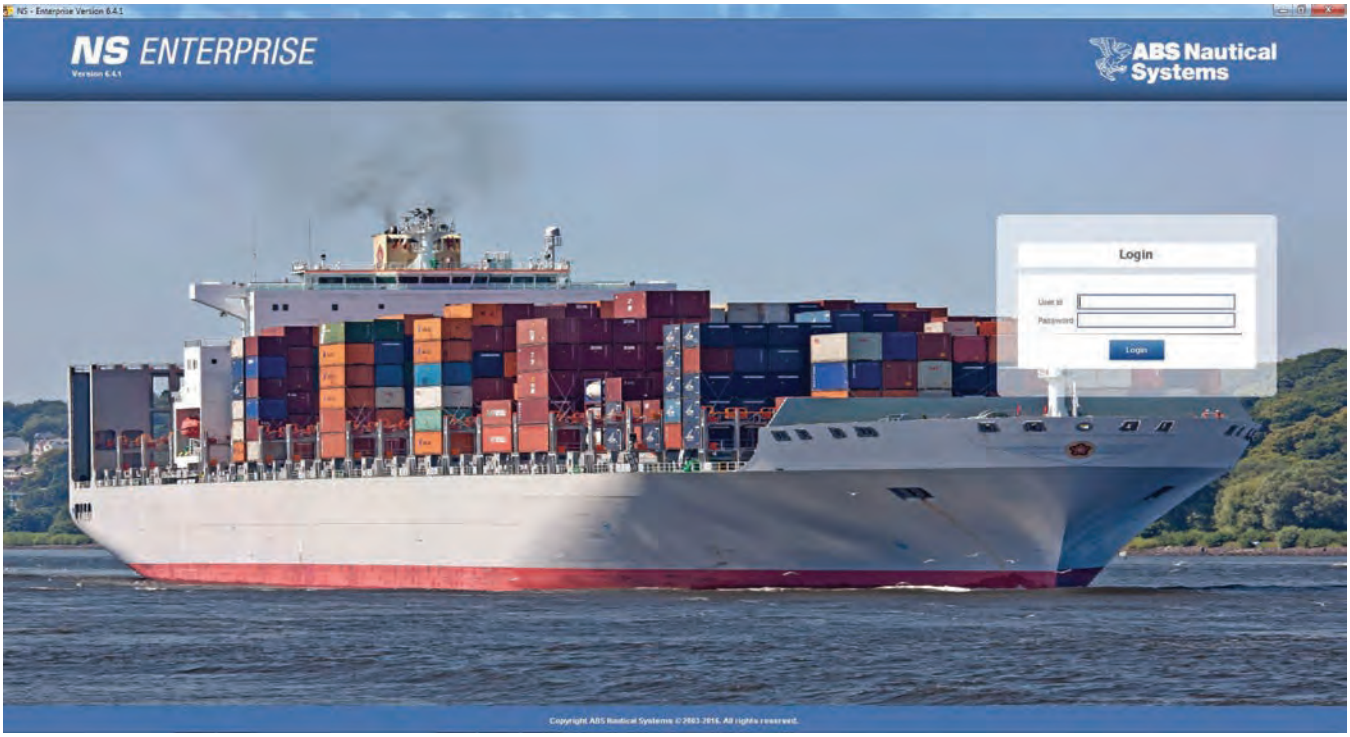
writes code at Nautical Systems, it's aligned to their experts and, theoretically, the linkage is back to the clients, more importantly, who define the requirements.

Today's ABS team is not your Grandfather's classification society. The Asset Integrity Team has surveyors on it; the Operational Environmental Performance team chief engineer is today a former Captain who has earned his PhD in Naval Architecture. Fireman insists, "It is a totally different blend of people to help provide us that subject matter expertise so when NS is moving forward, it's based upon sound principle. And as president, one of the things I do in our user conference is to bring those things out to our clients so they can see things before I've locked them down, make sure my roadmap is where they think the product should go because they operate everything. I operate nothing."

More than Technology

ABS NS is focused on delivering a complete, fully integrated solution for end-to-end fleet management focusing on three key areas: *Asset Management, Compliance Management* and *Workforce Management*. To that end, says Fireman, "I'm now at the point where I have the organization in place to reach, start implementing our strategy and accelerate our pace of development." Underscoring that pace of development, ABS has actually filed an application for a trademark for the ABS Future Class initiative. The same has been done with the ABS cyber safety standards.

Looking ahead, ABS intends to use its clients to aid them in developing mobile apps, the first of which Fireman says will be rolled out this year. That 'app' will involve purchasing; a mobile application for senior staff to utilize when they



have to buy something and it's time critical. That again will involve client input and taking what is currently in the core NS software and making it more utilitarian for mobility. Fireman adds, "Again, it all depends upon what you think you need in your business. But let the clients decide what they want. I'm just giving them options."

Cyber Security is another place where ABS and NS in particular intend to take a lead position. Millions of pieces of information stream out of monitoring systems on board today's vessels. Owners want to use that data to decrease their risk, but at the same time, the cyber threat – if not properly addressed – could have just the opposite impact. Fireman told ***MarPro***, "It starts with the software. Data is something that happens a little bit later in the process. So what we published is 'Cyber Safety,' and Volume 1 in our Cyber Safety series is 'Cyber Security.' This involves, he says, understanding not just IT operational safety, but making sure the human side is taken care of. "At the end of the day, whatever potentially bad things happen, we have to understand the human safety element."

SubM: High Tech & Brown Water

Subchapter M, the groundbreaking industry towboat safety rules, is just around the corner. Already very much plugged in to the U.S. flag side of the equation, ABS is arguably as well positioned as any one of a dozen consortiums of software developers, surveyors and consultants who all hope to provide service for one of the biggest additions to the regulatory regime in decades. ABS Nautical Systems, already a recognized player in blue water, will tailor its NS Core product to the subchapter M requirements.

Fireman explains the ABS approach succinctly by saying, "Nautical Systems has lots of pieces. NS Core is for people who don't need as much, don't want as much. It is for folks who have a lower requirement. One of the things that gives us a big advantage is the fact that we had 30 years of blue water knowledge. An inspection is an inspection is an inspection. The fact that you're on a different widget is interesting, but it's essentially still a core function."

Asked if the all things 'blue water' can be applied in a 'brown water' world, Fireman responded, "There are many things that aren't. What we'll do is we'll take out the things that are not required – make them go away. They're in the code; they just won't be turned on for that kind of client. The other thing that we're going do is to sell the NS Core as a cloud-based solution for operators that don't want to build or deal with the whole IT infrastructure problem." The new ABS approach will incorporate a subscription model with Microsoft as the third party provider for the solution.

According to Fireman, selling for sale's sake is interesting, but if it's a bad fit, then it's a bad fit. He adds, "I'm out of the box. You know us. NS is an out-of-the-box marine and offshore solution." Where others propose to customize a solution for the ultimate subM rules, or for one particular customer, the ABS NS solution will go about the task differently. "I'm not customizing code for Subchapter M. I am taking our basic, broader system and 'eliminating' things that are not required in a complexity." explains Fireman, continuing, "For example, when we want to do inspections, these are processes that exist inside Nautical Systems and the different modules that get used and how workflow moves back and forth. And as things get logged in and standard jobs get created – I don't create the standard job, they do it."

