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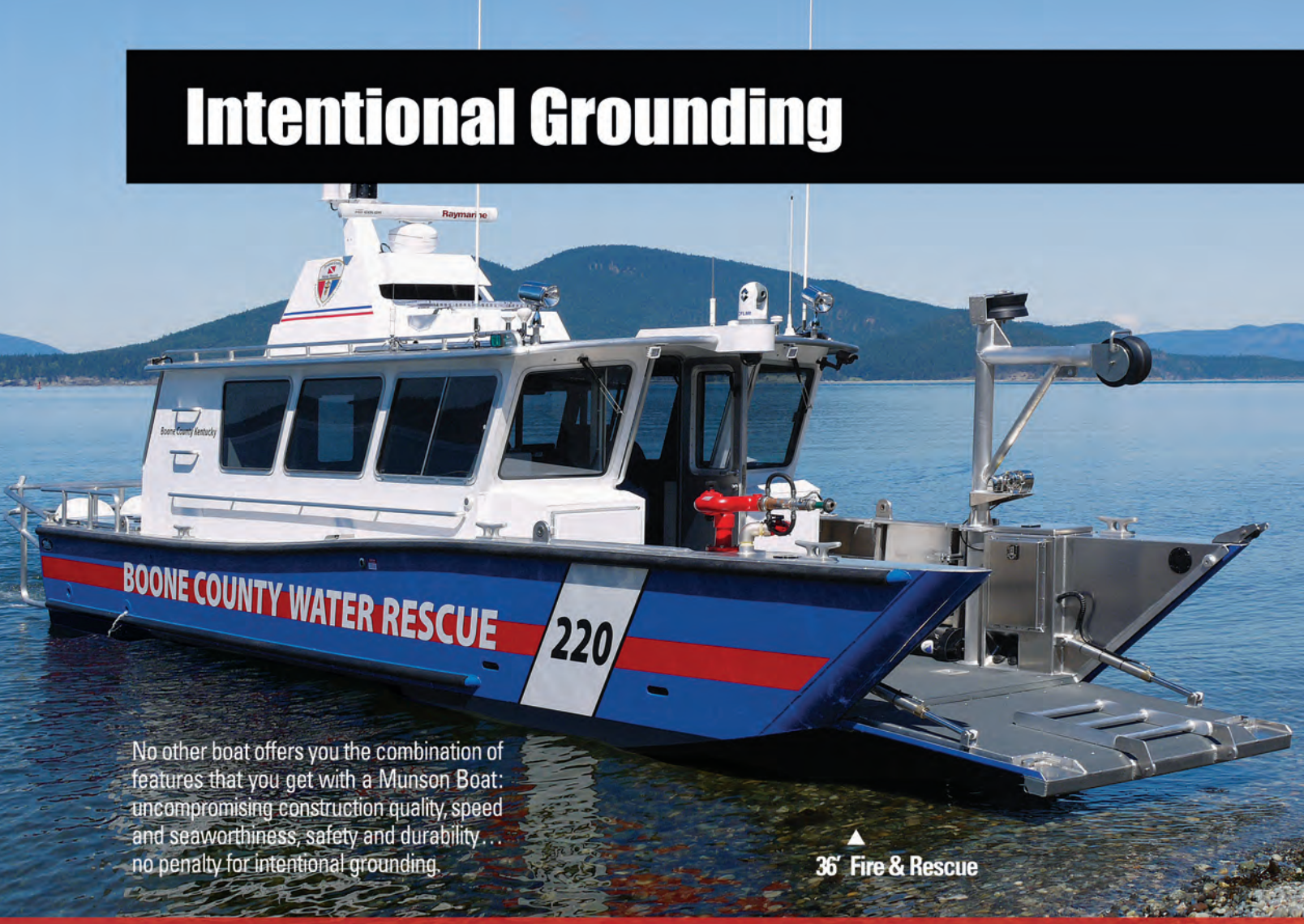

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On the Cover

26 Expanding Rules for Marine Ops

Serious offshore incidents in recent years have compelled both the federal government and the oil and gas industry to make commitments to environmentally sustainable practices and safety. SEMS regulations are a big part of that effort. The story begins on page 26.

Photo: courtesy of Bureau Veritas.

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It was way back in 1984 (before marine monitoring was cool, I assure you) that I found myself returning to my aging coastwise chemical tanker after a much needed 75-day vacation period. At the time, I was Second Mate on the steam tanker (more historical background) *David D. Irwin* and so, I first wandered up to the bridge to find out what kind of mess my opposite number had left me, even as he scurried down the gangway like a rat off a sinking ship. Back then, the Notice to Mariners came in paper form and no, they didn't download automatically onto the ECDIS chart overlay.

In any event, and as I morosely surveyed the six-inch stack of chart corrections awaiting my attention, I also noted the surprisingly cool and dry air being pumped out of the air conditioning system. When I had last departed the vessel, one of my most important (but unofficial) duties had been to go down two flights of stairs during the mid-watch to reset the A/C unit breaker, which seemingly failed at least six times per day. I remarked brightly to the Master upon my first opportunity, "Hey, really nice of the company to upgrade the A/C system for us!" After a pregnant pause and a deep draw on his filterless cigarette (it was 1984, after all), he exhaled and replied dryly, "Mr. Keefe; that A/C has nothing to do with you or me. The Radars keep overheating. Don't overreach here."

And, so it was that I learned that HVAC was an important component aboard every merchant vessel, albeit not for the reasons I might have thought. Today – with the MLC Code and seafarers who actually have choices – HVAC does have something to do with them. And, it has a lot to do with the equipment, as well. In the highly competitive world of offshore oil & gas, the equipment that ensures both comfort and operational readiness is everything. Starting on page 42 of this edition, you'll learn why.

Our offshore Annual edition also contains a plethora of information on equipment, operations and risk management for what arguably has once again become the backbone of the U.S. merchant fleet and the very engine driving the fat backlogs of today's domestic shipyards. This month, we've got it covered from A to Z. That said; no less important for those same shipbuilders is the national security aspect of the Coast Guard's ongoing Offshore Patrol Cutter (OPC) drama. The sweepstakes – notwithstanding protests by two other builders – have been narrowed to three finalists, each honing their designs to make the cut. This month, Susan Buchanan handicaps the entire process for you.

Finally, but looming ever larger in the proverbial porthole are the first ever, but long-awaited ***MarineNews 100*** industry awards which will debut in our August edition. Designed to showcase the best in every category of the shallow draft, coastwise and brown water industry, you must apply to be considered. Click on **http://mn100.maritimemagazine.com** for full details.

Joseph Keefe, Editor, keefe@marinelink.com

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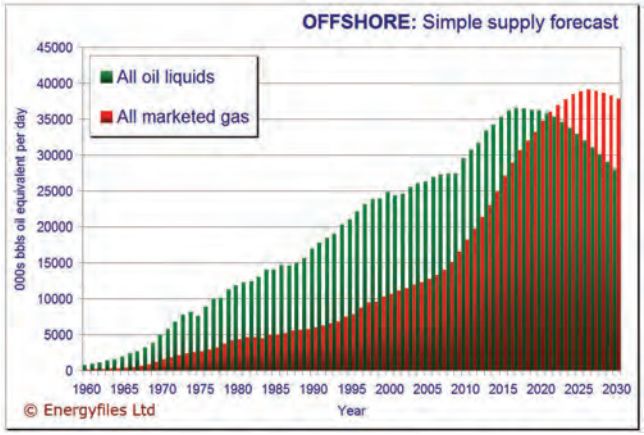
The Offshore Industry – Looking Back, Ahead and Under the Surface



In the rich and exciting history of offshore energy, the numbers and milestones are many and they describe both happy and less-than-auspicious events. Marked by innovation, it is also an industry defined by change – change in equipment, production sources and types and myriad other variables. Domestically, only 3 percent of offshore areas are currently leased for offshore production – the vast majority of these offshore properties remain off-limits by the U.S. federal government. All of it is important. If viewed purely ***By the Numbers***, the history of oil & gas might look something like this:

1869 – First "submarine drilling apparatus," patented, a fixed, working platform for drilling offshore to ~ 50 feet.

1897 – Wells drilled off piers in Summerland, Calif.

1905 – Oil discovered in the Caddo Pine Island field in Louisiana.

1921 – Halliburton patents "Method and Means for Cementing Oil Wells," a design that isolates the various down-hole zones, guards against collapse of casing.

1924 – First platform erected on Venezuela's Lake Maracaibo.

1928 – Patent to Louis Giliasso for submersible barge drilling unit, launching the era of mobile drilling.

1937 – First offshore oil platform in 14' of water one mile off the Louisiana shore (Creole –Superior/Pure).

1938 – First well drilled offshore Texas (Galveston Bay – Standard Oil).

1945 – First offshore U.S. lease sale.

1947 – Kermac 16 is credited as the first oil rig located "out-of-sight-of-land," 10 miles off Louisiana in 18' of water.

1953 – Congress passes the Outer Continental Shelf Lands and the Submerged Lands acts, settling the dispute between states and the federal government over who controls what part of the coast offshore.

1954 – First jackup drilling unit deployed. First offshore pipeline laid; First federal Outer Continental Shelf lease sale; and the maiden voyage of the "Mr. Charlie" submersible drilling vessel.

1955 – Platform installation depth reaches 100 ft.

1956 – First drill ship launched.

1962 – First semi-submersible drill vessel, first subsea well completion; fixed platform depth reaches 200'.

1965 – First fixed platform in North Sea; patent awarded for an "underwater manipulator with suction support device" (an early ROV device).

1969 – Oil platform six miles off Santa Barbara, CA coast suffers blowout, creating an 800-square mile oil slick.

1972 – U.S. oil production allegedly peaks.

1973 – OPEC oil embargo quadruples oil prices. Shortages created an "energy crisis" that fuels interest offshore.

1975 – Operation of the UK's first North Sea oil pipeline.

1975 – Reel pipelay exceeds 1,000 ft water depth.

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BY THE NUMBERS

1978 — Shell Oil Co.'s Cognac production platform becomes the first to sit in 1,000 feet of water.

1979 — Pemex's exploratory oil well blowout in the GoM 600 miles south of Texas spills 40 million gallons.

1981 — First offshore horizontal well drilled; first Congressional Outer Continental Shelf leasing moratorium.

1985 — Offshore begins to bottom out. Exploration stopped as crude prices drop. Industry comes to a standstill.

1986 — Oil Price hits Modern Low, falling below $10/bbl due to over-production by OPEC, worldwide recession.

1988 — Series of explosions, fires destroy the Piper Alpha North Sea Oil drilling platform, killing 167 oil workers;

1990 — OPA 90 requires all tankers entering U.S. waters be double-hulled by 2015.

1991 — Brazilian well is sited in 2,360 ft deep water; and supercomputer workstation processes 3D seismic model.

1993 — Petrobras layaway subsea tree placed in 6,000 ft of water.

1995 — Deepwater Royalty Relief Act; Conoco installs first concrete-hull tension leg platform in the North Sea.

1996 — First spar production facility installed in the Gulf of Mexico in the Neptune field.

1999 — Transocean introduces a dual-activity drillship.

2004 — Na Kika will become the deepest Gulf of Mexico production at 7,600 ft water depth.

2006 — Successful test at the Jack 2 field, in 7,000 feet of water and more than 20,000' below the seafloor, establishing viability of deepwater Lower Tertiary play.

2007 — Oil reaches $100 per barrel.

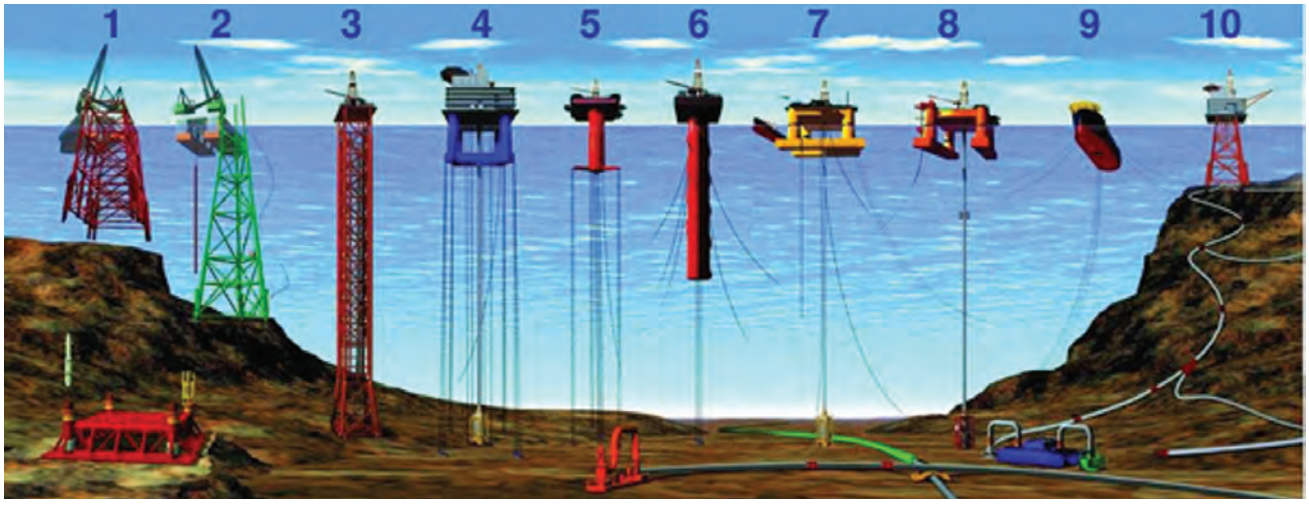
2008 — The record peak of $145 per barrel in July, falling back to $32 per barrel by year end.

2010 — Arrival of BP's Deepwater Horizon at Macondo well in January

2010 — Macondo Well blowout occurs on April 10, killing 11 workers, and triggering a spill that takes three months to cap. Disaster triggers a 3-month moratorium on drilling in U.S. waters, launches new era of safety regulation.

2010 — Perdido, an oil and gas spar production facility, is launched. It is world's deepest oil development, and the deepest drilling and production platform.

2012 — U.S. and Mexico agree to work together when drilling for oil & gas below their maritime border in the GoM.



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Executive Director

Offshore Supply Vessel Dynamic Positioning Authority (OSVDPA)

When the OSVDPA held its first board meeting in March, it began charting the course toward a new dynamic positioning operator (DPO) certificate especially designed for the offshore service vessel industry. As the Executive Director for the newly created Offshore Supply Vessel Dynamic Positioning Authority (OSVDPA), Aaron Smith is charged with managing the day-to-day operation of the Authority. Along with the OSVDPA Board of Directors and Technical Advisory Council (TAC), Aaron is currently crafting the Authority's dynamic positioning operator (DPO) certification program and ensuring this program is accepted by the U.S. Coast Guard, the offshore energy industry, and our international counterparts. Prior to joining OSVDPA, Aaron was the Deputy Chief of Staff and Legislative Director for Congressman Jeff Landry (LA-03). In this role, Aaron was responsible for developing strategies to turn the Congressman's vision into legislative victories. In addition to assisting with the Coast Guard and Maritime Transportation Act of 2012, Aaron also drafted and secured House-passage of legislation increasing Louisiana's share of offshore royalties and ensuring offshore wind farms must comply with the Jones Act. Prior to joining Congressman Landry's office, Aaron served in similar capacities for former Congressmen Kenny Hulshof (MO-09) and Henry Brown (SC-01) as well as current Congressman Aaron Schock (IL-18). Based in Metairie, Louisiana, he remains both geographically and strategically close to the constituency that he serves today.

Incorporated as a non-profit, the OSVDPA is seeking to improve the safety of the maritime industry by improving the quality and quantity of certified DPOs. Beyond this, the Authority will provide a certification pathway to those currently excluded or discouraged from gaining a certificate. Listen in this month as OSVDPA's Smith plots a new, more inclusive and safer path for offshore oil & gas service providers.

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As the Executive Director for the OSVDPA, you are in charge of day-to-day operations. That said; it's a new enterprise and there's got to be more to it especially when kicking off a "start-up."

The most important item on my punch list is developing buy-in from the maritime industry. For OSVDPA to be a viable alternative for prospective Dynamic Positioning Operators (DPOs), we need support from the mariners, the vessel operators, the oil companies, industry associations, and the flag states. Lately, much of my time has been spent listening to the wants and needs of each of these segments of the industry. While each has different desires, all agree the OSVDPA system needs to be rigorous in its requirements, yet practical in its implementation. To ensure our system meets these requirements, the OSVDPA will be rolling out a way for the industry to provide input on pieces of our certification system before they are finalized. By providing an opportunity for this input, the OSVDPA believes our final product will better serve the industry.

Today, we have IMCA, OMSA and the Nautical Institute, in addition to BSEE, the US Coast Guard and the BOEM who are all involved to one degree or another in the offshore energy environment. What do you bring to the table that they don't – or won't – and why?