As the inland tug and barge community begins to use the same sorts of software tools to manage their inspections, operations and other tasks, it will also be necessary to move this data back and forth from the office to the boats. The ABS CTO dismisses those challenges. "I don't think it matters. NS works offline and online, and what it does, it replicates. This is one of the powers of the architecture. If you're in blue water and your SATCOM is down, fine. NS doesn't care. You continue to do what you have to do. The next time you have connectivity, the database on board and in the office gets synchronized. So it's totally dependent upon the client's need."

Looking Back, Moving Ahead

In 2015, the ABS-classed fleet surpassed 230 million gross tons, a five percent growth from the previous year. The ABS orderbook saw an impressive 15% year-on-year increase to 57.2 mgt of vessels set to be classed by ABS. Coupled with another year of positive class transfers, ABS is arguably well positioned for the future; a future that will look markedly different for the organization, especially in terms of people, technology and class responsibilities.

Eventually, at ABS and the NS group, Fireman knows it will come down to managing data; something there is currently no shortage of. He sums up that challenge neatly saying, "I was with a vendor recently and they were talking about one of their clients. They captured so much data, they're drowning in it and they didn't know what to do with it. And they had the spigot wide open, you know, through satellite, and finally, they admitted, 'Maybe that's not really the right answer.' So part of this is also building an integrated, strategic approach and not just jump into the deep end of the pool."

For Howard Fireman, ABS and ABS Nautical Systems, the lesson is quite clear. "You have to integrate to get to the things you want. Data by itself is just data. You can't make a decision without having it analyzed to get information." 153 years ago, a classification society could be nominally measured in gross tons and numbers of vessels. Over time, 'progress' on the water was largely measured by the same pedestrian metrics – the increasing size of tonnage, both in terms of LOA and/or deadweight. Today, the old adage that *'we're not aware of what we don't know'* might very well depict what's coming next. One thing is for sure: Howard Fireman's future classification society will be there to find out.

Maritime Training – from the Bottom Up

Finding innovative ways of engaging, educating and ultimately employing future maritime professionals starts by introducing K-12 students to the waterfront.

By Joseph Keefe

(*) All images provided by Dr. Art Sulzer

Organized maritime education can trace its roots back to January 1, 1875 in the United States when 26 young men, ages 14 to 21 reported aboard the New York Nautical School administered by the City of New York on a retired US Navy Brig. This first effort continues to operate today as State University of New York Maritime College. Other states followed suit over the next quarter century.

In 1937, as the need to find entry level mariners became apparent, the NY City Board of Education responded with the opening of the Metropolitan Vocational High School for Boys in Manhattan and aboard a laid up ferry which after the war was replaced by the victory ship *John W. Brown*. This high school graduated more than 5,200 students into commercial deck, engine and steward departments until it was shuttered in 1985 due a declining US merchant fleet.

Maritime stakeholders continue to predict dire shortages of qualified mariners in the not-too-distant future. U.S. Maritime Administrator Paul "Chip" Jaenichen recently said that the United States will need '70,000 new people' for the nation's maritime fleet by 2022. While maritime training for officers still continues in a robust fashion at the nation's (six state and one federal) academies, as well as at schools such as the MITAGS-PMI sponsored Workboat Academy, the task of increasing the level of awareness about maritime careers to middle and high students has lagged. Beyond this, the continued lack of representation on the waterfront from minorities and women has long been an issue; one which many schools and organizations are trying to solve.

Foundations

In 2001, industry leaders came together at a MARAD sponsored conference to discuss an aging workforce that did not show promising signs of renewing itself with the skills and in adequate numbers that the 21st century would require. That call was heard by the existing Maritime colleges, which began to expand and diversify programs and include new training as required by the IMO and the increasing sophistication of ships, tugboats and offshore infrastructure.

That call was also heard by Primary and Secondary (K-12) education stakeholders which realized that a maritime education offered a good pathway for urban students to not only get out of the city, but also into a rewarding post-secondary maritime education and career path. But, not if they hadn't before ever seen a ship or been introduced to the possibility that a maritime career was even a remote possibility. The need to bring an awareness of maritime career possibilities into the lower grades had never been more acute. That metric persists today.

Educational Collaboration

Schools in New York, Philadelphia and San Diego opened independently of one another. At first, these schools were arguably 'maritime' in name only, but recognizing that by working together and sharing best practices, these schools hoped to develop more quickly and spread the message. Momentum did build, and working with the Ship Operations Cooperative Program (SOCP), MARAD, industry and academic partners, a conference was created in 2008. Hosted at MITAGS and attended by more than 200 stakeholders, this event caught the attention of Congress; in particular Congressman Elijah Cummings (D-MD). The then-Coast Guard and Maritime subcommittee chairman eventually held hearings on the need for more schools and entry level mariners. By then, six maritime and marine schools were in operation.

Fast forward to 2015 and a second conference was sponsored by State University of New York, North American Marine Environmental Protection Association (NAMEPA) and SOCP with the purpose of bringing together K-12 schools – now numbering 56 – with post- secondary educators and marine employers. The process of urban education is not an easy one, with a raft of socioeconomic issues coming into play before the education process can even begin. And before that could happen, it was necessary to develop a focused, unified curriculum with which to get to the next step.

That curriculum is now here. It challenges students, increases their academic curiosity and develops the core characteristics necessary for a life at sea to begin – and to succeed. And, the metrics show that it is working. According to Dr. Art Sulzer, Founder of no less than four charter schools, including the Philadelphia-based Maritime Academy Charter School, a three-year case study conducted through the University Of Pennsylvania Graduate School of Education – *Maritime Tactile Education for Urban Secondary Education Students* – showed increased student attendance, academic development and markedly improved graduation rates at six maritime and public high schools located in Philadelphia, PA and Toledo, OH.

Today's Maritime Academy Charter School, now enrolling grades 2-12, has a total enrollment of 816 students, of which 281 are enrolled in grades 9 through 12. Beyond this, 49% of all students are female and 52% are identified as being Black, Hispanic and/or Asian in heritage. Sulzer adds emphatically, "The K-12 schools have stepped up and produced motivated and educated students. Post-secondary institutions and employers need to do the same and bring these young people into the mix."

By the Numbers

From 2008 to 2016, the number of K-12 maritime oriented schools in the United States grew from just six, located in four states to 56 spread throughout 16 states. Beyond this, the student population at those schools grew collectively from 1,600 to more than 12,000. Examination of K-12 Maritime Education Statistics based on a 2012 University of Pennsylvania School of Education Case Study conducted by Dr. Sulzer revealed even more encouraging data:

Selected Statistics:
Toledo, Philadelphia Maritime & Public Schools

	Maritime Schools			Public Schools		
	Toledo	Philadelphia	AVG	Toledo	Philadelphia	AVG
Graduation Rate (1)	96%	88%	92%	84%	56%	70%
Test Averages (2)	68%	38%	53%	56%	29%	43%
Attendance (3)	96%	96%	96%	94%	81%	88%
Discipline Issues (4)	20	20	20	108	38	73

Notes:

1.) Based on attending 4 years of high school
2.) % Proficient (state tests / "No Child Left Behind")
3.) Based on the state required number of dates of attendance
4.) Expulsions and Suspensions (per year)

Ladders to Opportunity: Educators and Industry Step up to Assist

The various state maritime academies have been training young men and women to go to sea as officers for generations, tracing their roots back to the 19th century. That said; their populations have been largely homogeneous, with the first women graduating from SUNY Maritime in 1974. The institutions have tried to change their demographics of underserved populations and have made limited progress. RADM Francis McDonald, a 1985 graduate of the Massachusetts Maritime Academy and now its President, has made one his primary goals the introduction of more diversity on his Buzzards Bay campus.

At SUNY Maritime, leadership recognized that more effort was needed to recruit, retain and graduate underrepresented populations of students. In 2013, the college formed a working partnership with the New York Harbor School and the Maritime Academy Charter School in Philadelphia. This evolving relationship involves visits by staff and students between both institutions, the sharing of academic course material and the operation of a Maritime STEM summer camp. Other state maritime academies are starting to develop similar outreach program – the Massachusetts Maritime Academy, for example, runs a Maritime Leadership camp each summer.

Not every maritime career requires a four year academic degree. The growth of maritime programs at community colleges around the country has been steady, with that number now at 10 – and poised for even more growth. In Houston, San Jacinto Community College recently opened a $30 million dollar facility that specifically works with the city's five maritime-oriented high schools and the traditional high schools, as well.

Maritime museums have also begun to work more closely with neighborhood schools in order to understand the specific academic core requirements and tailor their programs accordingly. To that end, the Independence Seaport Museum in Philadelphia runs STEM classes weekly and has redesigned several exhibits to directly address academics in history, science and world commerce. The museum works closely with the Maritime Academy Charter School and maritime business leaders to promote its programs.

Likewise, tall ships have captured the American public's eye since OP SAIL 76. Currently, tall ships of one variety or another can be found in most of our major port cities. Now aware of the increasing number of maritime K-12 schools around the country, they have begun to introduce academics for their programs afloat and at sea, linking to common core academic requirements. In particular, the tall ship *Niagra* in Erie, PA offers two week programs that cater to maritime high schools around the country. In Wilmington, DE, the tall ship Kalmar Nyckel just completed a new training center, focused on K-12 education.

Industry Professional Organizations

Beginning in 2003, industry organizations such as SOCP, SNAME, the Sea Scouts and many others developed various programs and products to inform and interest youth in the sea and to consider a maritime/marine education and career. Dr. Sulzer serves on a National Committee of the Sea Scouts, and has worked to bring maritime/marine science awareness to this organization. Sulzer says, "A recent survey of Sea Scouts found that 25% had an interest in learning more about post-secondary maritime education and careers. That's the first time leadership ever asked that question."

And then, in 2008, as a result of the maritime education conference held at MITAGS, the Maritime for Primary and Sec-

> **"The K-12 schools have stepped up and produced motivated and educated students. Post-secondary institutions and employers need to do the same and bring these young people into the mix."**
>
> **– Dr. Art Sulzer, Founder of the Philadelphia-based Maritime Academy Charter School**

ondary Education Coalition (MPSEC) was formed. Led by a chairman and advisory board that works in concert to promote and assist maritime/marine science K-12 education around the country, the coalition is comprised of maritime associations, private and federal maritime industry employers, institutions of higher education, maritime museums, tall ships and K-12 maritime/marine science schools.

The organization's primary goal is to offer all students in America's urban cities the unique opportunity to explore the nation's rich maritime heritage through maritime education and to follow a path to high school graduation and a career in the maritime /marine community. Membership is free and open to all who want to promote maritime education.

Maritime Curriculum (at last)

Sponsored by SOCP, the coalition has developed curriculum entitled, "Introduction to Maritime and Marine Science Education and Careers," a 170-hour course. Suitable for grades 8-12, the curriculum was developed by maritime high school teachers, comes in 19 modules and more importantly, follows the scope and sequence format that the schools already employ. Its modules cover all facets of the industry afloat and ashore, as well as the education pathways to reach them. It is now available to purchase through the SOCP at **www.socp.us**.

Supporting all of that are numerous organizations that sponsor various hands-on student programs such as "Sea Perch" by the Office of Naval Research, "Building to Teach" by the Carpenters Union, and maritime youth programs such as the Sea Scouts, Sea Cadets. Professional organizations such as SNAME, NAMEPA, WISTA, and the Organization of Black Maritime Graduates are available for mentoring and school career presentations. The coalition aims with its new web site, hosted by SUNY Maritime College, to connect all of these with the schools that could benefit from their help. The effort is starting to yield fruit, but the job is anything but done.

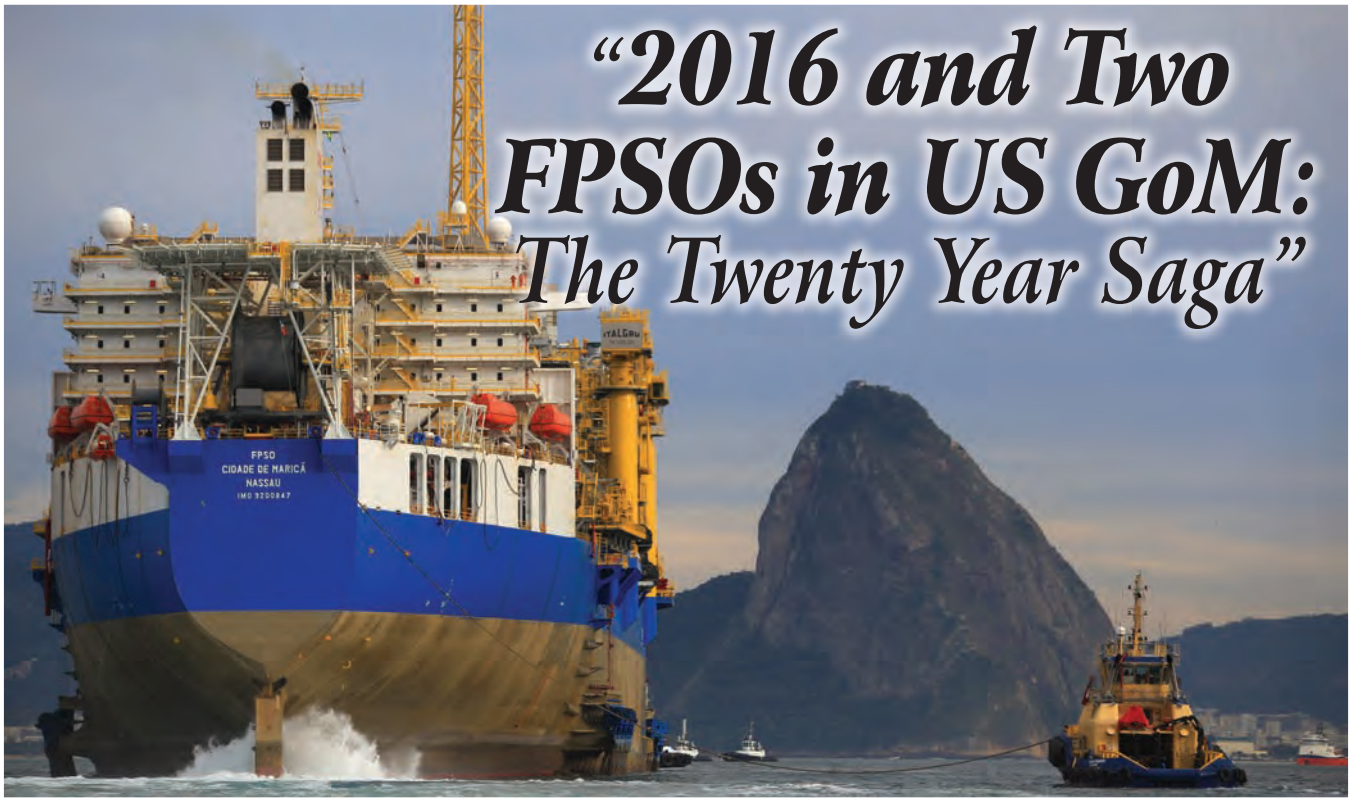
Progress and Issues: No time to take the foot off the gas …

Steady progress has been documented. Maritime students have risen to the challenge; many of these inner city schools post-graduation rates in the 90th percentile, as compared other urban schools which languish at graduation rates below 60%. Beyond this, students at the maritime/marine schools have also have also developed their academic proficiency to state requirements. Nevertheless, the socio- economic issues of inner city youth do not fade just because a student has risen to the top of their class. The issue of funding further education, as well as providing a smoother path to the next step – education and then gainful employment – remains largely unsolved.