While there are numerous players offshore, mariners seeking certification as a DPO really have only two current options: the Nautical Institute or the DNV. As with anything, there are advantages and drawbacks to each of these systems. What the OSVDPA hopes to do is to combine the best of both worlds and provide a third option that actually works for the offshore service vessel industry.

The 600 pound gorilla in the room in today's offshore environment probably involves operators who are apt to chafe at a new system or increased burdens. What would you say to those skeptical of your intentions?

I certainly understand that change is uncomfortable. For this reason, the OSVDPA seeks to change only those parts of the DPO certification process that do not address the uniqueness of our industry, while keeping the structure that is familiar and recognizable to the maritime industry. As such, we believe that the OSVDPA will lessen the burdens on mariners and vessel operators. One of the problems the OSVDPA hopes to address is the delay in mariners receiving their certificate after completion. Simply, it should not take more than three months for a DPO to receive their certificate after sending in their log book. Another problem we hope to address is ensuring all mariners currently operating DP systems are able to be trained in the safe operation of DP. The OSVDPA understands that whether we like it or not, there will be unclassed DP vessels working for years to come. As such, we feel the industry must ensure the DPOs working on these vessels are trained in the safe operation of these vessels. In short, OSVDPA was founded to provide another option for those seeking a DPO certificate. If mariners believe another option will be less burdensome or onerous, we will not restrict them from making that choice.

What's the difference between a classed and unclassed DP system?

Many times, the difference is only a stamp in the vessel's book. Some charterers do not require class review of a vessel's DP systems. As such, many vessel owners choose to forgo the expense of having the vessel's DP system classed, even though most of these vessels meet class requirements or have the functional equivalency of a classed DP system. For this reason, the OSVDPA feels there is no reason to exclude mariners serving aboard vessels with unclassed DP system from earning a DPO certificate; provided, the vessel is fully vetted and it is proven to be functionally equivalent to that of a classed DP system.

You are home now in Louisiana, however, during your time as a legislative director / deputy chief of staff at Congressman Jeff Landry's offices in Washington, you were intimately involved with legislation surrounding the Jones Act. Where will the Jones Act come into play with OSVDPA? In other words, do you see this as an international effort or just something impacting U.S. operators?

Yes, I am a personal supporter of the Jones Act and was honored to work with one of the most prolific Jones Act-supporting Congressmen during my time in Washington. However, the OSVDPA does not view our certification system as exclusive to U.S. operations. We understand a DPO certification program must be internationally recognized in order to be a viable option. The system must provide DPOs the freedom to switch—for example—from a Gulf project to a North Sea project, or move from a service vessel to a MODU. As such, the OSVDPA is taking steps to ensure that our certificates will be recognized worldwide.

How can you hope to meld both the U.S. regulatory scheme with international efforts when we already

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have such difficulties with things like Ballast Water Treatment, the MLC code, and others?

Anytime the three-foot stack of DP operations guidance on my desk starts to seem overwhelming, I just think, "I could be dealing with ballast water treatment," and my faith is restored. Kidding aside, while the DP industry may not be heavily regulated, it is heavily standardized. Most aspects of DP equipment, operation, and training of personnel follows the guidance provided by IMCA, MTS, and other industry associations. As such, the OSVDPA is building its certification system upon the guidance provided by these bodies. By doing so, we ensure the OSVDPA system meets the standards used anywhere in the world.

You say that the OSVDPA has collaborated with the DNV classification society and industry stakeholders to craft a set of recommended practices for all DPO certification systems. Does this mean that you will ultimately seek DNV approvals of your training schemes?

The OSVDPA is working with both DNV and the Nautical Institute to ensure that they will accept OSVDPA certificates as being equal to their own. The OSVDPA will also seek approval from the flag states that have previously approved DPO certification systems. Our work with the DNV on developing a recommended practice document is a little different. Seeing that numerous DPO certification systems were developing around the globe, the DNV started an effort last year to set down a list of recommended practices for all DPO certification systems. We are participating in this effort because we understand worldwide acceptance of certificates is of great importance to the maritime community, and international acceptance is easier if all certification systems have the same basis.

You say that "Nowhere in the maritime community is the need for well-crafted options more evident than the certification of dynamic positioning operators (DPOs)." That said; give us your initial, baseline assessment of the skills of the typical DP operator in our offshore (US GoM) markets today.

Without a doubt the skill, safety, and professionalism of the DPOs serving in the Gulf of Mexico is second to none. Unfortunately, many of these mariners are being held down by arbitrary rules in the current DPO certification system. As previously stated, there is no reason that mariners serving aboard vessels with unclassed DP systems should not be able to earn a certificate. Additionally, the current system has put roadblocks up for those that do not have an STCW credentials, accepting flag state certificates of competency (e.g. a 100 ton Coast Guard license) only on a "case-by-case" basis. It's nonsensical that a mariner certified as competent master by the flag state is prevented from earning a DPO ticket by a private certification provider. These mariners aren't the only ones encumbered by the current system. Today's sea-time requirement causes trouble for even the STCW license holders serving on classed service vessels because their vessels are simply not on DP as much as a drillship or MODU. However, these service-vessel-based DPOs are performing many more complete DP evolutions than their counterparts on a drillship. The system needs to be amended to give them credit for this experience.

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How do you see the certification process proceeding? Do you see it as a simulation based assessment; will it involve a certain amount of verified sea time or, a combination of the two?

As I said, there's a lot of good in both the Nautical Institute and DNV systems. Specifically, we see that the NI's sea-time-based model has produced generations of highly skilled DPOs. Alternatively, much can be said of DNV's assessment-based and simulator-heavy system. We want to blend the two models into one that uses simulator training, and a dedicated sea-time component; one that actually requires the prospective DPO to have his hands on the chrome. While the OSVDPA system uses a sea-time requirement, we also understand that experience does not necessarily equal competency. For this reason the OSVDPA system also includes classroom, simulator, and onboard assessments. Through this blending of certifications systems, the OSVDPA believes that our system will not only provide high caliber DPOs, but will also pass muster with any vetting body.

OSVDPA held its first board meeting only on March 12th, charting the course toward a new dynamic positioning operator (DPO) certificate specially designed for the offshore service vessel industry. What do you see as the timeline going forward?

Currently, the OSVDPA Board of Directors and the Technical Advisory Council, a group of mariners and training providers that work within the DP industry, are crafting our certification system. As previously stated, as the pieces of this system are finalized by the Board of Directors, they will be released for comment. We are seeking this early input to ensure that each component of the OSVDPA certification system has a broad base of support before the system as a whole is finalized. We hope to complete this process by the end of the summer and start certifying DPOs sometime in the third or fourth quarter of 2014. The OSVDPA welcomes comments and even criticism, so anyone interested in more specifics should contract me directly at: **Aaron.Smith@OSVDPA.org**

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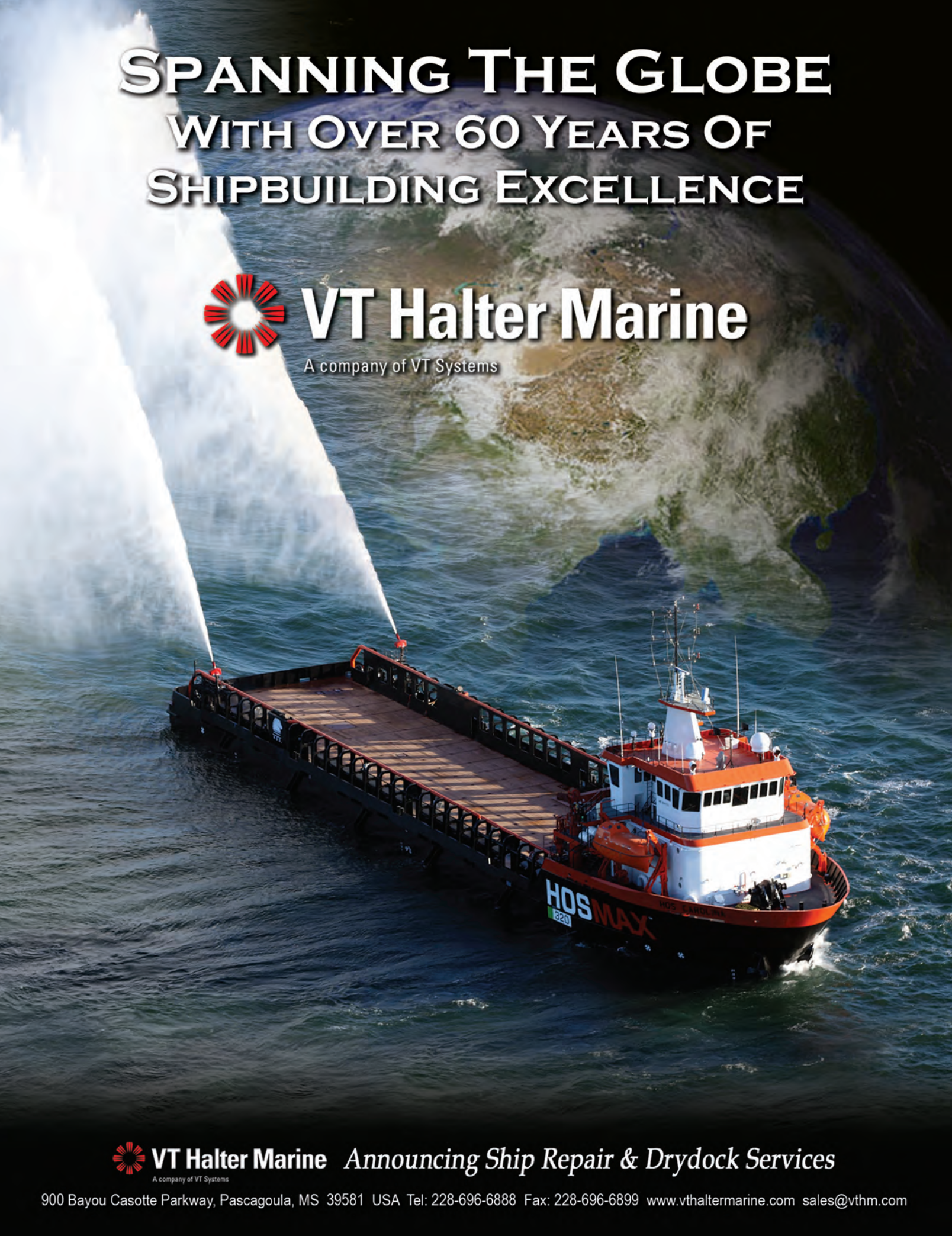

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Arctic Energy Exploration: Not If, But When?

By Randall Luthi

Energy exploration in the Arctic has been a hot topic in recent years and shows no signs of cooling down anytime soon. However, the United States appears stuck in neutral on the topic and those opposed to oil and natural gas exploration anywhere have used the Federal inaction to advance their arguments against any development.

Whether the rest of the world's Arctic regions will be explored is no longer a question of if, but when. While U.S. officials have stood on the edge contemplating new regulations, new requirements and litigation setbacks, other countries have moved ahead. Russia, Canada and Norway continued to advance their exploration programs in 2013, and 2014 will see more. U.S. Federal officials have repeatedly stated their desire to establish an Arctic exploration program that will set world wide standards. However, we cannot lead when we are not in the game. Currently, the U.S. is sidelined by its own apparent hesitancy.

There isn't much disagreement that the Arctic is a unique ecosystem that provides a great array of natural resources and a vital subsistence livelihood to its residents. However, the Arctic also holds the great potential of large natural gas and oil resources. Producing those resources would provide local jobs and economic benefits, and also add a vital energy supply line to the rest of the world.

Those who oppose oil and natural gas exploration simply state that Arctic development cannot take place safely. Fortunately, the oil and gas industry operating in Arctic waters outside the United States is showing that is not the case. The industry has a duty and obligation to minimize risk, and is full of 'can-do' individuals dedicated to seeing that exploration and development is done with safe operations and environmental protection as top priorities.

If the United States wants to be a leader in Arctic development, the federal government should make 2014 a year of action and achievement rather than just talk. The Department of the Interior needs to complete their Arctic regulations and release them for public comment, so that the process may be completed. The Administration needs to work closely with interested parties, including the oil and gas industry and Native groups, to move forward with a program that will provide local benefits, such as revenue sharing, and broader national benefits, such as increased energy security and less reliance on foreign oil.

The U.S. Energy Information Administration projects that the world will use oil and natural gas as a primary source of energy for generations to come. Nontraditional fuels will become a bigger share of that energy portfolio, but are still expected to supply only about 15 percent of the world's energy supply.

So, when will U.S. energy interests in the Arctic by explored? Now is the time for our policymakers to decide whether the United States will continue to sit on the bench in the Arctic or actually be allowed in the game in the near future.

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Randall Luthi *became the President of the National Ocean Industries Association (NOIA) in Washington, DC on March 1, 2010. An attorney and rancher from Wyoming, Luthi has held various positions ranging from Wyoming Speaker of the House, to director of a Federal agency, to legislative assistant in the U.S. Senate, to an attorney at both the Department of the Interior (DOI) and the National Oceanic and Atmospheric Administration (NOAA), where he worked on natural resource damages following the Exxon Valdez accident. Luthi most recently served as the Director of the Minerals Management Service (MMS) at DOI from July 2007 through January 2009.*

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There's No Such Thing as a Routine Grounding

By Randy O'Neill

In past columns, the focus of our discussions has been primarily on maritime incidents such as collisions, allisions and groundings in which U.S. Coast Guard-licensed deck and engineering officers were subject to marine investigations and negligence changes, potentially leading to the dreaded "letter of complaint" against your U.S. Coast Guard issued credential(s) or endorsement(s). This month, we examine a grounding case in which indeed a 46 CFR 5.29 negligence complaint filing was made against the involved master requiring a vigorous license defense. What made this case different than most was the fact that because the charged master was serving as a pilot (independent contractor) at the time of the incident, he also had a significant professional liability exposure as a consequence of the grounding's aftermath.

The Incident

The incident occurred while the master was piloting a vessel on a busy river in the western United States. The vessel needed to navigate around some large debris in the river caused by recent heavy rains, preventing it from turning to port and possibly damaging the bow thruster. So, after weighing anchor and confirming with the ship's mate that the bow thruster was ready, the pilot ordered half starboard thruster with the concurrence of the ship's captain and got underway very slowly. Shortly thereafter, the pilot ordered full starboard thrust and received acknowledgement from the mate. Approximately five minutes later, the pilot ordered hard to starboard and dead slow ahead. In the next four minutes, sequential orders were given for slow ahead, half ahead, stop engines and slow astern. The vessel was hard aground.

For almost the next hour, the pilot issued a series of engine and helm commands, both for the bow thruster and main engine, in an unsuccessful attempt to refloat the ship – all to no avail. The marine casualty was promptly reported, statements were given by the involved bridge crew and the 'hurry-up-and-wait' period ended rather routinely.

The Investigation & ALJ Proceedings

In the ensuing USCG investigation of the grounding, examination of the pilot's plan to swing the ship to starboard using only the bow thruster until it was properly positioned to engage the main engine was the subject of much debate. The timely execution of his orders by the ship's mate, particularly the order of full starboard thrust, eventually became a major point of conflict between the pilot and the mate. Specifically: *was the order of full starboard thrust given and acknowledged by pilot and mate, respectively?*

Bottom line: The ship grounded on a shoal admittedly known to the pilot who contended that, had his orders been executed as given, the incident would have never taken place. Incomplete or non-existent recordings of the bow thruster orders and the absence of a 'rate of turn indicator' on the ship added to the problem of piecing together the sequence of events leading to the grounding.

After a lengthy Suspension & Revocation proceeding in administrative court, the Administrative Law Judge (ALJ) concluded that there were too many gaps in information to effectively prove negligence on the pilot's part to merit a suspension, but sufficient evidence to issue him a Letter of Warning (LOW) and a three-month suspension on probation for his role in the grounding.

The pilot reluctantly accepted the USCG sanctions and now prepared to defend himself against $2 million civil suit filed against him by the ship's owners. While the damage to the ship as a result of the grounding was minimal and, after being refloated, was promptly put back into service, the now complicated journey of its cargo of corn products was a different story.

Damages & Consequences

After 1,500 tons of corn was lighted, barged, trucked and ultimately reunited with its ship at a port over 50 miles away, the shipping company sued the pilot alleging that his actions in the grounding incident led it to incur significant expenses to remove and transport its cargo to a port for reloading back onto its ship. And with the Coast Guard's Letter of Warning for his actions in the grounding available to the shipper's plaintiff attorneys, the pilot and his personal assets were bucking a pretty strong tide.

While it is unusual for licensed deck and engineering officers to be sued personally as the result of a marine casualty, state and, to a lesser degree, harbor and docking pilots have a real exposure in that regard.

Not surprisingly, while the administrative court pro-

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ceedings moved along relatively quickly, this particular civil case is slowly working its way through the deposition stage and is unlikely to see a courtroom or settlement discussion for months, if not years. Sadly, the pilot defendant's defense costs, regardless of whether or not he prevails, will be enormous. While he was prudent to have purchased professional liability insurance with both civil/legal defense and indemnity components as part of his license defense package, in today's world of inflated jury awards, it's questionable whether his $1 million policy limit will be enough to both compensate his attorney and satisfy the plaintiff's demands.