With a true maritime curriculum in place, inner city students – and beyond – will now begin to advance to the point of that first entry level position or, in other situations, the college experience offered by the traditional maritime academies. But, the connection between K-12 experiences – now reaching maturity – has to be met by industry commitment to bring the job to fruition.

Firms such as K-Sea, Moran and McAllister have already stepped up to the plate. Others who want to get involved need only find a K-12 maritime school and connect with them by offering internships, scholarships, mentoring and employment. Post-secondary institutions – both academic and technical – need to follow suit and ensure that these students, once enrolled in their programs, have the support and financial resources to complete the program. The future of the North American maritime industry just might hang in the balance. **www.mpsecoalition.org**

"2016 and Two FPSOs in US GoM: The Twenty Year Saga"



Credit: Claudio Paschoa

Peter Lovie's Chronology of the FPSO's difficult struggle to viability in the U.S. Gulf of Mexico is a fascinating journey through time and the oil industry itself.

2016 saw the arrival of the second FPSO in the US Gulf of Mexico. Despite the long prominence of the US Gulf of Mexico in pioneering in the offshore world, FPSOs have been curiously slow in arriving despite being the most used floating production system in the rest of the world. Tracing what went on from securing regulatory approval in principle to be able to use FPSOs in GoM, through the unexpected events in the industry, changes in design criteria and the decision making that lead to where we are today with one FPSO in operation and a second about to start, both employing unique Jones Act shuttle tankers, is not an easy task. The story begins in 1996.

How did it all start?

The first FPSO anywhere in the world is usually taken to be Shell's Castellon FPSO offshore Spain that started operation in 1977. It was not until 1995-1996 that Texaco's Fuji prospect drew attention to the possible use of an FPSO in GoM, this for an unusual requirement in 1,700 feet of water – deep water in these days – and at a relatively remote location from pipelines.

In late 2001 the MMS Record of Decision stated that: "In 1996, OCS operators, as well as builders and operators of FPSO vessels, began having serious discussions with the MMS about the possibility of using FPSO systems in the Gulf of Mexico." It was the operators in US Gulf of Mexico (GoM) that took the initiative to open these discussions with the MMS which revealed that MMS would require an Environmental Impact Statement (EIS) before they would consider any application to use an FPSO for any specific field development in GoM.

An EIS had not been required for earlier facilities in deep water, and MMS did not see why they should undertake that effort for the industry at their cost. Potential operators wanted to be able to have the FPSO in their "toolbox" for immediate action without that EIS delay. Discussion led to DeepStar, enlisting the support of 60+ stakeholder organizations, stepping forward to act on behalf of the industry to both fund and support the preparation of an EIS. It ultimately took more than $3 million from the operators to get it done: $1 million of funding to MMS plus in excess of $2 million in expenditures incurred by operators.

The 793-page EIS was published by MMS in January 2001, followed by the US government's formal Record of Decision on 13 December 2001. MMS then announced it was ready to accept applications for the use of FPSOs in GOM in its press release on January 2, 2002.

Success in achieving acceptance of the EIS led to the question of what it would take to move forward with FPSOs in GoM. The common best guess that industry bandied around in 2002 was that there might be four to six FPSOs in GoM in the next ten years. Despite the willingness of the MMS to accept FPSO applications, no projects came forward until years later. Years later in sitting down to write this saga in 2016 and comparing notes with the father of the EIS (Allen Verret), Peter Lovie concluded that under the current post Macondo regulatory systems and climate, doing the EIS for FPSOs in 2016 would be virtually impossible.

With the EIS in place at the end of 2001 the stage was set at the start of 2002 for developing shuttle tanker business to support expected FPSO installations. These were the circumstances that led to two competing companies to propose shuttle tanker services for the US GoM market. Both faced the same ground rules – shuttle tankers in GoM had to be Jones Act compliant: US built, US crewed and 75+% US owned.

In 2000, a supermajor conducted an assessment on the use of FSOs to store crude oil production from expected nearby spars. A vigorous and protracted debate went on for months, weighing engineering and economic factors. It led eventually to abandoning the FSO idea.

Use of shuttle tankers follows naturally from the use of vessels requiring offloading, i.e. FSOs and FPSOs. With the EIS in place at the end of 2001 the stage was set at the start of 2002 for developing shuttle tanker business to support expected FPSO installations. These were the circumstances that led to two competing companies to propose shuttle tanker services for the US GoM market. Both faced the same ground rules – shuttle tankers in GoM had to be Jones Act compliant: US built, US crewed and 75+% US owned.

Tanker construction for the US was far more difficult than anywhere else in the world – fewer shipyards, slower delivery and about 2-1/2 times as costly than the industry was used to seeing in the Far East. The two shuttle tanker contenders chose different solutions to the same problem.

The first off the mark was Conoco's subsidiary Seahorse Shuttling & Technology LLC that chose to create a new DP2 design tailored to GoM conditions, to be built in a shipyard in Alabama with Korean input. Seahorse Shuttling was closely followed in the marketplace by American Shuttle Tankers LLC (AST), a 50:50 venture of Navion of Stavanger and Skaugen PetroTrans. The combination thus brought together local GoM experience with the best available in shuttle tanker expertise from the more harsh environment of the North Sea. The AST shuttle tankers would also be DP2, this time either an existing tanker design adapted to be a newbuild in a US yard, or would be a DP2 conversion of an existing product tanker of Handymax size.

By 2004, however, the need for FPSOs and hence shuttle tankers realistically became "Slim Pickens." Inquiries for shuttle tankers were few despite multiple deepwater developments out on the horizon. And, by 2005, there then was no shuttle tanker contractor in the business of proposing services for GoM.

The Hurricanes of 2005

Just as the shuttle tanker contractors had left the scene, along came Katrina and Rita to further complicate things. They were two of the worst hurricanes offshore in living memory: both in the same year, weeks apart. MMS counted 113 production platforms destroyed and 52 heavily damaged in these two hurricanes. A record number of Mobile Offshore Drilling Units (MODUs) set completely adrift. It dawned on operators that here was a collision hazard that had not been anticipated in their planning and design. No one could ever knowingly take that kind of risk – a small probability but a risk with horrendously large consequences. The regulators did not come up with this requirement: once again it was the operators that took the lead. Despite all the bad press attributed to big oil, this was the oil companies acting responsibly and doing so without any government decree.

Disconnection of an FPSO in GoM was a new phenomenon, not associated with traditional hurricane effects or standard regulatory requirements. Careful forecasting and disciplined integration with disconnection preparation became necessary. There was a minor side benefit in that it made it possible to more readily modify topsides if ever needed and do it dockside nearby rather than offshore with a permanently moored FPSO.

Macondo: it all hits the fan

The final competition for the first FPSO in US GoM ended up being a close race, with BW Offshore finally drawing ahead by a nose to win the contract to design, build and lease the first FPSO in the Gulf of Mexico, for a five year term with three one year options. Simultaneous with the FPSO bid competition the shuttle tanker competition opened up. In other parts of the world this bid process might not be so difficult but here in the US there was the Jones Act to contend with. Petrobras America did a remarkable job in sifting through the various offerings. Conversion of newbuild tankers ultimately won the day.

All looked fine for once. The Petrobras America team had successfully managed their way through the procurement and construction of the first FPSO in GoM and its pioneering progress through MMS and USCG regulatory approvals, even though it was for a world record breaking water depth. BW Offshore had

Credit: Teekay Corporation

completed the BW Pioneer FPSO in Singapore and sailed it to the Gulf of Mexico, arriving in late February of 2010.

Within days of the first FPSO arriving in GoM, the Macondo disaster happened. Everything shut down. Looking back, it is difficult to imagine more things going wrong on the arrival of the first FPSO in GoM, and yet the FPSO team at Petrobras America managed its way through it all.

Then came an upheaval in the regulatory regime: MMS was dismantled by the Obama Administration in reaction to Macondo, replaced with a new regulatory structure. Past processes that were underway with Cascade/Chinook became subject to reexamination and change. With Washington paranoia in the air, the regulatory climate became more difficult for the Petrobras America team to deal with as operator. Along the way, they were managing the shift from project to steady operation. Their team deserves recognition for their achievement in overcoming all obstacles.

2012: Recovery and first oil

At long last, production operations did start in the US GoM. 25 February 2012 was a day of celebration: first oil. Since then more than 81 offloadings have occurred. On 24 April 2012 Shell filed its Deep Water Operational Plan (DWOP) with BSEE for the Stones development about 200 miles from New Orleans, for an FPSO as host in Walker Ridge 551. Then in 2013 Shell announced its firm commitment for the design, construction and operation of an FPSO under a lease contract with SBM for their Stones development in a record 9,500 ft. water depth. This became the second FPSO in the US GoM.

2013 also saw a Shell commitment with OSG for a time charter for the third shuttle tanker for offloading operations in US GoM: the OSG Tampa, a Handymax size of products tanker delivered from Aker Philadelphia in 2011, converted in 2014 in Poland to shuttle tanker configuration.

The outlook for more FPSOs in GoM

Why have FPSOs taken so long in GoM? There are some fundamental differences in the GoM from the rest of the world. One of these is geography: GoM has a flat alluvial plain going out a hundred plus miles, making it simple and cost efficient to lay pipelines out to where production platforms are located, unlike (say) the Norwegian Trench that helped prompt development of shuttle tankers in the Norwegian North Sea.

US oil and gas domestic production has been in great demand for US domestic consumption. Until the very end of 2015 it was even against US law to export oil from GoM to other countries. Consequently there was no incentive to think of storing and sending the oil outside the country. Only recently in a very few particularly remote and deep waters in GoM has necessity overridden other production and delivery solutions to make FPSOs the ultimate choice.

In December 2015 legislation was signed into law to allow export of crude oil from the US. One of the questions that used to be asked was “Can we export the production from an FPSO to somewhere that is outside the US? The answer hitherto had to be NO. Now it would seem there is no reason why an FPSO in US GoM could not – in theory – offload to a foreign flag export tanker and send the oil outside the country, conceivably with good financial advantage. Longer cycle times could be a drawback and with shuttle tankers already on charter, there may be little incentive to try foreign tonnage. So it sounds academic at this point in market history but does offer a new option to Petrobras or Shell for their GoM developments.

Shuttle tankers remain a difficult solution for GoM, living with the Jones Act, despite advances elsewhere in the world that do not have these constraints and additionally benefit from a larger scale of operations to justify optimizing what might be possible with tanker export. In 2016, the prospects look doubly remote when considering the need for securing an outlook of several years at reasonably stable and favorable oil prices to justify a commitment for a third FPSO in GoM that may be measured in the billions of dollars.

The saga of FPSOs in GoM has taken a lot of energy and enthusiasm over the years but realism does seem to have set in – there may be little chance of another BW Pioneer or Turritella sailing into the GoM in the next decade.

Software Solutions & Remote Monitoring Solutions

Amidst a challenging global financial climate for operators in most sectors, and further accentuated by the increasingly onerous regulatory hammer being applied by the IMO, U.S. Coast Guard and individual flag states, vessel operators and maritime stakeholders everywhere are looking for ways to optimize and streamline their operations. The end-goal is more efficient, leaner and more profitable shipping, port and maritime operations. The vehicle to get there certainly includes technology and software.

Historically slow to answer the technology bell, the maritime industry is finally fully on board with high-tech future of the global waterfront. Call it whatever you want: big data, remote monitoring, enterprise suites, and a host of other acronyms. In this edition, Maritime Professional looks at the very best of the software suites being used in the maritime industry today. And, we ask, which one is right for you?

ABS Nautical Systems

16855 Northchase Drive, Houston, TX 77060
Website: www.abs-ns.com
Employees: > 3,700
Technical Director: Howard Fireman
Description: Maritime ERP for Compliance, Asset & Workforce management
Method of Delivery: Cloud & local server: Both
Operating System Required: MS Windows
Required Database: MS SQL or MySQL

The Software and its Value:
ABS Nautical Systems (NS) has been developing software solutions for more than 30 years. Software designs reflect a deep understanding of the market. Ship owners and ABS experts collaborate to ensure that software meets customer needs and reflects leading edge technology for compliance, safety and asset management. The NS Fleet Management solution is a fully integrated marine ERP system covering every aspect of marine operations. With software designed around standard

ABS 6.4 My Workspace

ABS NS: Howard Fireman

marine documents and processes, users efficiently improve vessel operations by focusing on key business drivers in asset management, compliance and workforce processes. The depth of this integration is reflected in the simplicity of single entry of information at the most appropriate point in the operational workflow. Minimizing the burden on crew, while optimizing the quality of ship and vendor data, NS provides for clear decision making and operational optimization. Training for on board users spans one day; for office personnel; three days.

Biggest Success:
A 30 year growth path from a from a point solution for maintenance to a fully integrated Marine ERP solution; developing software that has evolved with the marketplace, technology and clients.

Baker Lyman

5250 Veterans Memorial Blvd, Metairie, LA 70006
Website: www.bakerlyman.com
Employees: 12
Technical Director: Mike Serafin
Description: Vessel Record Keeping System, meeting Sub M requirements
Database System: SQL Express on board / SQL Server for office
Delivery: Standalone Vessel Installation, Office Installed Server. Vessel/office Communications via data transfer email (cellular, satellite, or wifi).
Operating System: Windows 7 or later

The Software and its Value:
Baker Lyman Corsair's electronic Vessel Record Keeping software consolidates recordkeeping into one location, accessible from the web. Corsair is configurable to match your Safety Management System, using a vessel interface of check boxes, buttons, and drop down entries, for all

Baker Lyman crew hitch scheduling

Baker Lyman: Mike Serafin

ClassNK: Mitsuhiko Kidogawa

Danaos: Dimitris Theodossiou

Sub M requirements, minimizing typing. Color coded menus identify non-completed items. Deferred items are automatically tracked and rescheduled. Corsair includes electronic log keeping, including Navigation, Safety, and Preventative Maintenance. A full Audit Control system generates and tracks Deficiencies and Non-Conformities. Crew Management includes tracking of all crew documentation, graphic crew scheduling, time sheets, payroll reporting, work and rest time tracking, training schedules and training including expiration dates – all configurable to match your training system. The equipment section maintains specifications for all equipment, and schedules and records all maintenance items, critical and non-critical. With multiple reporting options, data can be imported from Excel spreadsheets. Reports are printable or exportable in Word, Excel, or PDF.
Latest Upgrade: V 2.0.5.2