Mariners with similar exposures should be mindful that there are options available to them to protect their assets, as well as their credentials, and should explore those options when reviewing their insurance portfolios.

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Randy O'Neill *is Senior Vice President with Lancer Insurance Company and has been Manager of its MOPS Marine License Insurance division since 1984. Over the past 29 years, Mr. O'Neill has spoken and written on many occasions on the importance of USCG license protection. He is a regular contributor to MarineNews magazine. He can reached at: roneill@lancerinsurance.com*

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SEMS: Expanding the Rules for Marine Operations

The rapidly changing offshore regulatory landscape is amply reflected by the BSEE's implementation of the first mandatory SEMS rule for oil and gas operators in the OCS. The Bureau Veritas SEMS Audit team explains how.

By Lucas Lopez-Videla and Ronald White

Serious offshore incidents in recent years have compelled both the federal government and the oil and gas industry to make mandatory commitments to environmentally sustainable practices and worker safety. The US Bureau of Safety and Environmental Enforcement (BSEE), for instance, has established Safety and Environmental Management Systems (SEMS) regulations, which companies operating oil and gas and sulfur leases in the Outer Continental Shelf (OCS) are legally obligated to meet with regularly audited safety and environmental programs.

Early Origins

The concept of SEMS was born in response to a 1990 finding by the National Research Council's Marine Board that the standard prescriptive approach to regulating offshore operations had forced the industry into a compliance mentality. Further, the Marine Board found that this mentality was not conducive to effectively identifying potential operational risks or developing comprehensive accident mitigation. The Marine Board therefore recommended, and the BSEE concurred, that a more systematic approach was required for managing offshore operations.

The first major industry effort to standardize SEMS came from the American Petroleum Institute (API), who developed *Recommended Practice (RP) 75 - Development of a Safety and Environmental Management Program for Outer Continental Shelf Operations and Facilities*. The API also produced a companion document, RP-14J, for identifying safety hazards on offshore production facilities. The API RP-75 was published in May 1993 and, in 1994, the BSEE published a Notice in the Federal Register that recognized implementation of RP-75 as meeting the spirit and intent of SEMS. This recommended practice was updated several times in the following decade to give greater focus to contract operations such as those on mobile offshore drilling units (a third edition was published in May 2004 and was reaffirmed in May 2008).

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Game Changer: Deepwater

The Deepwater Horizon incident in April 2010 dramatically changed the regulatory landscape, leading to the BSEE's implementation of the first mandatory SEMS rule for oil and gas operators in the OCS. Also known as the Workplace Safety Rule, it required all OCS lessees to have a well-documented SEMS program in place by November 15, 2011. These SEMS outlined safety and environmental management procedures for routine work processes, unsafe incidents, and emergencies.

To be SEMS-compliant, operators must have their programs monitored and, if necessary, updated every three years through a comprehensive auditing process that includes submission of an audit plan, a thorough review of all aspects of the program, and reporting of audit findings via a formal report to BSEE. On November 15, 2013, all operators with facilities in OCS waters of the GOM were required to have a SEMS audit and many offshore operators successfully completed their first round of audits to meet this deadline.

Missing a Key Market Segment

The current SEMS rule mainly focuses on oil and gas leaseholders, i.e., the operators. However, the first round of audits made it clear that marine operators, who play a large and significant role in OCS activities, were underserved. Marine operators include contractors that transport materials, personnel, and other resources to support oil and gas operations. On any given day in the OCS, there are many instances when marine support operations—including floating offshore installations (FOI) that produce oil and gas, mobile offshore drilling units (MODU) that drill wells, and other service vessels that provide well stimulation and logistical support—expose their workers to the same hazards as the operators. It therefore follows that these contractors should adhere to many of the same elements of SEMS to manage workers' health and safety and the environmental sustainability of operations. In fact, the SEMS regulation states that operators must have "procedures for verifying that contractor personnel engaged in well control, deepwater well control, or production safety operations can perform their assigned duties." However, this requirement needs to be given greater depth and specificity for a framework that takes full account of contractors' activities.

Many oil and gas operators agree, particularly because their SEMS compliance is so closely tied to the operations and services that contractors provide. To that end, operators have been auditing support staff and contractors for the conformance and robustness of their SEMS programs. This has led to the problem of "audit fatigue," with contractors being audited on their SEMS programs by each separate operator – up to 25 audits per year, in some of the more extreme cases.

By achieving SEMS certification, contractors can streamline the compliance process, which could ultimately lead to a reduction in the number of audits they must undergo. Operators also gain assurance that their contractors meet all SEMS requirements in the Workplace Safety Rule, which frees them up to allocate less time for multiple audits.

This need has prompted the Center for Offshore Safety (COS), an industry-sponsored organization dedicated to advancing offshore safety in the GOM, to consider defining a specific guidance for auditing contractors against SEMS. The COS requirements for third-party SEMS auditor, which have been incorporated into federal law under SEMS II (see sidebar), are currently being reviewed and may potentially be edited to reflect the broader scope of GOM activities.

U.S. Coast Guard Gets Involved

On September 10, 2013, the US Coast Guard published a Federal Register Advance Notice of Proposed Rulemaking (ANPRM) to require vessels engaged in OCS activities to develop, implement, and maintain a vessel-specific SEMS. Under this proposed rule, a vessel owner would be required to develop and implement a SEMS that is compatible with a lease operator's SEMS required under BSEE regulations. Vessel-specific SEMS would also incorporate procedures to ensure that the design, fabrication, installation, testing, inspection, monitoring, and maintenance of equipment comply with all applicable safety and environmental regulations.

Guiding their decision process, the Coast Guard is currently reviewing SEMS of the International Maritime Organization (IMO), the International Association of Drilling Contractors (IADC), and the International Standards Organization (ISO). It is also researching whether compliance with these management programs would be an appropriate alternative to API RP 75. This includes a review to determine which safe work practices are to be followed and how workers should best be trained to identify hazards and have the knowledge, skills, and abilities to perform the duties expected of them.

As part of this review, the Coast Guard solicited comments from the offshore E&P community – including operators, contractors, and agencies, such as the API – as well as all other interested stakeholders. Comments have related to the feasibility of implementing a SEMS that incorporates API RP 75, the compatibility with BSEE SEMS regulations, potential methods of oversight, safety issues, costs and regulatory burdens, and more. Approximately sixty comments were received by the December 9, 2013

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deadline, to be reviewed by the Coast Guard as they develop the new regulations.

The Coast Guard estimates that such a regulation would affect approximately 2,200 foreign and domestic vessels engaged in OCS activities, including 1,800 offshore supply vessels (OSVs), 150 lift boats, 125 MODUs, and 125 other vessels.

Auditing Contractor Compliance

For 2013, companies had the option to conduct SEMS audits internally with their own designated and qualified personnel (DQP). The BSEE has now moved to an expanded regulation known as SEMS II, which is designed to enhance existing SEMS programs to include additional requirements related to employee participation and additional empowerment of field-level personnel with stop-work and other safety management authority. SEMS II also requires that operators have an independent third-party audit conducted by an audit service provider (ASP) that has been accredited by the COS. While the operator may have members of its own internal organization on the audit team, a representative of the third-party firm must, at a minimum, lead the audit.

The first contractor to pursue SEMS certification was Pacific Drilling (PD), a specialist in ultra-deepwater drilling services. Pacific Drilling selected Bureau Veritas, the global testing, inspection, and certification group and COS-approved audit service provider (ASP), to conduct the audit in accordance with Center for Offshore Safety (COS) audit protocols. "Pacific Drilling is dedicated to maintaining a safe working environment. We seek ways to engage the industry by participating in the various organizations that support safe work through the development of standards, policies and procedures, such as the Center for Offshore Safety (COS). As a subscribing member, Pacific Drilling has committed to have its management system audited against the SEMS Rule and API RP 75 as a 'stand-alone' Safety and Environmental Management System," said Tony Seeliger, VP Americas for Pacific Drilling.

The Bureau Veritas SEMS Audit team conducted an onshore assessment of Pacific Drilling's management system at their corporate office and an offshore audit of one of their drillships in the Gulf of Mexico to verify conformance with the applicable SEMS requirements. As RP 75 SEMS is designed primarily for production operations, there are several components that are not fully applicable to contractor activities. Thus, it was a joint effort to agree on the most effective customized framework for Pacific Drilling. Today, a full range of stakeholders are working in unison to review protocols to address contractor activities. The effort is ongoing and hopefully it will yield findings that can be utilized as a best practice by the offshore community moving forward.

The ABC's of EALs for the EPA's VGP

How Ester-Based Oils Handle Hydrolysis to Remain the Top EAL for VGP

By Ben Bryant and Dirk Fabry, Klüber Lubrication

When the Environmental Protection Agency (EPA) issued the new Vessel General Permit (VGP) in December 2013, lubricant and fluid manufacturers were prepared to give vessel owners a number of environmentally acceptable lubricants (EAL) to work with. EAL usage is now essentially required for any application on vessels where incidental lubricant discharge could occur in the marine environment. Those applications include stern tubes, thrusters, stabilizers, CPP propellers, and wire rope and mechanical equipment immersed in water during normal operation.

Today, with so many EAL choices available, vessel owner/operators and equipment manufacturers are looking to understand the performance characteristics of these different lubricants. Other than water lubricated applications, EALs attain their environmental qualities by using either an ester oil, a polyalkylene glycol (PAG) oil, or a combination of ester and synthetic mineral oil (PAO) as the base oil of the lubricant. Considering that the vast majority of EALs that have been approved by seal system manufacturers contain ester oils, it is likely that most vessels will use an ester based EAL. It is important for users to have an accurate understanding of ester oil performance characteristics to assist in their selection of EALs and to ensure they receive the most benefit from their investment.

Evaluating Environmentally Acceptable Ester-based Lubricants

As a mainstay of marine lubrication, ester based oils and greases continue to offer value and versatility in a majority of situations. As a class, ester-based oils exhibit excellent environmentally-friendly properties in terms of biodegradation, non-bioaccumulation and minimal toxicity. Concern over lubricant effects in these three environmental areas was the basis for issuing the changes to the oil–to-sea interface section of the VGP, which specifically targets mineral oil as unacceptable.

Esters used in lubricant formulations fall into one of two categories: either naturally produced triglycerides from vegetable or animal sources, or synthesized esters developed by combining acids and alcohols in a manufacturing process. Triglyceride esters have found acceptance for use

in hydraulic oils and as a base for biodegradable greases. However for marine use, where the influence of water and operational temperatures can affect the lubricant's performance, synthetic esters generally perform better.

Triglyceride esters do have a high viscosity index to minimize thinning at high temperatures, and they exhibit high lubricity. Furthermore, reaction with paints and varnishes is not a problem. However, they exhibit poor temperature stability and poor flow behavior at cold temperatures. At high temperatures, oxidation readily occurs, requiring more frequent oil changes. They also exhibit poor hydrolytic stability, readily breaking down in water to form carboxylic acid and other acids that can damage machinery and seals. It is these negative traits of triglyceride esters that lead to the often repeated claim that ester based products have poor hydrolytic stability.

Synthetic ester oils, on the other hand, can be used with a wider range of applications, because their properties can be tailored for specific performance conditions. They handle a wide range of temperatures and exhibit high viscosity, lubricity, corrosion protection and oxidative stability — the latter feature contributing to longer lubricant life, an advantage in hydraulic fluids, and stern tube and-thruster oils where vegetable or mineral oil based lubricants need to be changed more frequently.

Hydrolysis Resistance in Ester-oil Chemistry

To answer the question, *"What about the hydrolysis of ester oils?"* it helps to understand the basics of ester chemistry. Synthetic ester oils are derived from an inorganic acid or an organic acid in reaction with an alcohol. The esterfication reaction produces the ester, plus water. The reverse reaction, called hydrolysis, consumes water while producing acid and alcohol. Like all chemical reactions, the process depends on temperature.

Although all esters can be hydrolyzed, it does not mean all esters have poor hydrolytic stability. Again, the difference is in the formula. When using vegetable resources, the esters produced have simple, linear molecular shapes with double carbon-hydrogen bonds. They are referred to as "unsaturated esters," because the molecule is not "fully saturated" with hydrogen atoms. These structures are relatively weak, and in the presence of water and heat, poor hydrolytic stability can be expected.

But when saturated esters with branched acids -- known as polyolesters -- are utilized, hydrolytic stability is improved. In fact, for these complex polyolester molecule shapes (technically known as sterically hindered esters), hydrolytic stability is very good. Field experience with saturated synthetic polyolesters with branched acids show that even when mixed in 300 to 500 ppm water, acid content does not increase over years.

Ultimately, the speed of hydrolysis reactions is influenced by several factors:

- *The chemistry of the base oil*
- *Percent of water in the oil*
- *Oil temperature (higher temperatures speed up the hydrolysis reaction)*
- *Formation of reaction products that support further hydrolysis (acids that act like catalysts)*
- *Use of additives that support hydrolysis*
- *Presence of copper, which can also support hydrolysis*

Of these factors, ensuring a low percentage of water in the oil is the ultimate deterrent against hydrolysis. For thrusters, the amount of free water in gear oil should not exceed 200-1000 ppm depending on manufacturer specifications. Typically, a maximum of 200-300 ppm is recommended. In stern tube oil, the water content should generally not exceed five percent. By maintaining seal integrity and monitoring the condition of the oil, ester oils used in stern tubes should last for years.

In addition, due to the low water percentage recommended in these applications, using an emulsifier to disperse the water in oil will increase the tendency towards hydrolysis. Oils without emulsifiers can have free water removed with conventional oil filters containing water separators. Oil with an emulsifier will yield a stable emulsion; however, water cannot be easily removed. Using an emulsifier in stern tube oil is a viable emergency measure that will require prompt oil replacement.

Bottom Line Benefits of Ester-based Oils

VGP environmental standards for EALs are being met by a number of alternatives: triglyceride vegetable oils, ester-based oils and PAG oils. Environmentally, ester-based oils exhibit excellent biodegradation, non-bioaccumulation and low-toxicity characteristics. Operationally, they handle a wide range of temperatures, exhibit high viscosity, lubricity, corrosion protection and oxidative stability. Concerns about ester oils' susceptibility to hydrolysis can be addressed by selecting the right formulation, namely saturated synthetic polyolesters with branched acids. When environmental friendliness, operational performance and resistance to hydrolysis are all considered, synthetic polyolester oils are an excellent choice for hydraulic oil and grease, stern tube oil, thruster oil, and gear lubricants.

The OPC Sweepstakes: *Three for the Money*

Three Companies Compete For USCG's Lucrative OPC Contract

By Susan Buchanan

In February, the U.S. Coast Guard chose three finalists to design its new Offshore Patrol Cutters, with awards to Bollinger Shipyards in Lockport, La., Eastern Shipbuilding Group in Panama City, Fla. and General Dynamics' Bath Iron Works in Maine. Each company was awarded a Phase I design contract valued at between $21 million and $22 million. At the end of the 18-month Preliminary and Contract Design Phase I, the Coast Guard will choose one company's team for a Phase II Detailed Design and Construction contract for the lead OPC. Planned for fiscal year 2016, the Phase II design exercise will include options for that company to produce a first OPC and up to ten more.

In one of the government's biggest, recent surface-ship construction initiatives, the Coast Guard wants to acquire 25 OPCs, at an estimated cost of $10.5 billion. The OPC is a next-generation, medium endurance vessel that will replace the Guard's aging fleet of 210-foot Medium Endurance Cutters, built in the 1960s, and 270-foot cutters, dating to the 1980s.

Each of the three company finalists proposed a different vessel, and they'll use their $21 million to $22 million in Phase I to develop more detailed designs, with engineering. The Guard has strict specifications as to what it wants, classed to American Bureau of Shipping NVR or Naval Vessel Rules.

Vessel Designs Expected To Be Similar

"We designed following guidelines in the Coast Guard's request for proposal," issued in Sept. 2012, said Kenneth Munroe, executive vice president and chief operating officer at Eastern Shipbuilding. "You're going to see a lot of similarities between vessel designs from each of the finalists. They may come in different shapes and different arrangements but they'll be fairly close to one another. We have to follow the specifications, and you can't just throw stuff in."

What's more, "the USCG has made the point that price will be important," Munroe said. The Coast Guard wants the OPC's range and endurance to be greater than today's cutters, with improved command, control, communications, computers, intelligence, surveillance and reconnaissance equipment, along with more powerful weapons and a larger flight deck. OPC designs will incorporate green technologies that cut energy use and reduce waterborne noise and waste streams.

The Coast Guard's phased approach aims to control its final costs by creating competition in the design stage. The progressive design-build strategy sets requirements early on, reducing risks associated with construction costs and schedules. The Coast Guard released a draft of its RFP and technical data packages in 2012 to give the industry a look at its OPC requirements before issuing its RFP in September of that year. The agency talked with potential vendors in 2010 during industry day events and in one-on-one meetings.