ClassNK

1-8-5 Ohnodai, Midori-ku, Chiba, 267-0056 JAPAN
Website: www.classnk.com
Employees: ~ 1,600
Technical Director: Mitsuhiko Kidogawa
Description: A maritime solution for secure storage of SCF documents
Annual Sales: Sales Commence July 2016
Method of Delivery: Cloud / local server
Operating System: Windows 7 / Internet Explorer 11

The Software and its Value:
ClassNK Archive Center is the maritime industry's first solution for the secure storage of Ship Construction File (SCF) drawings and documents compliant with the IMO goal-based standards (GBS) and related services. It can be used as a platform to store various ship drawings or documentation for any vessel, as a platform to store the GBS-SCF as well as other drawings and documentation for all ship classes and simplifies the storage of these important files by offering a paperless, user-friendly way to manage drawings. Rather than sifting through multiple files manually, information can be quickly and easily found using the Archive Center's search function. It also enables effective communication between shipbuilders, shipowners and ship management companies by bringing them all under one umbrella and providing a central terminal through which files can be exchanged. The software comes with 24/7 support for users around the globe. The user-friendly system requires only basic software skills.

Biggest Success:
The ClassNK Archive Center is the maritime industry's first platform that fully incorporates all requirements of SCF industry standards while ensuring user friendliness and fulfilling other user demands.

ClassNK HQ

DANAOS

14 Akti Kondyli Street, 18545 Piraeus, Greece
Website: www.danaos.gr
Employees: 100+
Technical Director: Dimitris Theodossiou
Description: Danaos Web Enterprise Suite (Financial, Commercial, Ship Management) & WAVES Fleet Performance Management
Annual Sales (licenses / Seats Per License):
500 on 5,000 ships, unlimited users
Database System: Oracle DB or MS SQL
Delivery: Cloud and On-premise installations
Operating System: Any browser

The Software and its Value:
The Danaos Web Enterprise Suite is an integrated maritime software suite that provides security, agility, scalability, interconnectivity, tailor-made to the needs of the client. The Maritime ERP Suite can be integrated into all daily functions of any shipping company. Provided as a web-enabled system, Danaos facilitates secure and reliable interconnectivity between offices and vessels, through any satellite system. All modules are designed to offer the same User Interface and process information between departments. The integration between the modules can be progres-

Danaos Campus

sive to support initial stages, offering the potential to activate the system progressively, according to requirements. WAVES is a maritime Fleet Performance System and maritime data analytics platform that aggregates and analyzes data gathered from multiple sources with the ulterior view to create a true competitive advantage. WAVES integrates existing Big Data and corporate systems (even non Danaos) with any information on the cloud. The average training requirement is about 5 days.

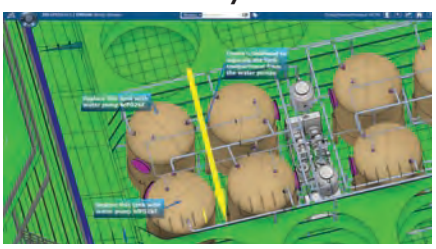
Biggest Success:
Users include KOTC, SCI, Dry Ships, Schiffahrt.

Dassault Systèmes

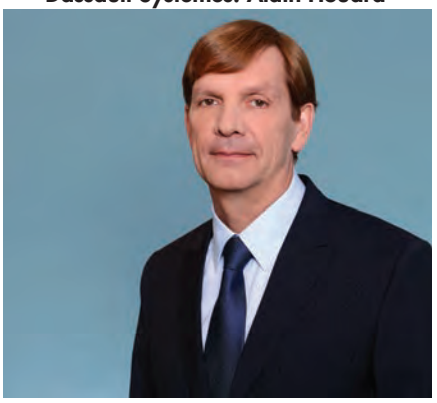
175 Wyman St, Waltham, MA 02451
Website: http://www.3ds.com/
Employees: 13,345
Technical Director: Alain Houard, Vice President of Marine & Offshore
Description: 3D design, simulation and manufacturing preparation
Annual Sales: proprietary
Delivery: Cloud and local server

The Software and its Value:
Dassault Systèmes provides Industry Solution Experiences specifically designed for the Marine and Offshore industry based on the 3DEXPERIENCE platform. The business platform connects every organization to help create differentiating consumer experiences. 'Designed For Sea' allows multi-discipline engineering teams evaluate and validate design options in real time through advanced 3D simulation and analysis to ensure design integrity, high quality, and manufacturability. 'On Time To Sea' is an integrated program management environment to coordinate a shipyard's supply chain,

Dassault-Systèmes



Dassault Systèmes: Alain Houard



effectively plan, manage, and monitor activities to ensure smooth execution and timely, on-budget delivery. 'Optimized Production For Sea' enables shipyards to perform manufacturing assembly definition, discipline-specific work preparation, process planning, interactive 3D work instructions, as well as 3D simulation and validation of manufacturing plans to help optimize production. Streamlining production plans, saving considerable work hours and reducing cost, it also improves production quality based on tight integration between design and manufacturing via 3DEXPERIENCE platform.

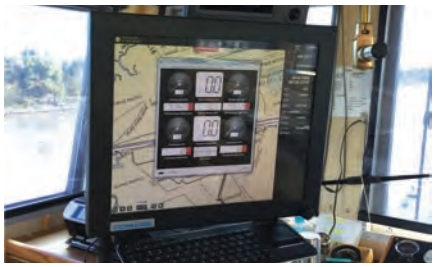
Biggest Success:
Long time customers Meyer Werft, DCNS, and IASC classification society Bureau Veritas have all recently adopted Dassault Systèmes modules for the purpose of streamlining, improving and optimizing their business models.

Floscan

3016 N.E. Blakeley Street, Seattle, Washington 98105
Website: www.floscan.com
Employees: 45
Technical Director: Joe Dydasco
Description: Diesel Fuel Monitoring Systems for Inland River Fuel Tax Compliance
Delivery: Cloud and local server
Operating System: Windows 7 or higher

The Software and its Value:
Fuel monitoring is a key element in running an efficient fleet. FloScan offers cost-effective solutions at a fraction of the competition's cost. FloNET DataLog Systems monitor, record and transmit fuel flow and

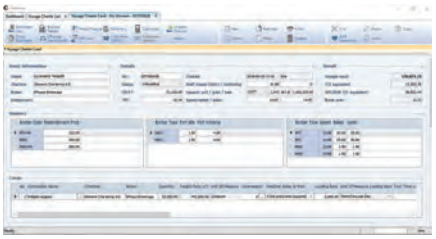
Floscan DataLog



vessel data from ship-to-shore via internet connection. This permits operators to manage fuel inventories more efficiently, monitor vessel location and movement. In addition, DataLog with the NEW TaxLog feature provides an automated solution to computing propulsion fuel burned in taxable zones with its proprietary Geo-Fencing feature. All 27 taxable river zones that apply to the Inland Waterways Revenue Act have been mapped and are installed when the software is loaded on the vessel's PC. DataLog automatically begins recording fuel consumed by the engines upon entering taxable zones and stops upon exiting. It does this in one minute intervals and is displayed with the corresponding vessel position so accuracy is assured. The average training requirement for users is 1-2 days.