Stakes are high for the companies involved. Landing a contract to build will create many skilled jobs in the region around the shipyard. Senators and congressmen from Florida, Maine and Louisiana are monitoring the Guard's acquisition process. Work will flow outside of the country, too, since each of the company's design teams has a foreign partner.

Huntington Ingalls and VT Halter Protest the Awards

Huntington Ingalls Industries in Pascagoula, Miss. and VT Halter Marine in Pascagoula were not chosen as finalists in February. And last year, the Coast Guard passed on designs from Fincantieri's Marinette Marine in Marinette, Wis., General Dynamics' National Steel and Shipbuilding Co. or NASSCO, and Vigor Shipyards in Seattle, Wash..

On Feb. 24 and Feb. 25, respectively, Huntington Ingalls and VT Halter Marine protested the design awards through filings with the Government Accountability Of-

Artist's conception of the Eastern Shipbuilding Group's OPC concept

The Bollinger built Fast Response Cutter. Bollinger has years of experience with the U.S. Coast Guard.

fice (GAO). Pending resolution of those two protests, the Coast Guard in February ordered that OPC work be stopped temporarily. Under GAO rules, it takes 100 days from the date of a protest until the office provides a resolution. A decision on the matter is expected in June.

Huntington Ingalls is the builder of the Coast Guard's new high-endurance National Security Cutters, with four completed, a fifth to be launched this year and work under way on a sixth. Bollinger, meanwhile, is the prime contractor for the Guard's short-range patrol craft, the Fast Response Cutter.

Bollinger's USCG Work Record Is Lengthy

Of the three companies awarded OPC contracts in February, Bollinger – with its extensive record in building smaller cutters – has done the most work for the Coast Guard. Bath builds destroyers for the U.S. Navy and last built Coast Guard vessels in the 1930s. Eastern builds offshore support vessels and other commercial boats.

In February, Chris Bollinger, president of Bollinger Shipyards, said the company's award was a vote of confidence in its craftsmen and engineers, who are building Coast Guard cutters now. Bollinger's award indicates the company's could build for the agency for decades to come, he said. Bollinger has partnered with Gibbs & Cox Maritime Solutions in Virginia for its OPC design development, L3 Communications in New York for the OPC's C4ISR systems, and Netherlands-based Damen Shipyards Group--which made the parent design for the fast patrol cutters being built in Lockport now. C4ISR refers to command, control, communications, computers, intelligence, surveillance and reconnaissance.

Bollinger expects to employ more than 250 naval architects, engineers, designers and planners to support its OPC design under Phase I and its Phase II proposal for detailed design and construction. If Bollinger wins its bid for Phase II construction, thousands of jobs would be created in South Louisiana and the Gulf Coast, the company said in February. With 2,500 employees, Bollinger operates 10 shipyards in South Louisiana and Texas now and will expand to 11 by year's end. Two of those – Bollinger Lockport New Construction and Bollinger Marine Fabricators – do new construction. The company runs 28 drydocks, ranging in capacity from 400 tons to 10,500 tons.

"Our company has built more than 145 fast patrol boats for the U.S. Navy and Coast Guard since 1984," Robert Socha, Bollinger's executive vice president of sales and marketing, said. In 2008, the Coast Guard selected the company to design and build its new 153-foot Fast Response Cutters. "Our Lockport facility has successfully designed, constructed and delivered eight of the FRCs and was recently awarded more, bringing our contracted FRC units to 24, with an option for up to 34 units," Socha said.

Other government awards to Bollinger include USCG 110-foot Island Class patrol boats in 1986; the U.S. Navy 179-foot Cyclone Class patrol ship in 1977; and USCG 87-foot Marine Protector Class patrol boats in 1993.

Bollinger's current, commercial construction includes program designs for ABS-classed 300-foot and 270-foot DP2 platform supply vessels, along with the completed 210-foot and 234-foot DP2 designs for construction supporting deepwater oil. "Additional programs include lift boats, dredgers, multi-purpose support vessels, docking tugs, articulated tug and barge units, tank barges and deck barges, as well as rigs and mini supply vessels," Socha said.

Repair and conversion are big parts of Bollinger's business. "New builds need a safe and experienced place to go for their regulatory and day-to-day repairs and con-

versions," Socha said. Founded in Lockport in 1946, the company is family owned and operated.

Eastern Is Surrounded By Military Bases

Kenneth Munroe said Eastern feels honored to be selected as one of three finalists. "At the same time, we believe we have an exceptional design and the facilities to build these vessels for the Coast Guard at our two shipyards in Panama City," he said. "We've teamed with STX Marine, our design group, and with Northrop Grumman--our prime subcontractor for supplying C4ISR and our integrator for the vessel." Based in South Korea, STX Marine has offices in Houston and Vancouver, while Northrop Grumman is headquartered in Virginia.

Eastern is building 300-plus-foot offshore supply and construction vessels now and delivering one about every six weeks. "We're located in Bay County, along with an Air Force base, a Coast Guard base and a Navy base," Munroe said. "If selected for Phase II detailed design and building a ship as well, we would put hundreds of people to work in construction, in addition to engineers. It would bring up to 2,000 jobs to northwest Florida."

In February, Brian D'Isernia, president and CEO of Eastern Shipbuilding, said now that the Coast Guard has evaluated proposals from eight U.S. companies, based on technical, management, past performance and price factors, affordability will be the main consideration in its OPC acquisitions. With Eastern's track record of building 110 vessels on time and on budget since 2002, and with Bay County's tradition of supporting the military with its three bases, Eastern is the perfect place for building OPCs, D'Isernia said.

D'Isernia founded Eastern in 1976 and expanded it from a 15-employee shipyard to 1,600 people today, Munroe said. "We have a very strong record and really want to do the best job possible for the Coast Guard. We look forward to the Phase I process and moving into Phase II." Munroe noted that in the 1980s Eastern made a major modification on a 210-foot Coast Guard cutter based in Panama City.

Bath Wants To Expand Its Customer Base

Bath Iron Works – busy producing U.S. Navy destroyers – is partnered with Spanish shipbuilder Navantia and L-3 Communications on its OPC design team. Bath has one shipyard in Maine, where it employs about 5,400 people. The company has worked with Navantia for 30 years.

"Since the two shipyards that weren't selected by USCG for the OPC's preliminary design phase have filed formal protests, it would be inappropriate for us to discuss our OPC proposal at this time," Jim DiMartini, Bath Iron Works spokesman, said last month. "If those protests are resolved and efforts resume, the open competition between the three yards that were down-selected will continue." But because competition will be intense, Bath will continue to refrain from discussing its OPC design and team.

In February, Bath Iron Works president Fred Harris said the company's Coast Guard design award was a key development since the shipyard wants to expand its customer base and maintain its design and manufacturing workload. "We will continue our yard-wide actions to ensure we can build these Coast Guard ships affordably, safely and on or ahead of schedule," he said. February's "BIW News," a monthly letter on the company's website, said the frigate-sized OPC is aligned with Bath's capabilities, experience and workload, and that OPC construction would fit nicely into the company's schedule for later this decade.

"This competition reflects the state of the shipbuilding industry in our country as three shipyards go head to head to secure much-needed work in an extremely tight market," Harris said in the February newsletter. "Without doubt, the winner will ultimately be determined by cost."

Eastern Shipbuilding's Nelson Facility

Also in the February letter, Doug Nelson, Bath Iron Work's OPC capture manager, said the Coast Guard awards suggest that technical designs from each competitor, as well as their capabilities and facilities – existing and planned – are satisfactory. "So for Phase II, that only leaves cost," Nelson said. Bath's OPC team is expected to grow somewhat from the core group that developed its conceptual design and proposal. Phase I engineering, design and planning work will be done in Maine, with support from L-3 Communications in New York and Navantia in Spain.

"With its skilled workforce and an outstanding record of designing, building and providing superior life-cycle support for ships, Bath Iron Works is uniquely positioned to build vessels like the Coast Guard's OPCs," Maine's U.S. Senators Susan Collins and Angus King said in a joint statement on Feb. 11. The OPC would be an excellent fit for the company and would create good jobs in Maine, they said. Collins is a senior member of the Senate Defense Appropriations Subcommittee, and King is a member of the Senate Armed Services Committee.

Bath is known for building quality vessels that last. Bath's USCG cutter Perseus, launched in 1932, sailed for 76 years. The boat was transferred to the Navy during WWII, then returned to the USCG for patrolling before it was decommissioned in 1959. Perseus was sold to Circle Line Cruises in New York City, where it sailed for another 49 years, and was a rescue boat in the city's 9/11 disaster. Sister ship USCG Calypso, launched by Bath several months before Perseus, served the Coast Guard and the Navy.

OPCs: A Modern-Day, Multi-Missioned Workhorse

According to the Coast Guard, the new OPCs are a needed bridge between its National Security Cutters and its Fast Response Cutters. The service's current fleet of 210-foot and 270-foot Medium Endurance Cutters has become expensive to maintain and operate and is in many ways technologically obsolete. Beyond this, the Coast Guard simply can't afford to replace all of them in a hull-for-hull program. The coming OPC will therefore bridge the mission gap between the two hulls; satisfying both requirements. Medium Endurance Cutters are the workhorse of the Coast Guard fleet, fulfilling responsibilities for long-distance missions carried out by high endurance cutters and missions closer to shore, performed by patrol boats. Building of the Coast Guard's first 11 OPCs is likely to extend through 2028.

Companies Collaborate *to Find Cool Solutions*

Dometic's HVAC systems fit right into the dual purpose of providing comfortable workboat environments while also protecting vital equipment. Both tasks go hand in hand and collaboration between parties is the key.

An efficient and reliable HVAC (heating, ventilation and air conditioning) system on board commercial vessels is essential. In difficult and often extreme operating conditions, the system will provide a comfortable and healthy work environment for crew and also protect vital electronic equipment from overheating and potentially breaking down. Recently, Dometic Marine supplied chilled water air conditioning systems and engine room ventilation equipment for new Signet Maritime Corporation tugs – the Signet Arcturus (November 2013) and Signet Polaris (April 2014) – both built at Patti Marine Enterprises, Pensacola, FL. This equipment included a 20-ton chiller, with supporting air handlers, engine room ventilation, and mist eliminators

Dometic Marine, a division of the Dometic Group, is a global supplier of comfort systems and equipment for yachts and pleasure boats and a major supplier of HVAC, engine room ventilation, watermakers, and toilet systems to the commercial, workboat and military markets. This includes an extensive line of air conditioning systems to handle and suit a variety of vessels, from its high-capacity chilled water systems to its smaller self-contained systems.

Images above (left to right): A standard Dometic MCG 5-ton chiller, Dometic's 20-ton custom chiller which is similar to the equipment on board Arcturus and Polaris, Dometic's AT-DC Series Air Handler.

Collaboration

Several different specialist companies first needed to come together, each with experience to be considered so as to ensure the best solution for each vessel. The owner, shipbuilder, naval architect, local integrator and the HVAC supplier were all involved in the exchange of ideas about the selection and installation of the most suitable HVAC equipment and its placement on the vessel to guarantee the most effective air distribution. In this case, they chose Dometic. Over time, Dometic Marine has distilled the collaborative strategy into a productive and efficient process.

Ed Todd, Director of National OEM Sales, Dometic Marine, told *MarineNews*, "Our strength is our ability and willingness to work with the various parties through every stage of the process, demonstrating Dometic's personal touch and dedication from start to finish. We are prepared to adapt and customize our HVAC equipment to best suit our customer and each particular vessel."

From the start of the build, to launch and beyond, Dometic insists that its personnel are always on hand to provide input. By visiting the yard on numerous occasions during the construction, the account manager is able to reconfigure equipment, make adjustments and react to questions. The relationship continues after the vessel is launched, with continual check-ups and requests for feedback on the performance of the equipment.

Todd adds, "Through close collaboration with our customers, we are able to develop HVAC and sanitation equipment to satisfy exact vessel specifications, which has led to the growth of our workboat customer base globally. The current contract with the Signet Maritime tugs is a good example of five companies working together successfully."

Specifically for this project, Dometic was able to use its specialized knowledge of this type of vessel gained from a recent contract with Signet to supply the equipment for 2012 Trinity Offshore shipyard-built tugs Signet Stars & Stripes and Signet Constellation. As well as providing its cutting-edge air conditioning for the living areas on board, Dometic is also supplying engine cooling equipment for

Signet Arcturus and Signet Polaris after recently acquiring engine room ventilation specialist Livos Technologies Inc.

All the companies involved met at Patti Marine ahead of construction – Dometic, Signet Maritime, Patti Marine, local integrator Prime Mechanical and local naval architect Andy Heitman of Building Energy Sciences. Ed Todd explained, "At the early meeting, we scrutinized the design, looked at quotes and discussed how we installed similar equipment on other Signet boats. We also analyzed the boat's architectural characteristics and their effects on heat-load calculation and equipment placement. The Naval Architect then makes adjustments and changes to the design according to the requirements of Signet and Patti Marine. Although the vessel designer, Robert Allen, will set up the general scope of the vessel, the local relationship with the architect is very valuable as they will look at the specifics of the Dometic HVAC equipment."

Dometic on Board: Equipment & Personnel

Signet Arcturus, a more powerful version of RAmparts 3200 class z-drive tug Signet Weatherly with a very large fuel capacity of 90,000gals, has been fitted with Dometic's two-stage 20-ton chilled water system with individual fan coils throughout the vessel. On board both Signet Arcturus and Signet Polaris, the equipment will cool the galley, crew mess, captain's quarters, engineers' quarters, control room, three crew staterooms, lower deck head and pantry.

As with tugs Signet Stars & Stripes and Signet Constellation, the Signet Arcturus pilothouse features glass windows for unobstructed visibility and can become overheated, affecting both the crew and electronics. Mounting the air handlers on top of the roof, Dometic further customized its equipment by installing fan coils with DC blowers in the wheelhouse for higher air flow and better air distribution to combat the heat. An additional two-ton fan coil was also added to the package on Arcturus and Polaris. Highly suitable for tugs with limited space, Dometic's equipment features a compact design, enabling the chillers to be neatly stacked vertically or horizontally to best fit the space available.

In terms of engine room ventilation equipment, Dometic Livos supplied the Signet Arcturus with intake mist eliminators for the engine room as well as the fresh air make-up system. It delivered 32-inch diameter, 20 HP axial engine room fans with steel housings, which are controlled manually with Dometic's central manual control. VFD units and associated electrical components are housed in a custom NEMA 4X enclosure. Dometic Livos also supplied a series of in-line duct fans for the auxiliary machinery spaces (4 x 6 in. and 4 x 12 in.).

Nathan Farr, OEM Account Manager (USA), Dometic Marine, told MarineNews in April, "For this project, the plan was fairly straight forward as to fitting and installing the equipment to accommodate the design of the tug because of our experience with a similar vessel. Early challenges which commonly arise at the initial stages can include issues with the ducting, which may need re-doing, or the arrangement of the grills to ensure sufficient air distribution.

"Once the equipment is ordered, we then made regular checks to see how things are progressing and to dis-

cuss any issues with Prime Mechanical, who in turn sub contracted their engineering work to Andy Heitman to carry out work such as heat-load calculations. These checkups continue after the launch. For example, while Arcturus was at Signet Maritime undergoing sea trials and, during my regular visits, I looked at the water flow and the performance of the impeller. I also made trips to the yard for Polaris. Collecting feedback is very important, as air conditioning is so critical for crew comfort. Nobody wants to work in a hot boat."

Livos Technologies – Now a Dometic Asset

The recent acquisition of Livos Technologies Inc. brought engine room ventilation to Dometic's workboat customers to provide them with a single source for their air condition and ventilation needs – and this was a implemented in the package supplied to Signet Arcturus and Signet Polaris. The new products include axial fans, centrifugal blowers, smoke and fire dampers, mist-eliminating grilles, and electronic fan controls.

Michael Murray, Engine Room Ventilation Product Manager, Dometic Marine, said: "The ventilation of engine and machinery rooms and areas where there is electronic equipment is very important for safety and to prevent equipment failure. It is ideal that Dometic can now offer all of these complementary products to our customers."

Murray adds, "In terms of safety, our mist eliminators will stop sea spray from entering a machinery space, greatly reducing the chance of corrosion, while our fans are built from marine quality materials and coatings, ensuring long life in extreme salt environment."

HVAC: Hidden Value; Critical Elements

It's something that most operators and their crews rarely think about – except when it fails in service. And, HVAC may seem like a small part of the shipbuilding process, but it is a crucial element in the completed vessel. Cutting-edge equipment will often need to be customized, vessel designs will need to be adapted and challenges overcome – a process requiring input from all parties.

"We require the highest quality and proven-reliable air conditioning to provide a comfortable and pleasant working environment for our crew members, as well as cool sensitive elec-

"At the early meeting, we scrutinized the design, looked at quotes and discussed how we installed similar equipment on other Signet boats. We also analyzed the boat's architectural characteristics and their effects on heat-load calculation and equipment placement."

– Ed Todd, Director of National OEM Sales, Dometic Marine

tronic equipment on-board," said Joseph W. Dahl, Vice President and General Manager of Signet Shipbuilding & Repair (SS&R). "Dometic Marine has proven to provide a wide range of HVAC solutions, which are further supported by exceptional technical expertise and customer service."

A specialist supplier to OEM, refit and repair and aftermarkets, Dometic Marine has a support network of company-owned offices located in 12 strategic regions across the globe supported by numerous marine R&D facilities and factories. The products are further supported in the field by factory-authorized distributors, dealers and service engineers offering a global presence in over 100 countries worldwide. In this case, it wasn't hard to see why Signet chose this solution. Collaboration was the key; Dometic was the solution.

Arcturus interior

Arcturus launch

Innovation Drives

Marine Monitoring System Development

By Alain Meslati

Innovation is a key driver in the development of advanced monitoring systems for environmental and safety compliance in the marine sector. Patrice Flot and Alain Meslati of diesel engine control and instrumentation specialists CMR Group, explain more about the latest technologies.

The marine power sector is facing many challenges, particularly in areas where emissions resulting from combustion inside engines, along with fuel consumption levels need to be reduced. These and other factors are leading to the greater use of bio-fuels in the form of bio-diesels and an increase in the quantity of biodiesel being blended into conventional diesel fuels. As familiarity with bio-fuels grows it is likely that the challenges they pose, notably dislodged fuel debris and other contaminants which may have accumulated during storage and engines systems over time causing problems, can only be effectively overcome and managed with the introduction of fuel conditioning monitoring systems which ensure proper engine performance and prevent time consuming and costly damage to components caused by inferior or low-grade fuels.

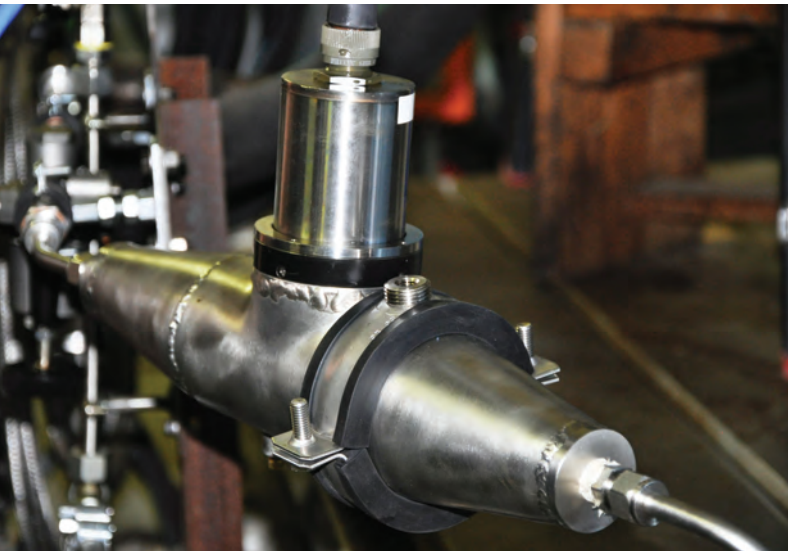
Solutions

The NIRIS fuel quality smart sensor has recently been introduced for use on electronically fuel injected marine diesel engines. The technology is a near infra-red spectrometry system which performs continuous in-line analysis of fuel, measuring over 20 different parameters involved in the specification of fuel quality. It uses advanced hydro carbon profiler technology to measure the molecular structure of the fuel, continuously transmitting information to the Engine Control Unit to allow real time optimisation of injection, combustion and post-treatment for all types of fuel, including bio-fuels.

The technology behind the sensor is based on a smart combination of established infrared hardware and powerful data treatment software, which have been brought together in a package that is no larger than a juice bottle and can be easily mounted on an engine and connected to other control technology and systems to deliver major user benefits in terms of advanced monitoring capabilities, financial savings and better on-site emission control leading to improved environmental compliance.

International Maritime Organization (IMO) regulations for MARPOL Annex VI Tier III, which is aimed at reducing pollution emissions, have also led to upheavals for diesel engine manufacturers when it comes to control and management systems. This in turn has led to companies like CMR developing high performance Local Operating Panels (LOP) for engines.

These incorporate the Smart Innovative Monitoring System, SIMS and can be integrated, configured and installed for quick and easy use for marine applications, processing and displaying all user defined engine parameters, triggering local alarm outputs, updating the alarm list and storing events in the log book. Built upon modular archi-



tecture, a LOP operates with acquisition unit and Human to Machine Interface (HMI) modules. They are used for I/O, engine monitoring, controls, pumps, compressors applications and are engineered to ensure marine standards' compliance and feature technology to manage simultaneously the functions of safety and shut down and condition monitoring, providing the vessel's crew with a single integrated control system that's easy to use.

Many Benefits

The benefits provided by this technology are illustrated through two distinct applications: The first one is a vessel featuring a single propulsion engine where the redundancy of the controller is compulsory. In this instance, one of the most important criteria that the LOP has to satisfy is the capability to manage at the same time, and in real time, dual controllers – the CMR device is equipped with two CAN networks, enabling the system to continuously manage the parameters of the electronic control modules (ECM), monitor the communications and display the main controller parameters on the engine.

The second example concerns the numerous requests for simultaneously managing several communication protocols available on engines or ships - CANopen / SAEJ1939 / Modbus TCP/IP / Ethernet which are all embedded on CLARINUX SW, SIMS' OS allows LOP to manage the communication with engine parameters (T°/Pressure/ Speed) through I/O modules, ECM and sometime the propulsion system by reading and writing messages both ways.

LOP systems have been supplied by CMR to many customers of the world's leading controllers manufacturers including Bosch, Woodward, Heinzmann, Caterpillar and MTU. CMR Group supplies instrumentation and controls for offshore platforms and vessels, marine, engines and industrial applications around the world. With core product groups including rugged cable systems, controls, custom products, electronics, alarm monitoring and safety systems, industrial sensors, and software, the CMR Group is an engineering partner for the world's leading manufacturers.

www.cmr-group.com

***Alain Meslati** joined CMR in 1989, and today focuses on engine builders, mostly in High and Medium speed Diesel and Gas engine in Europe, North America and Asia. Patrice Flot was hired at CMR France in 2005, as an Operations Manager. He was in charge R&D, Production, Design, and Technical departments. He became Managing Director in Dec 2006.*

gplink Evolves
to Serve the *Entire* Market

Second generation of Caterpillar's gpLink will do more and serve a wider market.

By Joseph Keefe

It is no secret that Remote Tracking, Monitoring, and Notification Systems for just about anything that floats, is here. In on the ground floor of all of that, more than 18 months ago, was the organization that provides premier power solutions in the medium- and high-speed segments with outputs from 93 to 16,000 kW in main propulsion and 10 to 7,680 kWe in marine generator sets.

gplink, the satellite/cellular based tracking, monitoring, and notification system was specifically designed just for Cat engines. That's about to change, however. Beyond the all-important monitoring of diagnostics and operating parameters – with ten basic features coming standard – the system does so much more. Caterpillar Marine Power Systems has so far delivered hundreds of these systems to operators and that number is poised to increase dramatically as CAT continues to change how it does business.

Today, gplink is authorized for use in over thirty other countries across five continents with several in the approval process set to come online in the near future. Surprisingly affordable, the dynamic system works with both cellular (inland) and satellite (offshore) systems and more importantly, operates independently from other communication systems aboard the vessel. Through the utilization of dual band cellular technology with GSM communications, as well as the Iridium satellite system, gplink is able to provide vessel coverage on a global basis. Monitoring both diagnostics and engine parameters, the system typically installs in about 4 hours with an extremely small physical footprint and global service and coverage. A call center is manned by trained Caterpillar Technical experts on a 24/7 basis to provide support to subscribers. These experts can remotely access any fault codes or operating conditions, review a vessel's alarm status, troubleshoot any engine conditions and potentially eliminate a service technician's preliminary visit to a vessel.

gplink can provide immediate notification via e-mail, SMS, and/or phone of any critical alarm or event. For those users operating in near coastal or inland waters, an iPhone APP to enhance the service is also here.

Remote monitoring is the new wave for marine equipment in a fast changing global environment. Chad McIntosh, Product Definition Engineer at Caterpillar Marine told *MarineNews* recently, "Over the years we have seen increasing interest from our customers to find new ways to optimize their fleet operations in order to save on Total Operating Costs including fuel, maintenance costs, and maximizing vessel availability time. With the onboard ship technology improvements, remote monitoring is becoming a more effective way to meet these needs. Additionally, with the advent of increased usage of electronic onboard monitoring equipment, the ability to have a fully connected vessel is becoming increasingly likely.

Caterpillar Marine's Product Link is the second generation iteration of its successful gpLink engine monitor. Caterpillar Marine currently offers gpLink as a remote monitoring solution, but the firm is currently working on its next generation version. McIntosh adds, "We are planning to take our current offering and use feedback from our customers to make it even better. We are still in process of finalizing the naming and commercial offering structure. Based on our current timeline, we expect to begin phasing in select offerings to our customers for both new

KEY CAPABILITIES

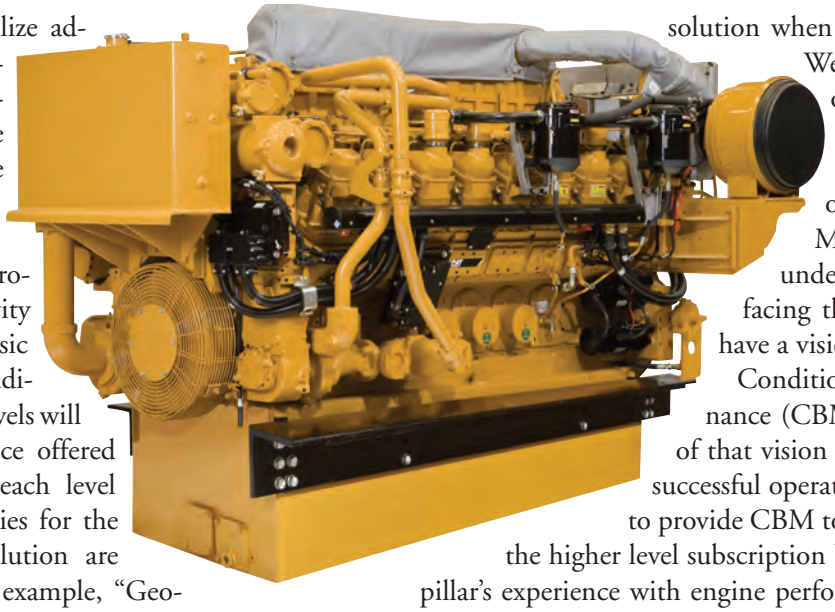
On-Demand Diagnostics	gplink remotely monitors the most critical parameters of engines, generators as well as select auxiliary systems, such as electrical power, smoke alarms & bilge levels.
Instant Notifications	gplink notifies of any alarm conditions that may occur with your power or other critical safety systems. Alert notifications are sent automatically according to your delivery preferences via SMS text message gplink can also interface with existing security systems to instantly notify you of tripped alarms.

and retrofit installations of some existing engines by late 2014. Our vision is not to replace gpLink, but to offer multiple solutions allowing our customers to determine the best fit for their individual application."

Serving the Entire Community

It's important to note that the initial monitor solution was primarily a data collector, but the next version will be so much more – covering all kinds of equipment, providing not only data but also technical advice. Actually, the new remote monitoring solution is a part of a larger initiative at Caterpillar. This means that Cat can help meet the remote monitoring needs for more than just its own marine engines. McIntosh says, "Many of our customers are more than just Caterpillar Marine customers and have other CAT engines or equipment. Additionally, it is critical for Caterpillar to respect that most of our customers own and operate mixed fleets. The challenge we see many manufacturers needing to address today is how to manage the data from multiple brands of equipment. We are working hard to address these concerns so that our 2014 product offering in the remote monitoring space is capable of meeting the needs of the entire fleet, not just the Cat powered fleet."

The original gpLink units were optional with an eye towards someday making the system a standard feature for all CAT engines. In the future, a remote monitoring 'ready' feature which would eventually be available on most Cat and MaK marine engines will be available. This same technology will include multiple levels of solution suites. Hence, some engines would come with most or all the equipment needed to connect to gpLink service right at the point of delivery. In some cases, additional equipment may need



to be purchased to utilize advance features. But McIntosh insists, "Our vision is that basic engine monitoring is available without cost to every Caterpillar and MaK customer. This will provide basic connectivity and a static view of basic engine parameters. Additional more complete levels will be a subscription service offered via our dealers, with each level including the possibilities for the gpLink monitoring solution are seemingly endless. For example, "Geo-fences" are virtual boarders that are set up by geographic coordinates. Once a GEO-fence is set up you can use them to notify you when an asset enters or leaves that boundary. This can be used to set up boundaries for standard routes, protected zones, or even around your docking location of your vessel. McIntosh adds, "We've seen customers use GEO-fences to put checks on vessel operations to ensure that the crew isn't making unscheduled stops, which could lead to fuel theft and / or other unauthorized activities. We are using GEO-Fencing at Caterpillar as part of the AIS system currently available worldwide to evaluate vessel docking and port frequency, allowing us to better establish market leading service infrastructure for marine. This is all part of ensuring that we can offer the best marine product support available to our valued customers.

CBM, Retrofits, and more …

Today, Cat is even talking about field trials on competitor's engines. For example, the gpLink system monitors messages over both public J1939 and Caterpillar proprietary communications. Hence, the possibility that their system could be used to pull the public data from competitor's engines is being explored because it could allow Cat to help provide a complete solution for customers who may not have just Cat engines on their vessel or fleet.

In today's fast moving marine world, the next step involves "complete ship monitoring" along with remote centers and call-in "Alerts." And, Cat is already there. McIntosh told *MarineNews*, "We currently offer a service for our yacht owners called 'Cat Concierge' that provides 24/7 call in service. Although Cat Concierge does not require remote monitoring, it has been proven to be a more effective solution when paired with gpLink. We have also launched our new Navigator program, providing similar services to our top Commercial Marine accounts. We understand the challenges facing the market today and have a vision for the future."

Condition Based Maintenance (CBM), of course, is part of that vision and the future for all successful operators. Caterpillar plans to provide CBM to customers as part of the higher level subscription based services. Caterpillar's experience with engine performance and development provides the ability to set up analytics to help customers avoid failures through highly sophisticated CBM. Says McIntosh, CBM will be part of our initial remote monitoring offerings and will be expanded over time."

Finally, and while monitoring solutions are a good bet for newbuild tonnage and repower jobs, the task becomes a bit more tricky when dealing with existing engines and equipment. Addressing that challenge, McIntosh said, "We definitely plan to offer a retrofit kit. There will be some limitations around engine models supported via the Cat hardware, however, we are actively working to find that perfect match of Cat hardware (for Cat and MaK equipment) and third party hardware for non-Cat and MaK, all sending data to the same source, running through the same analytics engines, and reporting via the same customer interface. This technology is incredibly challenging, but also very exciting, and we believe the future of marine operations." **www.marine.cat.com**

STREAMLINED SERVICE FOR THE OFFSHORE SECTOR

In a business where time is money, Signal Ship Repair's niche 'high blocking' repair methods have significantly reduced repair times and increased shipyard efficiencies.

By Joseph Keefe

If Signal Ship Repair's (SSR) primary business can generically be described simply as ship repair and conversion, then it can also be said that its practice of 'high blocking' to facilitate faster, and more efficient in-house Z drive repairs is its signature service. Utilizing a simple but highly effective shipyard technique, SSR has taken a routine practice originally used to facilitate naval ship drydockings, and turned it into a signature service that helps offshore clients with drop down thrusters, z-drives, pods and keel coolers get repairs done rapidly. In a business where day rates can soar to $50,000 or more, getting them back to work in days, instead of weeks, can make all the difference.

A *MarineNews* visit to SSR's mobile shipyard in April brought the valuable, if not unique service into full perspective for the offshore markets that the Gulf Coast yard serves. Located in downtown Mobile, Alabama, the SSR facility of 53 acres and 4,400 feet of waterfront operates one Panamax and one 4,500 ton drydock. SSR offers mooring capability for vessels 1,000 feet (305 meters) in length. Signal International Inc., SSR's parent, is a Gulf of Mexico provider of marine and fabrication services which include a full service suite of new construction, heavy fabrication, offshore drilling rig and ship overhaul, repair, upgrade and conversion.

Signal International, LLC was organized in 2002 as a limited liability company after acquiring the offshore divi-

"The high block dockings fill short term availabilities in our dry dock schedule. The high blocking along with in-house Z drive repair capabilities turns our client's repair around rapidly, getting them back to work in just days."