Biggest Success:
Enterprise Marine Services based in Houma, Louisiana is currently outfitting their fleet of 64 inland river pushboats with the FloNET DataLog System. Over 32 vessels have been fitted to date and Enterprise is using the equipment to improve vessel fuel efficiency and to monitor fuel consumption in taxable zones.

Glomaris UI - Voyage charter card



Glomaris

Firskovvej 36, 1. DK-2800 Lyngby Denmark
Website: www.glomaris.com
Employees: 30
Technical Director: Niels Ammendrup
Description: Voyage Management Solution
Annual Sales (licenses / Seats Per License): 75/5
Delivery: cloud and local server
Operating System Required: Windows / IOS

The Software and its Value:
This product offers full access to chartering, operations, vessel monitoring, advanced routing and passage planning, control and finance, all in one strong solution. There is no upfront investment, customers 'pay-as-you-go' via a low monthly payment per user. Glomaris is strong commercial shipping software that provides seamless integration to DA-Desk, Q88, Baltic99, MarineTraffic, Microsoft Dynamics NAV and more. The user friendly system requires but 1-2 days of training for new users. The latest upgrade to the software is Glomaris 1.3. The software runs on and uses a Microsoft SQL Server /Azure SQL.

Biggest Success:
Glomaris today has more than 120 users (customers) in the tanker/bulk operator trades.

Glomaris
GLOBAL MARITIME INFORMATION SUITE

Helm: Shawn Deleurme

Helm Operations

400- 1208 Wharf Street, Victoria
Website: www.helmoperations.com
Employees: 50
Technical Director: Shawn Deleurme
Description: Maintenance and Compliance
Annual Sales: 40+ companies on Helm CONNECT – we charge by vessel.
Database System: Microsoft SQL Server 2012, Microsoft SQL CE
Method of Delivery: Cloud & local server
Operating System: Windows 2012. , Client: OSX 10.7, Linux, Windows 7++

The Software and its Value: Helm CONNECT Compliance targets the requirements of Subchapter M, ISM, RCP, TMSA and more. Anyone adopting Helm as a safety management solution will be fully compliant under these new regulations. This package includes Audits, Forms, Corrective Actions, and Documents. Audits creates internal audit checklists, schedules audit for either in office or onboard, documents and manages each finding and corrective actions, and completes the audit while maintaining historical data. Forms creates and maintains electronic versions of paper forms. The user then controls which forms are published and create approval gateways, ensuring best practices are followed. Corrective Actions is a management app, which gives the ability to track, delegate, complete and approve corrective actions stemming from Forms and Audits. Documents uploads PDF versions of policies and manuals and publishes those documents, maintaining control of which documents and versions vessels have access to. Crewmembers require just 15-30 minutes to learn and use Helm CONNECT.

Biggest Success:
Helm CONNECT is so intuitive to use that customers are referring other companies to us. Our current customers are one of our largest lead generators.

HydroComp, Inc.

13 Jenkins Court, Suite 200, Durham, NH 03824
Website: www.hydrocompinc.com
Number of Employees: 8
Technical Director: Donald MacPherson
Description: Hydrodynamics; Design & analysis; Ship resistance and propulsion; Propeller design
Annual Sales (licenses): 50
Delivery: Local server
Operating System: Windows

The Software & its Value:
The HydroComp software brand is comprised of naval architectural design tools that meet strict criteria: Our prediction tools and propulsor geometry modelers must be accurate. Companies will spend significant sums on structure (hull forms or appendages) and equipment (such as engines or propellers) that depend on the

HydroComp: DonMacPherson

prediction accuracy of the tools. A systematic development and validation process insures program reliability. The software must fit into a corporate setting, where users are confident in the outcome of the tools. User feedback from an international family of software customers that crosses many disciplines helps guide interface design and program operation. HydroComp products are tools for professionals, they must be practical and readily usable by practicing naval architects. End-user technical support and training classes, supported by Hydrocomp's active consulting practice contributes to the fidelity of the software. HydroComp's expert staff are the software's most critical users.

Biggest Success:
Industry acceptance and market share for NavCad, the tool for resistance and propulsion. Used by over 600 industry professionals, it s part of the curriculum in more than 50 universities and academies.

Krill Systems

175 Parfitt Way SW, Bainbridge Island, WA 98110
Website: www.krillsystems.com
Employees: 6
Technical Director: Casey Cox
Description: Vessel Fuel Management Systems
Annual Sales: $2M - $5M
Database System: Microsoft
Delivery: Cloud and local server
Operating System: Windows 7/8/10

The Software and its Value:
Krill addresses the robust marine industry demand for complete, turn-key systems by

Krill Bunkering Screenshot

becoming a 'system integrator' with the ability to supply a broad selection of fuel flow meters and other accessory components to meet client requirements. Today, Krill supplies Coriolis fuel flow meters from Emerson Micro-Motion, Endress+Hauser and ABB; Volume meters from Kral, Pro Flow Dynamics and others, selecting the best meters to meet each requirement. Krill provides solutions that accurately measure and report Bunker fuel on vessels and measurement of bunker flow at on-shore facilities. Krill also developed a 'Dual Bunkering' system that provides simultaneous measurement and display of bunkers at different oil density levels. More recent developments include a custom software system to measure LNG/LPG, liquid/gas transfers. This is anticipated to become a major requirement in the near future. Krill optimizes fuel consumption by delivering accurate measurement data of vessel fuel consumption, in real time, to managers.

Biggest Success:
A Fisheries Research Vessel Fleet installation. Current Projects include a NOAA Vessel Operations Center (VOC)

Logimatic

Logimatic

Sofiendalsvej 5B, 9200 Aalborg, Denmark
Website: www.sertica.com
Employees: 116
Director: Michael Paarup
Description: Maintenance, fleet management, procurement &HSQE
Database System: Microsoft SQL Server 2008R2
Method of Delivery: Local server
Operating System: Microsoft Windows 7

The Software and its Value: Sertica is one modern single integrated client/server system encompassing all standard maritime industry business processes in areas including but not limited to safety/HSQE, operations, procurement and technical. The software is built for and together with the maritime industry and proven through years with a strong portfolio of customers operating vessels world-wide, also including offshore operations and support. Sertica supports the entire flow from initial data entry at the vessel, technical supervision, vessel performance optimization, procurement management and the related logistics, electronic invoicing, auto-matching, approval and payment, gives full transparency through the entire flow including the possibility for high level KPI and subsequent data drill downs. The software is additionally capable of replacing and eliminating numerous other systems, streamlining data interaction between functional modules in an easy-to-access user interface. Beyond this, it provides a standard integration engine for the finance (ERP) system, making business processes automatic, efficient and cost

optimized. No special training is required.