– Signal Ship Repair Vice President Joe Mayhall

sion of Friede Goldman Halter. Signal International, Inc. was incorporated in 2007 and began operations of offshore fabrication with shipyards in Texas and Mississippi. The Pascagoula location(s) – consisting of an East and West Yard – specializes in floating oil rig repair. In 2010, the company entered into the US Gulf Coast ship repair business with the asset acquisition of Bender Shipbuilding and Repair in Mobile, Alabama. It is now Signal Ship Repair. With a family of three yards strategically located along the Gulf of Mexico in Alabama, Mississippi and Texas, Signal is poised to ramp up its services to an equally vibrant offshore oil and gas industry and its support sector.

The ABC's of High Blocking

Signal Ship Repair (SSR) has the ability to dry dock up to 600 foot vessels draughting over 24 feet of water on 12 foot blocks. While the standard blocking is six feet, the high blocking scenario gives SSR the ability to repair drop down thrusters in the fully down position without cutting a hole in the dry dock floor. In this way, they are also able to rig and remove Z-drive thrusters much faster should they require removal to the shop for rebuilding. Beyond this, the practice greatly facilitates ease of bottom repairs and coating. In a nutshell, the high blocking scenario has opened a new niche market for Signal Ship Repair. With the increase in the number of construction and offshore support vessels working in the GOM, it has given Signal the opportunity to perform eight quick turnaround high block dry dockings in the past 12 months. SSR Vice President of Sales & Marketing, Joe Mayhall, told *MarineNews*, "The high block dockings fill short term availabilities in our dry dock schedule. The high blocking along with in-

house Z drive repair capabilities turns our client's repair around rapidly, getting them back to work in just days."

High blocking, as it turns out, has its origins in SSR's early Navy work. The procedure came out of the need to block Navy frigates with a steep dead rise. The frigate beams are made out of steel on a triangular setting and set at the turn of the bilge for hull stability. Depending on overall height needed, steel beams are set below and wood blocks on top of the structure. On centerline there are two stacked four foot blocking arrangements with elevated beams between and wood blocking atop of the concrete. This is dependent upon required height.

Mayhall explains further, "I don't know that Signal Ship Repair pioneered high blocking, but certainly, we take advantage of it. Only later did we use this method for dry docking commercial vessels that needed the high blocking (up to 12 feet/3m) for drop down thruster and Z-drive repair." And, in the past two years alone, SSR has performed the high blocking technique for as many as 18 different vessels. Operators taking advantage of SSR's expedited services include Transocean, Hornbeck Offshore, Olympic Shipping, Eidesvik, Dutra Construction, Express Marine, Signet and Seabulk Towing; just to name a few.

SSR fine-tuned the practice way back in 2010. Mayhall says, "We did a major maintenance and repair upgrade to our Panamax Dry Dock 1, taking it out of service for 90 days. During that period we deep dredged under the dry dock to accommodate the drillship DEEPWATER NAVIGATOR for an upcoming dry dock period. The docking requirement was 12 foot blocking. The 550 foot drillship would draw 30 feet of water when coming into the dry dock. The high blocking was necessary to remove and repair the 12 drop down and fixed Z-drives and thrusters as well as paint and underwater steel repair.

Time & Money = Oil & Gas

Like everything else in the maritime industry, minimal out of service time is paramount in the oilfield. Every day saved on a docking evolution can mean huge money to operators. Steven Lee, Equipment Manager at The Dutra Group said in April, "We have taken advantage of Signal's high blocking capabilities three times in the past twelve months. On the dredge Columbia it was extremely helpful with hopper door repairs to have height for removals. On our dump scow CK7 being blocked at seven feet made it so much more efficient working on the seals on the split hopper. We believe that Signal Ship Repair was able to stay on schedule and reduce overall time in the shipyard being able

to work the equipment with the high blocking system."

Joe Mayhall explains the practice even further, "Not having to cut holes in the dry dock floor to remove Z-drives is time and money saved. Just being able to maneuver under the vessel without being bent over, worse yet, on your knees is an advantage to the operator and to the shipyard. Efficiencies increase and less man-hours are needed to perform the work, rigging time is minimized, saving money and time on the clock. The practice gives us the ability to work the equipment in place and multi-task on the vessel, as we do."

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– Steven Lee, Equipment Manager, The Dutra Group

In April, SSR put a vessel on last week on eight foot blocks that provided the ability to work keel coolers, a drop down thruster forward and replace seals on the stern while completing minor steel work. Off and on, the work took just four days. Additionally, there were two vessels on the dry dock simultaneously. Upon undocking; one vessel went back to the GoM oilfield, and the other went to an overseas contract. Involving both 135 foot LOA tug and another multi-service (370 foot LOA) vessel, the double docking allowed two separate owners to have their vessels repaired and back to work with minimal downtime. Mayhall adds, "The slight increased price of the blocking effort pays dividends in way of less time in the shipyard and a better overall experience with the repair evolution."

Specialized Service for Offshore Clients

SSR's turnkey Deep Draft Rig Solutions also afford One-Stop-Shop Accountability, thruster work done by an

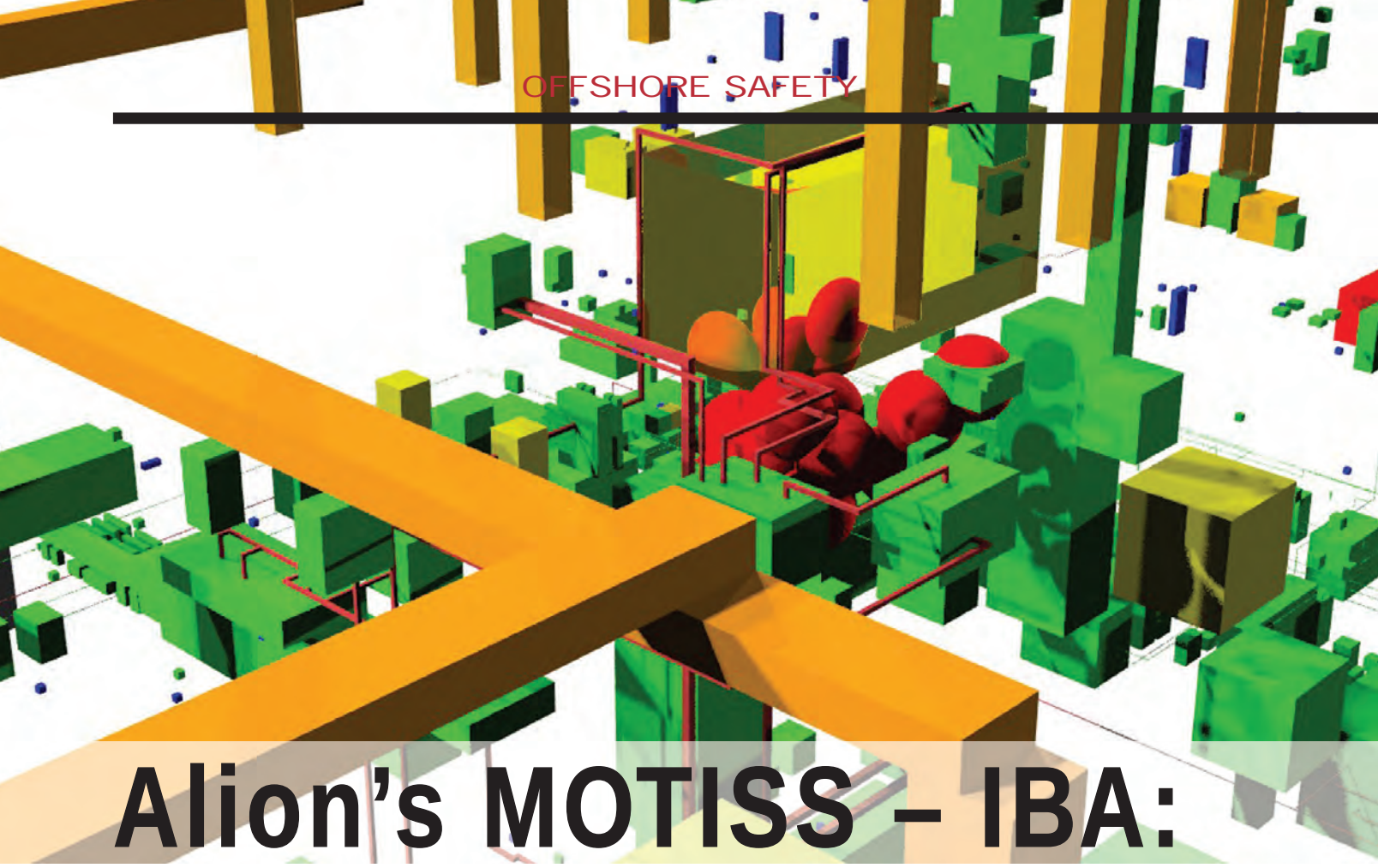
Signal Ship Repair

. . .a division of Signal International

experienced and specialized team (including the Thruster OEM), safe and easy-access worksites adjacent to the SSR shipyard and provides access to a Well equipped deepwater rig yard with dedicated shop for thruster work and space for storage of owner furnished equipment. In addition, SSR touts its easy access to the key Gulf of Mexico locations for its offshore oil & gas support clients.

Well into 2014, SSR, like many other Gulf Coast yards, remains busy and its backlog promises more of the same for the immediate future. In March they announced their intention to add 150 employees at its Mobile, AL location to accommodate another high profile drydocking operation; this time for a 615 foot Military Sealift Command vessel. Versatility for a wide range of vessels, therefore, remains the Hallmark of Signal Ship Repair's many strengths. The practiced technique of high blocking of special mission oil & gas support vessels is just one of those strengths. Then again, it may well be its most valuable resource for the competitive, red-hot Gulf of Mexico offshore sector. For operators looking for just one more edge when it comes to staying on station for as long as possible, Signal's got that niche covered.

www.signalint.com



Alion's MOTISS – IBA: *the Science of Survivability*

An Improved Risk and Safety Assessment Process for the offshore oil & gas industry – and just in time.

By Joseph Keefe

Alion's Measure of Total Integrated System Survivability (MOTISS) has been around a long time. Having previously earned its stripes primarily for naval applications, Alion began to market the service to the offshore oil & gas industry in the messy wake of the Macondo disaster. That event brought to the forefront, more than ever, the need to prepare for similar occurrences in the future and more importantly, increase industry's ability to conduct analysis. Today, a version called MOTISS-IBA (Integrated Barrier Analysis) brings the same comprehensive power of MOTISS to the offshore oil industry that previously was only available to the world's Navies.

According to Bill Cowardin, Assistant Vice President & Director of Operations at Alion Offshore, industry knows that it has to be innovative in making sure that offshore exploration and production activities are carried out in the lowest risk manner possible. He explains, "At a recent IADC Conference, one of the oil majors noted that 'never events' happen and that when one occurs, it affects the entire industry's license to operate. As the oil and gas industry pushes into harsher, more challenging regions such as ultra deepwater and the Arctic and employs increasingly complex technologies, it is natural that companies will want to perform (and society will demand) increased certainty of safety and risk management. To assess a complex system effectively requires an integrated analysis that considers all types of barriers: technical, procedural, and operational, acting in concert. This is what IBA is all about." But, what is MOTISS – IBA?

MOTISS Defined

In the U.S. Navy, damage control is everything. The Navy asks – are you vulnerable? And, it asks, can you recover? The offshore oil & gas industry, more than ever, needs to know the same thing. MOTISS integrates blast effects and recovery analysis within a single package to assist in survivability design, design evaluation, requirements assessment and resource allocation. Grounded in Alion's years of survivability engineering experience, MOTISS answers the need for a rapid and effective evaluation tool. More simply stated; MOTISS-IBA is an integrated safety assessment solution designed for the offshore industry to identify, evaluate and then control potential hazards.

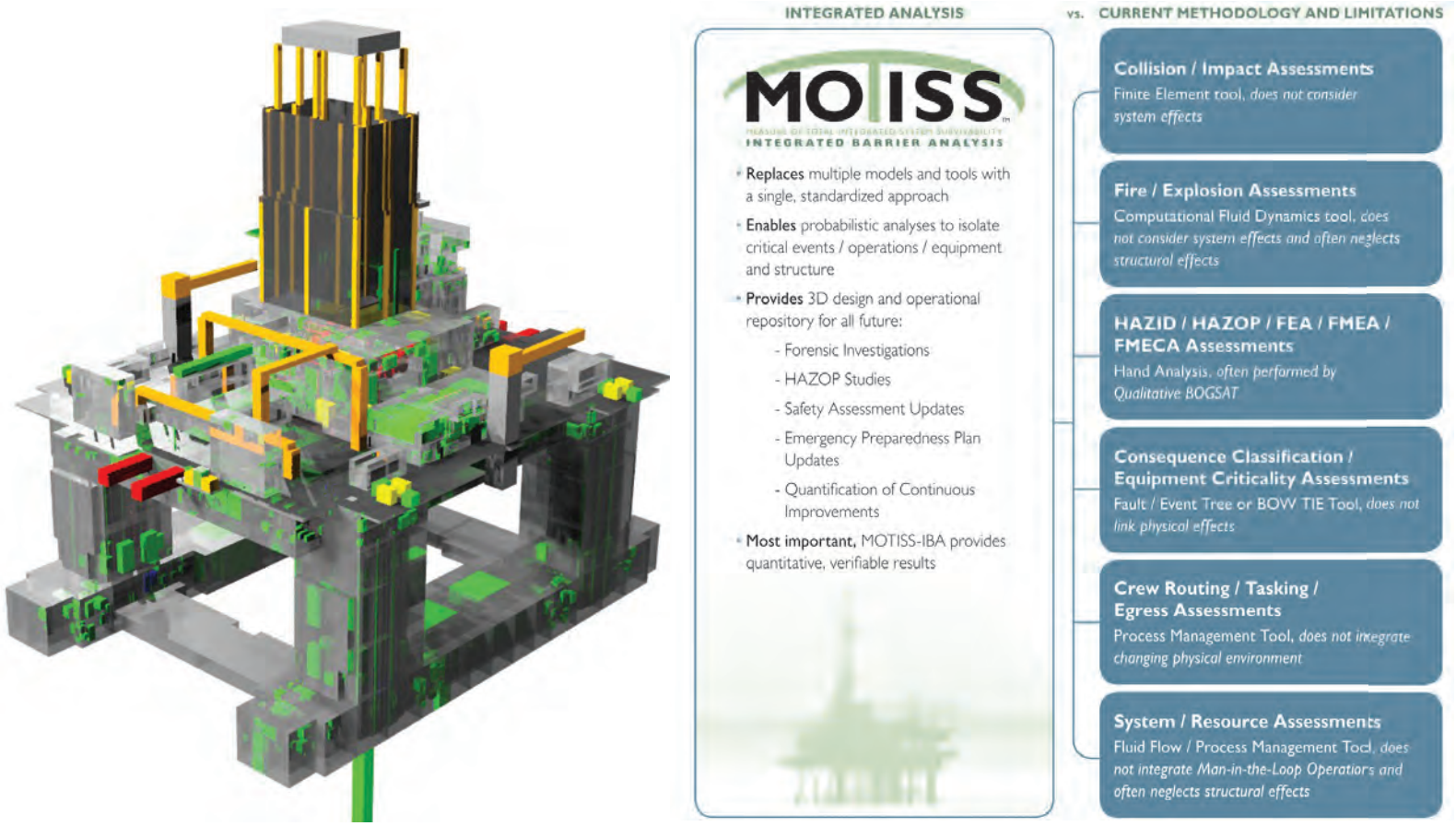
Unlike Advanced Finite Element Analyses (FEA) or Computational Fluid Dynamics (CFD) whole ship analyses, which are collectively expensive, both in analysis time and money, and often only provide the structural response of the vessel to a single "worse case" threat detonation point, MOTISS lets the user investigate and compare the effectiveness of two or more separate survivability enhancement design options and determine which provides the best "bang for the buck." The user can also manipulate the design, moving system components or plate armor (thickness) to find design changes which have minimal cost or no cost, but which enhance the total survivability of the structure.

MOTISS is both a process and a program. It is a process by which a system of systems' (such as a naval or commercial ship, a building or an oil rig) overall survivability is assessed probabilistically in the event of one or more threats. Using first principle physics coupled with empirical data and tests, MOTISS provides a solution to an event thousands of times, with each test randomly varying the threat parameters and hit location, in order to capture the chaotic nature of the random unknowns. This provides the ability to determine probabilistically, what would, will, or did happen in a similar real world threat event. The user or client can then locate and rank weaknesses quickly in order to allow for corrective action before those weaknesses are exploited in a real world scenario.

From their experience in helping the U.S. and South Korean Navies improve vessel survivability, Alion eventually made the leap to transfer that data analysis, technology (and approach) to the offshore world. Cowardin explains, "Following the explosion and loss of the Deepwater Horizon, I started thinking 'there must be a better way to validate the safety of offshore drilling.' I started thinking that the complex systems of systems analysis of total ship survivability, as performed for naval ships, might offer the solution. This led Alion to partner with an international drilling company to assess one of its

MOTISS provides Comprehensive Evaluation and Analysis:

Single-point and root-cause of failure determination	Integrated vulnerability and recoverability evaluations
First order structural and network system evaluations	Fire, flooding and threat damage analyses
Unbiased survivability design and option comparisons	Ballistic, jet, fragment and blast damage analyses



in-service rigs to see how the tools and methodologies used in the naval industry could benefit the offshore industry."

The Price of Failure

The price of failure in the offshore world is quite high. The South Korean government, for example, knows this well. Alion's Cowardin told *MarineNews* in May, "Today, the South Korean Navy does not build a (combat or auxiliary) ship that does not involve Alion basic and detail design input." But, Alion also challenges the oil and gas sector, asking: "What's the price of your license to operate?" That's because, while using MOTISS-IBA analysis tools might not be the least expensive line item in your CAPEX budget, its utility in the long run might be the smartest option for those looking to mitigate risk, eliminate unnecessary vulnerabilities and yes – demonstrate to the regulatory community that your rig is as safe as it can possibly be. The alternative, as shown in Table 1, can be even more costly.

Decision Support/Risk Analysis

A catastrophic incident, such as an explosion, on an offshore oil asset can have serious consequences -- from oil rig or platform damage to system failures that could interfere with initiating system recoverability or shutting down critical systems. Having greater capabilities to predict such incidents, before they happen, can help im-

Table 1 – The Price of Failure Offshore

Event	Piper Alpha	Ocean Ranger	Enchova Central	P36
Year	1988	1982	1984 & 1988	2001
Casualties (lives)	167	84	42	11
Losses ($)	3.4 billion	120 million	461 million	515 million

IBA's "One Model and One Tool" approach:

Reduced Costs	Less software, fewer vendors	More integration, greater understanding
Reduced Time	Improved Quality of Rig Operations	Bring rigs from yard to production faster
Enhanced Capability	Shorten time to regulatory approval	Improved safety and risk management
Faster Analysis Time	Fewer models, less run-times	Efficient use of resources throughout lifecycle

mensely. Unlike most individual assessments, MOTISS-IBA accounts for system, structural and physical effects. By combining multiple assessment models and tools into a single, standardized solution, MOTISS-IBA offers a faster, more efficient and cost-effective approach to identifying risks.

MOTISS-IBA plays an essential role in improving safety – for personnel, equipment and the environment – by helping ensure compliance with regulations. MOTISS-IBA provides quantifiable, verifiable results to demonstrate a rig's safe operation. And, results can be reused for multiple analyses, giving accurate data and cost savings over the lifetime of a particular rig.

Pilot Study & Real Life Analysis

In 2011, Alion Offshore, in a cooperative arrangement with an international drilling contractor, initiated a "Pilot Study" to show how technology used in other maritime industries could be applied to provide continuous improvement of safety and risk reduction in the offshore industry. The objectives of that study were grounded in demonstrating that a rig can be effectively modeled in MOTISS-IBA to support a myriad of analyses, including Ship Collisions (OSV Impact), Dropped Objects (Load Fall From Crane or within Derrick) and Fire and Blast (Oil / Gas Release with Ignition / Detonation on Drill Floor and Beneath Rig).

Continuing that thread, Bill Cowardin also talked about another, more recent project. "We recently finished an IBA analysis for a major drilling contractor and they were pleased with the methodology and the structure of the final deliverable which they found to be understandable and of appropriate detail to convey results but not so complex as to be automatically consigned to a shelf. The initial analysis resulted in some structural modifications that were incorporated before start of construction and resulted in increasing the safety of the accommodations spaces. As a result of the pilot study, our partner was able to enhance safety of operations by implementing some no cost procedural changes to address findings as well as validate changes in the emergency response plans that had recently been imple-

"Following the explosion and loss of the Deepwater Horizon, I started thinking 'there must be a better way to validate the safety of offshore drilling.' I started thinking that the complex systems of systems analysis of total ship survivability, as performed for naval ships, might offer the solution. This led Alion to partner with an international drilling company to assess one of their in-service rigs to see how the tools and methodologies used in the naval industry could benefit the offshore industry."

– Bill Cowardin, Assistant Vice President & Director of Operations at Alion Offshore

mented aboard the rig."

Also according to Cowardin, several other drillers are currently discussing new construction projects, and several oil companies are looking at applications to in service rigs. Two major shipyards engaged in rig construction are also in discussion about how IBA-based analysis might help them bring better products to their customers. Cowardin adds, "That all aligns with what our pilot study partner stated when they said that IBA offers 'faster, cheaper, and better' risk and safety analysis."

The Price of your License to Operate

In today's offshore environment, operating in a 'penny-wise and pound-foolish' manner is a recipe for disaster. What would you pay for peace of mind? For a 'zero-defect' environment? How about no lost time injuries? What's the price of your license to operate? The panacea for all that ails you and your far-flung rig operation might be less expensive than you might think. And, survivability means many things to many people. MOTISS-IBA, no matter how you define survivability, is likely part of that equation.

Silver Ships: Solid Solutions for Military Clients

Silver Ships, Inc. located outside Mobile, Alabama has recently delivered 11M RHIBS to the U.S. Navy under its Foreign Military Sales (FMS) program. The vessels will be used as security patrol boats. These particular boats are center-consoles; however, they also offer the 11M in full cabin, outboard as well as inboard diesel waterjet configuration, depending on the individual requirements, said Scott Clanton, Director of Special Projects. Beyond this, currently, the Alabama-based boatbuilder has an Indefinite Delivery/Indefinite Quantity (IDIQ) agreement through the U.S. Navy to provide in this calendar year, 100 High Speed Maneuverable Surface Target (HSMST) boats which operate either manned or unmanned with another 295 expected over the course of the following 4 years with a ceiling value of $48 million. Developing successful solutions has continued to allow Silver Ships to be awarded DOD contracts which integrate ballistic protection, counter measures, C4ISR systems, as well as the ability to maintain low-level sound and also reduced impact to crew; through use of shock mitigated seats and floors as well as the ergonomics throughout the entire craft. For example, the firm completed delivery of Riverine Patrol Boats (RPB's) awarded through the Navy's FMS in 2013.

The RPB has a 40-length overall, center-console configuration, with a bow area capable of transporting troops and equipment and providing rapid egress through a bow door. The RPB is beachable, with the ability to work in shallow or open water, powered by inboard diesel waterjet propulsion. "It's designed to facilitate maintenance, inspections and repairs to provide ease of operation and extended service life," and the PRB has multiple, crew-served weapon foundations," added Clanton. That contract notably consisted of the complete package – boats, trailers, on-board and deployable spares, OEM Technical Manuals, and Boat Manual and training, providing the customer with a one-stop shop.

According to Clanton, "Our competitiveness with US/foreign shipyards is based on our quality of workmanship, along with our QA standards and our understanding and implementation of design in accordance industry standards. That has always kept us in the fight, whether they're U.S. or foreign small-boat manufacturers." Building and delivering a vessel is unquestionably the easiest part of a contract while 'cradle to grave' requirements are always a challenge. Being able to provide after-sale service and support is crucial to end users and Silver Ships continues its focus on the warfighters, assisting them in keeping their output ready to go into harm's way.

Silver Ships has provided, on a global basis, military, municipal and commercial users with work and patrol vessels for more than 27 years. Whether it's brown or blue water operational requirements, Silver Ships can provide solutions from within its selection of hulls ranging between 21' through 65' manufactured entirely from marine grade aluminum – platforms designed to maximize the operational life of the boat while keeping the overall life cycle cost to a minimum.

2014 is definitely shaping up to be one of the most productive years for the company. In fact, Silver Ships is on track to Ship Out between 100 to 150 US Military platforms this year alone, not including its commercial and Law Enforcement (LE).

Chris Ransome Welcomes New Survey Vessel

Chris Ransome and Associates, Inc., a hydrographic survey company involved in a variety of on and under-water high technology projects nationwide, last month took delivery of their newest 26 foot survey vessel arrived this week. The new survey yacht is of all-aluminum construction with a 9 foot cabin console and two 115 horsepower outboard engines. Scully's Metal Fabrication, based out of Morgan City, La., teamed up with Chris Ransome and Associates on the construction of the boat. The new purpose-built vessel is capable of deploying all of the various sensors that Ransome currently employs, but specifically to enable the use of the latest generation of multi-beam depth sounding systems together with a mobile LiDAR sensor.

Christening Ceremony Held for R/V Neil Armstrong

Naval Architecture and Marine Engineering company Guido Perla & Associates, Inc. (GPA) announced that the christening ceremony for the Oceanographic Research Vessel AGOR 27, named in honor of the famed Neil Armstrong, was held at Dakota Creek Industries (DCI) in Anacortes, WA, on March 29, 2014. The 238 foot, state of the art oceanographic research vessel provides unprecedented opportunities for larger, interdisciplinary science teams of up to 25 members, utilizing highly developed research equipment and will replace aging Intermediate Class ships. Both the R/V Neil Armstrong and sister vessel AGOR 28 R/V Sally Ride, also well under way at DCI, have the capability of carrying sufficient supplies and support systems to stay at sea for up to 40 days, covering up to 10,000 nautical miles and withstanding high sea and wind conditions. Some advanced features include acoustic navigation and tracking systems that operate at various depths, a specially designed hull diverting bubbles from the sonar area, a state of the art suite of over the side handling systems with enhance remote operation capability and dual controllable propellers with variable speed motors for increased efficiency. Upon delivery in late 2014, the vessel will be operated by WHOI, supporting scientists with ongoing research worldwide, including in the Atlantic, Western Pacific and Indian Ocean regions in a wide variety of missions. AGOR 28 R/V Sally Ride, to be managed by Scripps Institute of Oceanography under charter party agreements with ONR, will soon follow after with an expected delivery in early 2015.

Rodriguez Shipbuilding
Triple Screw, Shallow Draft – and Prolific

Over the years, Rodriguez Shipbuilding Inc, of Bayou LaBatre Alabama has probably delivered more shallow-draft tugs than any other US-yard. Their signature lugger-type tug design, with its distinctive aft cabin and wheelhouse, has a strong following amongst U.S. Gulf Coast operators servicing near shore petro-operations. But they also built to a variety of designs. This March, the yard delivered a 75 x 28-foot model bow tug to Morgan City-based Garber Bros. Inc. and Sea Cypress LLC. The housework is built forward on the beamy hull, but it is what is below the water line that will matter to the owner and charterers. The boat has a total of nearly 2000 HP generated by three 660-HP six-cylinder Cummins QSK19 marine engines each turning a propeller through Twin Disc MGX5222 gears with 6:1 ratios. The triple screw configuration allows the design to maintain a shallow ten-foot moulded depth and, depending on load conditions, operate in as little as eight feet of water. Named the Sea Cypress, the new boat

is built to a design by yard owner Joseph Rodriguez It is a near sister to the Sea Oak delivered to Garber Bros. in 2007. Set up for both towing and pushing, the tug is fitted with SMATCO deck equipment including a waterfall type winch for anchor handling or towing. The stern deck winch also allows the versatile tug to make up to barges for pushing by way of a bridle running through stern deck rollers and side deck rollers.

At a glance ...

Fuel: 37,000 gallons	Accommodation: six crewmembers	Lube Oil: 300 gallons
Water: 6,700 gallons	Propulsion: (3) 660-HP six-cylinder Cummins QSK19	Electrical: (2) 45 kW gensets

Diesel-Electric Propulsion for Offshore

Long reserved for specialized applications such as ice-breakers, diesel electric has enjoyed a rapid growth for marine propulsion in the past decade. Brazil's Bravante Group recently took delivery of the M/V Bravante VI, their second in a five vessel series of diesel-electric PSVs, from Florida's Eastern Shipbuilding. The Bravante V delivered in 2013 is already on charter in Brazilian waters. Designed by STX and designated the STX SV290 design the 284 x 60 x 24 foot (86.5 x 18.3 x 7.5-meter) vessels are built around four Cummins-powered generators. Each 16-cylinder Cummins QSK60-DM engine rated for 1825 kW at 1800 RPM powers a Marathon Model 744 690VAC generator also supplied by Cummins. A pair of 690VAC electric motors each turning nozzled fixed-pitch propellers on Schottel Combi-Drives provides main propulsion. These two propulsion motors are each rated at 2,500 kW at 750 RPM to give a total of 6700 HP. Two Schottel 1180 kW tunnel thrusters with direct coupled electric drives also draw their power from the four main Cummins QSK60-powered generators. The flexibility of the diesel electric system in providing power to both ends of the vessel as well as to a wide array of cargo pumps and general ship requirements continues to attract owners' attention and orders.

LEEVAC Rams Ahead for Aries

LEEVAC Shipyards Jennings, LLC recently launched the M/V Ram Nation. The Ram Nation is an LEEVAC-designed 270 ft., diesel-electric, DPS-2, FI FI 1 Platform Supply Vessel that will be certified for worldwide operations. Chris Vaccari, owner and CEO of Leevac, says the Ram Nation is the first of four LDS-designed vessels currently under construction. The design was a joint effort between LEEVAC's engineering and Aries' operational teams. The Ram Nation is scheduled to be delivered during the third quarter of this year.

Kvichak Delivers for CRBP

Kvichak Marine Industries delivered Astoria, a self-righting 74 foot all-aluminum pilot boat, to the Columbia River Bar Pilots (CRBP) of Astoria, OR. Astoria is the third CRBP pilot boat designed by Camarc, Ltd., of the UK and built by Kvichak. The pilots christened Astoria at a ceremony last week where the vessel has joined Columbia, built in 2008. The pilots operate the vessels over the bar at the mouth of the Columbia River. Known for its extreme weather and turbulent waters, the Columbia River Bar is where the Columbia River collides with the Pacific Ocean. The resulting conditions require reliable, stable and self-righting pilot boats that safely and successfully transport pilots to and from the ships and tugs that navigate across the Bar. Power for the 75.5 x 21.5 foot Astoria is provided by twin MTU 16V2000 M70 marine diesel engines rated for 1410 BHP @ 2100 RPM and twin ZF 3050 electric shift transmissions. The engines are coupled to a pair of Hamilton 651 waterjets. Top speed is 29 knots; cruise speed is 25 knots.


Ingram


McNamara


Caponiti


Porter


Moseley

SCI Announces Silver Bell Honorees

The Seamen's Church Institute (SCI) announced the recipients of awards it will confer at its 37th Annual Silver Bell Awards Dinner in New York in June. SCI presents the Silver Bell Award, in recognition of outstanding leadership in the maritime community, to Orrin H. Ingram, President and CEO of Ingram Industries and Chairman of Ingram Barge Company and honors Captain James (Jim) McNamara, former President of the National Cargo Bureau, with a Lifetime Achievement Award. Ingram oversees the largest maritime transportation operation on the United States inland waterway system, Ingram Marine Group. McNamara, has devoted his life to improving the maritime industry, starting as a volunteer with SCI in the 1950s and today serves on the Institute's Board of Trustees. Jim has worked with the International Maritime Organization, chairing the Cargo Committee for eight years.

AMC Names Caponiti as President

The American Maritime Congress (AMC), a non-profit organization representing the U.S. maritime industry, has announced the appointment of James E. Caponiti as President. Mr. Caponiti joined AMC as Executive Director in October 2011 upon the completion of more than 38 years of service with the Federal government, including three decades with the U.S. Maritime Administration. Caponiti earned numerous honors at MARAD, including the Presidential Meritorious Rank Award, the highest Civil Service awards for Senior Executives.

Porter Receives GSSC's 2014 Navigator Award

Larry Porter, Master Trainer at Mississippi Gulf Coast Community College, was the recipient of the Gulf States Shipbuilders Consortium's 2014 Navigator Award. Each year, GSSC honors an individual who has displayed outstanding leadership and made significant contributions to the development of the maritime workforce. Porter received the award at the organization's annual meeting held in Biloxi, Mississippi. His leadership has resulted in the training and placement of approximately 670 welders in the shipbuilding/maritime industry in the past year alone.

WA Transportation Secretary Names Interim Ferries Chief

State Transportation Secretary Lynn Peterson has named Capt. George A. Capacci interim assistant secretary in charge of the Ferries Division for the Washington State Department of Transportation. Capacci will lead the ferry system until a permanent assistant secretary is selected. WSDOT will conduct a nationwide search to find a replacement for outgoing Assistant Secretary David Moseley who resigned effective April 15. Capacci joined Washington State Ferries in 2009 as regional port captain and was promoted to deputy chief of operations and construction for ferries in 2010.