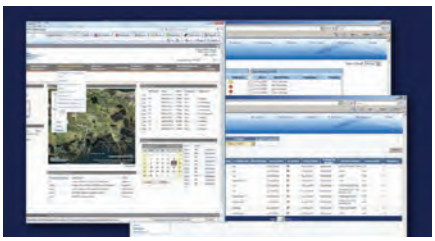
Biggest Success:
The latest upgrade brings Sertica to version 5.3.15

MarineCFO

1340 W. Tunnel Blvd, Suite 400, Houma, LA 70360
Website: www.marinecfo.com
Employees: 20
Technical Director: Dean C. Shoultz
Description: Workboat Fleet Optimization, Maritime Predictive Analysis, Marine Conditional Based Maintenance (CBM), Maritime Enterprise Resource Planning (ERP)
Annual Sales (licenses): 300+
Database: Microsoft SQL Server
Delivery: Cloud / Local Server / Hosted / Hybrid
Operating System: Windows 8

The Software and its Value: MarineCFO's core framework allows clients to customize features to their unique operational footprint. The MarineCFO model is built on ease of use, dependability, flexibility, affordability, and service. Vessel 365 enables efficient onboard workflow through simplified data collection processes minimizing data entry, increasing productivity through specific, repetitive tasking, and requiring minimal training. MarineCFO's proprietary vessel/shore replication code ensures timely and complete logs, reports, checklists, tasks, notifications, and document management flow seamlessly between crew and office personnel. MarineCFO Enterprise, a true maritime Enterprise Resource Planning system, combines the flexibilities of accounting, operational, safety, personnel, and asset management functions with Marine Conditional Based Maintenance, enabling a high degree of confident decision making. MarineCFO clients achieve budgetary

MarineCFO



MarineCFO: Dean C. Shoultz

goals through unrealized savings, diminishing operational expenses, and reoccurring ROI. The centerpiece of MarineCFO's reputation is the value of client service. The average training requirement for most users is 1-2 hours. System Administrators can learn the system in 4-6 hours.

Biggest Success:
The transition from a software provider to a marine industry recognized trusted technology partner which enabled the development of a SubChapter M Vessel 365 solution and groundbreaking Marine Predictive Analytics & Conditional Based Maintenance solutions.

Nobeltec

15242 NW Greenbrier Pkwy, Beaverton, OR 97006
Website: www.coastalmonitoring.com
Employees: 30
Technical Director: Iker Pryszo
Method of Delivery: local server
Annual Sales (licenses): 55 installations worldwide

The Software and its Value:
Nobeltec is enables surveillance and monitoring of Oil platforms, ports and harbors, fish farms, marine protected areas, wind farms, bridge/dam construc-

Nobeltec automatic or manual tracking

tion, military sites, submarine cable areas and many more. The software provides Coastal Monitoring and AIS/ARPA Target Tracking that automatically acquires and tracks up to 200 ARPA/1000 AIS targets. Completely customizable for both visual and audio alarms, it has an automatic or manual tracking feature when using the camera integration feature. Nobeltec records and replays up to one month of data (targets, video and audio) with unlimited archiving, and the software displays weather and weather forecasts that evolve over time. These features add up to a powerful tool which meets and monitors threats that include Illegal fishing, piracy or terrorism, collisions and allisions, search and rescue operations, optimization of port infrastructure and protecting marine protected areas. New users can be trained in one week or less.

Biggest Success:
At Bristol Port, VTW manages over 3000 vessels annually. The advantage in this case was that Bristol Port could find a cost effective solution with the possibility of further growth while maintaining the same system.

Oceaneering (PortVision)

11917 FM 529 4th Floor GDS, Houston, TX 77041
Website: www.oceaneering/data
Employees: 10,000
Technical Director: Robert Kessler
Description: AIS and asset tracking, Terminal Management, Marine Asset Protection
Annual Sales: $25 million
Database System: None (Software is SaaS)
Method of Delivery: Cloud

The Software and its Value:
PortVision 360, an AIS-based vessel tracking and maritime business intelligence software, includes comprehensive alerting, analytical reports, playback analysis, and group collaboration. The TerminalSmart Dock Management System provides full marine terminal management from scheduling through activity logging and KPI re-

Oceaneering PortVision 360

porting. Marine Asset Protection solutions increase safety, security, and reporting around vessels that are encroaching or threatening marine assets. PortVision GIS is now available specifically designed for GIS /Esri Platform users to add real-time vessel intelligence capabilities. Custom Solutions delivers customer-specific solutions to the most complex challenges in the energy and transportation sectors keeping assets, supplies, and operations moving smoothly, efficiently, and profitably. Remote Monitoring via AIS and additional sensor monitoring can be provided through Oceaneering tracking units (Iridium, VSAT). Web-based training is included for all users. Customized enterprise training programs are offered for enterprise deployment.

Orion Marine Concepts

Unit 302, 3rd Floor, Suncity Business Tower, Golf course Road, Sector 54, Gurgaon, Haryana, 122003, India

Website: www.orionmarineconcepts.com

Employees: 15

Technical Director: Capt. Mohit Sabharwal

Description: Integrated Vessel Management System

Annual Sales: (licenses): 450

Database System: SQL

Delivery: Cloud and local server

Operating System: Windows 7 & above

The Software and its Value:

IVMS consists of multiple modules including Inventory, Requisition and Procurement, Crew Management and Work Rest Hours, User Management and administration for Master data creation for all

Orion: Capt. Mohit Sabharwal

modules, Synchronizers; for ship, shore interface data transfer, VPRM – Vessel Performance Reporting and Monitoring, a Document management system and Q-strata. The Data Management function organizes all Sea and Port reports, including consumption data, performance, voyage reports, emission compliance data, and much, much more. Electronic Safety Management System provides for fleet alerts and circulars, Electronic Forms, Checklists and Permits to Work. Strata – Quality, Safety, Trends, Risks, Assessments, Timelines & Analysis – handles Inspections, Vetting, Superintendent and other similar functions, as well as Incident Reporting, Dry Dock planning & performance, Shipping Major and Key Performance Indicators, Port State Control inspections, Budgets and OPEX, Incidents and Fleet Benchmarking. As many as 450 on board metrics can be monitored. The average training requirement for users is 15 days.

Softcom Solutions UK

2 - 4 Archway Close, London, N19 3TD, United Kingdom

Website: www.softcomsolutions.com

Employees: 20

CEO: David Marais

Description: Ship broking (Dry & Tanker Chartering, S&P, and post-fixture)

Annual Sales: 27 clients / 1200+ users

Database System: Microsoft SQL 2008, 2012 or 2014

Delivery: local servers or cloud-hosted

Operating System: Windows 2008 for services / Windows 7 for client applications

Softcom Solutions: David Marais

The Software and its Value:

Softcom Solutions supplies fully integrated ship broking, post-fixture and email trading platforms and offers an on-site automatic position and cargo scanner. This Microsoft partner offers scalable and fully managed cloud-hosted solutions for SME's, to on-site installations for larger clients. Softcom Solutions offers a broad range of products which integrate seamlessly throughout from pre-fixture through to post-fixture and e-mail, allowing clients to focus on commercial business activities as opposed to maintaining data between multiple solutions from different providers. The scanner automatically parses all incoming e-mails for positions and cargo orders and saves them to a searchable vessel database. A myriad of reporting tools generate emails, spreadsheets and reports. The broking post-fixture solution tracks fixtures and commissions, offers built-in invoice generation, as well as integration to third-party accounting packages. New clients seamlessly switch to the platform through an automated data conversion from their existing platform. Softcom furthers provides on-site training.

Biggest Success:

Developing the industry's only on-site position and cargo scanner which has radically reduced the need for manual entry of data which is financially expensive, monotonous, time consuming, and prone to human error. In March 2016, the scanner service processed over 250,000 positions and cargo orders from 4.5 million emails - freeing up over 2000 man-hours.

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19	Blount Boats Inc	www.blountboats.com	(401) 245-9300
23	Boll Filter Corporation	www.bollfilter.com	(284) 773-8200
43	Future Care, Inc	www.futurecareinc.com	(212) 207-3590
5	Great American Insurance Group	www.GreatAmericanOcean.com	(212) 510-0135
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