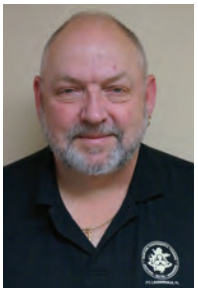

Steve Harris

EBDG is deeply saddened to announce that friend and colleague Steve Harris is among those missing in the recent Oso disaster. Although he has yet to be found, the level of devastation wrought by the mudslide in Snohomish County makes it unlikely that authorities will locate any survivors. Harris leaves behind a fine legacy of work that spans more than 30-years. He joined Elliott Bay Design Group in 1998, and quickly distinguished himself as an expert in advanced structural finite element and hydrodynamic analysis. Steve's considerable shipboard and marine engineering experience encompassed extensive involvement in structural design work for the offshore industry in the Gulf Coast area and the North Sea. His varied project portfolio included everything from US flag tankers to semisubmersibles to ocean energy research platforms. His loss is a great one not only for those closest to him, but to industry as well. He will be sorely missed.


Barsalini


Monacchio


Kunkler


Stiles


Pascal

Key Appointments Support Volvo Penta's Growth

Volvo Penta announced two key appointments to strengthen its management team in the Americas. The company appointed Ed Monacchio as vice president distribution development, region Americas and Gabriel Barsalini as general manager, South America. Monacchio joined Volvo Penta as U.S. marketing manager in 1996. Barsalini will report to Ron Huibers, providing direction and support for the day-to-day activities for Volvo Penta marine businesses.

CLIMAX Names Kunkler VP of Global Quality & Engineering

CLIMAX Portable Machining & Welding Systems hired Scott Kunkler as Vice President of Global Quality and Engineering. Kunkler brings 29 years of professional engineering experience in assisting companies with the technical evaluation of their acquisitions across the globe. Prior to joining the CLIMAX team, Kunkler was the vice president of engineering at CIRCOR Aerospace & Defense.

MPT Names Stiles VP, Curriculum Development

Maritime Professional Training has appointed Al Stiles as the school's Vice President of Curriculum Development in a newly expanded role focused on broadening MPT's course offerings in both on-campus and e-learning online settings. Stiles most recently worked with the Department of Justice for eight years as the Enterprise Learning


Lussow


Hernandez


Byrtus


Schechtman


Ferrier

Technologies Program Officer, which concluded 35 years of Federal Service. In that role he managed the DOJ's e-learning development and delivery for 110,000 DOJ employees.

Pascal Joins KVH as VP

KVH Industries, Inc. announced last month that Candice Pascal has joined KVH as Vice President, Content Acquisition. Ms. Pascal becomes KVH's key person for securing and managing rights to the studio and independent film and television content that will be delivered via KVH's new IP-MobileCast content delivery service. Most recently, Ms. Pascal developed and oversaw maritime content and business strategy matters including licensing and acquisitions for Global Eagle Entertainment. Pascal holds Juris Doctor and MBA from Stetson University and is a member of The Florida Bar.

Harrington Hoists Promotes Lussow

Harrington Hoists Inc. announced the promotion of Bret Lussow from Business Development Sales Manager to VP Business Development. Lussow has 16 years of combined service at Harrington Hoists, starting in 1998 as a Territory Sales Representative, later holding positions of Powered Product Sales Manager, Regional Sales Manager and in Business Development Sales.

Glander Appoints Bunker & Lubricant Broker

Glander International Bunkering announced the addition of Ryan Anthony Hernandez to their Florida office. Appointed as a Bunker and Lubricant Broker & Trader, Ryan will offer his clients an in-depth knowledge of both US and Middle Eastern ports.

BMT Fleet Technology Welcomes New President

BMT Fleet Technology Ltd (BMT), a subsidiary of BMT Group Ltd announced the appointment of Darcy Byrtus as President. Darcy joins BMT from General Dynamics Canada where he held the post of Director of Business Development for Naval Programs and Project Management. With over 30 years' experience in the management of defense projects, Darcy has a dual Masters in Naval Architecture and Mechanical Engineering from MIT and a degree in Physics and Oceanography from Royal Roads Military College.

Schechtman Named Deputy Business Manager for Parsons Brinckerhoff

Jeffrey Schechtman has been named Deputy Regional Business Manager for the Southeast region of Parsons Brinckerhoff, a global infrastructure strategic consulting, engineering, and construction management organization. A Parsons Brinckerhoff Vice President, he is currently the Executive Program Manager for the South Carolina State Ports Authority Program, managing the firm's activities associated with the delivery of a $1.5 billion 10-year capital program to modernize and expand various port facilities.

Wellsite Appoints Two to Management Team

Wellsite Rental Services, LLC has appointed Mark Johnson as president. Johnson joins Wellsite Rental Services with more than 34 years of experience in the oil and gas, domestic inspection and rental markets. He will manage all business ventures including operations and sales, while developing the core business and expanding the company's reach. Additionally, Rex Ferrier was named vice president - Texas operations. Ferrier joins Wellsite Rental Services with more than 36 years of experience in the oil and gas services business. Based in Victoria, Texas, he will manage WRS' Texas operations, including quality control and customer relations as the company expands into Texas markets. His oilfield career began with Diamond M Drilling Company in Morgan City, La.

Stabil Drill Names Alvarez Sales Manager, Latin America

Stabil Drill has named A. Mauricio Alvarez as Latin America sales manager. Based in Houston, Alvarez will identify new clients in the Latin American region through an active and structured approach and will also build relationships between clients and the operations teams in all South American countries. He holds more than 30 years of experience in drilling


Johnson


Alvarez


Tomkinson


Davidson


Angeli

operations, sales, services and strategic business planning.

Xantrex Announces Five New Sales Positions

Xantrex has announced the appointment of five new sales personnel to support its growth plans. Formerly with Xantrex, William Tomkinson has returned as a Strategic Account Manager. He will manage Xantrex's key aftermarket and commercial distribution customers across the U.S. and Canada. Otis Davidson is now serving as Sales Application Engineer to support OEMs and aftermarket partners throughout North America. Three regional managers have been appointed with Corey Manley handling the Western Region; Anthony Falcone is responsible for the Eastern Region; and Donald Hasler is appointed to cover the Midwest Region.

ACR Promotes Angeli to President, GM

ACR Electronics is pleased to announce the promotion of Gerald Angeli to President and General Manager. In his new position, Gerald oversees the manufacturing of ACR and ARTEX products. Previously, Gerald has held positions in Europe and Asia where he managed factories using Six-Sigma and lean manufacturing techniques. Gerald attended Boston University where he received his Masters of Business Administration and Lehigh University, where he earned his Bachelor's degree in Engineering Physics.

Davit-Launched Liferaft for Offshore Platforms

Survitec Group's new davit-launched liferaft meets the escape and survival needs of workers on offshore platforms. This range of escape slides and rafts incorporate the latest in escape equipment design and technology. They also form part of the Survitec Group's broad range of Launch and Recovery Systems (LARS) for offshore platforms. The new davit launched liferaft can be used on wind turbines.

www.survitecgroup.com

Flux-Cored Wire for Offshore Rig Applications

Hobart Brothers offers a welding wire to improve weld quality, particularly on offshore drilling rig applications and jack-up rig fabrication. The Hobart FabCO 712M gas-shielded flux-cored wire features less than 4 ml of diffusible hydrogen per 100 g of weldment, which decreases the chance of underbead cracking and can lessen the amount of preheating needed. The wire's low moisture pickup gives less chance of hydrogen entering the weld.

www.hobartbrothers.com

Ocean Safety Debuts Commercial Lifejacket

Ocean Safety's new commercial twin chamber lifejacket, K2, is compact and fully functional for demanding maritime conditions. The new K2 275N range is a twin chamber lifejacket approved to SOLAS MED Ship's Wheel and is LR ISO 9001 qualified. Designed to be unobtrusive, with or without spray-hood, it is wearable by professional mariners working next to water, while undertaking all types of work.

www.oceansafety.com

IMTRA's Colorlight Searchlight Range

IMTRA's Colorlight high-output searchlights offer unlimited horizontal and vertical movement, and the searchlights feature a dual light head platform. Operators have the flexibility to choose dual light beam models that allow half or full power with built-in redundancy in case of bulb outages; or models with two different light spectra technologies within the same fixture for maximum flexibility.

www.imtra.com

STAUFF Oil Quality Sensors

The new STAUFF Oil Quality Sensor (OQS) from STAUFF monitors oil condition – contamination and moisture. Oil can be changed based on need rather than a set interval, saving of millions of gallons of oil a year. The STAUFF OQS sensor is a live, flexible and cost effective condition based monitoring solution, designed to be permanently mounted within any lubrication system or machine.

www.stauffusa.com

Fugro Upgrades Its Electric ROV Simulators

Fugro's upgraded Electric ROV pilot training simulators provide a new electric ROV control pod and suite of electric ROV specific components, modeling all electric subsystems with greater accuracy and enables failure cases to be simulated on individual sensors and circuits, a wider range of training and new vehicle configurations to be assembled to reflects true circuit diagrams for validation in the simulator before entering service.

www.fugro.com

Pellerin's Horizontal Flotation Separator

Pellerin Water Solutions (PWS), a subsidiary of Pellerin Energy Group (PEG) has designed and built a Horizontal Flotation Separator (HF-SEP) for Stone Energy Corporation. The specifically designed HF- SEP with dissolved gas flotation (DGF) technologies enhances the separation process of oil and water which maximizes production, increasing profitability. Stone Energy will incorporate the HF-SEP with its GoM deepwater facility, Pompano.

www.pellerinenergygroup.com

Wellube's Valve Testing System Certified by BV

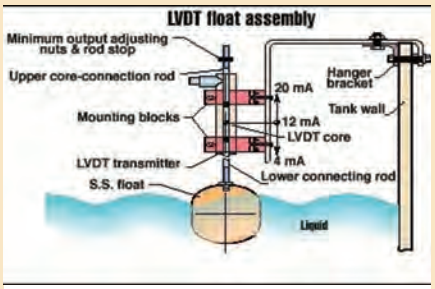
Unique Wellube FZC has achieved certification by Bureau Veritas of its Uni-Test Safety & Relief Valve Testing System. The primary device used to prevent over-pressurization in any onshore or offshore installation is the Pressure Safety Valves (PSV). The Uni-Test system verifies the set pressures of the PSV and ensures that it lifts when required, eliminating the need to remove the valves from the system.

www.unique-group.com

Caterpillar Ships First Cat 3500 Series Marine Gas Engines

Caterpillar Marine has shipped its first five Cat 3500 series marine gas engines from its Indiana manufacturing facility. Five Cat G3516 marine engines were selected to power the Becker Marine Systems subsidiary, Hybrid Port Energy, LNG-Hybrid Barge, the world's first LNG-powered barge. The G3516 is a SOLAS and BV certified spark-ignited, gas engine specially designed to operate in commercial vessel applications.

www.marine.cat.com



Macro Sensors LVDT Linear Position Transmitters

Macro Sensors HSIR Series LVDT Linear Position Transmitters are serving as level sensors to measure liquid level changes in gauging tank level volumes. A stainless-steel float coupled to a nonmagnetic stainless-steel rod is attached to the high-permeability, armature core of the LVDT. As there are no parts to wear out, the Sensors are nearly friction free to offer infinite resolution and long term operation.

www.macrosensors.com

Tweco Auto-Darkening Welding Helmet

The Tweco auto-darkening welding helmet features four sensors for enhanced performance. It can be used in weld and grind mode and will darken when TIG welding even at 5 amps. The helmet has a large viewing area, weighs 16 oz., uses solar power and is backed by a two-year warranty. It comes in three styles: Patriot Eagle, Skull & Fire and Yellow Dragon.

www.victortechnologies.com

Special-Steel Anchors for Super-Yachts

Fimbinger GmbH and its Seahawk Anchor combine exceptional design with functionality, lower weight and cost, as well as higher holding power. With only three parts and no welds, the forged and turned anchor bar – secured by a crescent with locking screws – is simply inserted into the anchor blade. The anchor can be dimensioned 25 percent smaller than in the conventional design.

www.guss.schmolz-bickenbach.com

Compact Drives, Controls PSV Enginerooms

Modular liquid-cooled drives and PLCs from ABB are included in VARD ELECTRO's application-specific propulsion and thruster power solutions for OSV's. The electric motor propulsion technology designed by VARD ELECTRO is used on a series of six platform-supply vessels (PSVs). These components provide real-time control updates and low harmonics power conversion of drives, and compactness – a valuable feature for packed OSV enginerooms.

www.abb.com/plc

Gates Corporation Launches New Website

The Gates Corporation has unveiled a state-of-the-art web site, offering easier access to hose and belt products, tips, and resources for an improved user experience. Highlights of the new Gates website include direct communication with a Gates industrial belt engineer. The new site features an intuitive interface for finding industrial belts, hose, and hydraulics. The new Resources Library houses more than 350 assets.

www.gates.com

ESAB Launches Redesigned Website

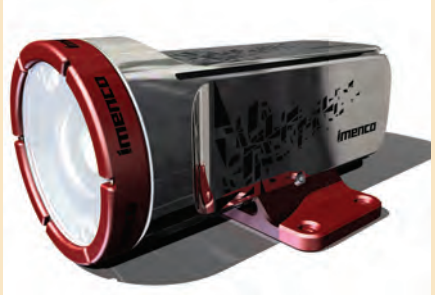
ESAB Welding & Cutting Products has launched a newly redesigned website. A fresh design offers visitors a better user experience, a completely revamped home page with impactful visuals, improved drop-down navigation menus and better functionality to locate content in fewer clicks. The website has been redesigned using the latest technology, making it compatible with today's browsers and mobile devices.

www.esabna.com

High Resolution Subsea Digital Imaging

Imenco has introduced an all-digital system that will have considerable ramifications in the way the subsea industry carries out inspection tasks. All future systems will be run with Ethernet using the latest TCP/IP Standard. With the 'PC' inside the camera rather than on the surface, users can tailor how they use the subsea system to meet specific demands using Imenco or custom Apps.

www.imenco.com



LIFEJACKET Tablet Case from GNA

The LIFEJACKET CASE from Global Navigation Authority is a waterproof iPad case with 'built-in' flotation, designed to protect an iPad when using it with Marine navigation. LIFEJACKET iPad cases are designed to provide a completely airtight operating environment, protecting from water incursion. Its IPX-7 and Military (MIL-STD-810G) certified design sets a new precedent in iPad protection.

www.lifejacketcase.com

Jet Edge's EDGE X-5 5-Axis Waterjet

Jet Edge's EDGE X-5 5-axis waterjet system with AquaVision Di Controller cuts precise taper-free parts. Capable of cutting sophisticated 3D parts such as impellers and bevels up to 50°, this workhorse waterjet system is designed to provide years of dependable service in harsh industrial environments. The EDGE X-5's sturdy design eliminates vibration and ensures maximum part quality, using an industrial PC controller.

www.jetedge.com

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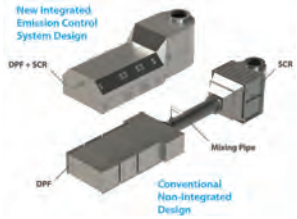
Heavy-Duty Pole Lights Stand Up to Harsh Conditions

Perko's heavy-duty Marinium pole light series are designed for the marine environment. Marinium is aluminum alloyed to be corrosion resistant with a 33% thicker wall. Perko's heavy-duty white all-round pole light features an anodized aluminum tube pole with a choice of LED or incandescent globe. Heavy-duty series pole lights are certified for use on power vessels under 65.6' and USCG-approved up to 2 nm.

www.perko.com



Johnson Matthey's Integrated SCRT System for Tier 4 Compliance

The US EPA has set low emission limits for Tier 4 diesel engines. Johnson Matthey introduces a Tier 4 solution with its compact, integrated SCRT (Selective Continuously Regenerating Technology) system combining CRT diesel particulate filter (DPF) and SCR technology. Recognizing the need for compact retrofit designs, the result is an integrated SCRT system that incorporates multiple unit operations into a single package.

www.jmsec.com

5000 Series CNC Router for Heavy Duty Machining

MultiCam's solution for heavy duty machining with its 5000 Series CNC Router is designed for high-speed nested-based cabinet production and other CNC routing applications requiring a heavy-duty machine. Standard features, such as the precision ground helical rack, digital AC servo drives (2200 IPM rapid traverse), a heavy box frame design and 25 millimeter linear bearings, provide virtually vibration-free cutting.

www.MultiCam.com

Huisman to Build World's Largest Cranes

Huisman has received an order for delivery of the world's largest cranes for a planned semi-submersible vessel. The cranes will have a lifting capacity of 10.000mt at a radius of 48m, and be tub mounted. Using large in-house manufactured bearings instead of traditional slew systems allows for accurate control of slewing and reduced maintenance. Another benefit is a significant weight savings – important on semisubmersibles.

www.huismanequipment.com

Oil Testing Kit Detects Cold Corrosion

Parker Kittiwake's Cold Corrosion Test Kit monitors specific levels of corroded iron in used cylinder oil. The Cold Corrosion Test Kit allows ship operators to monitor specific levels of both metallic and corroded iron in used cylinder oil, giving them a comprehensive overview of the operating conditions within the cylinder chamber. Simple to use, the test alters the color of an oil sample, indicating the concentration of non-ferrous iron compounds.

www.kittiwake.com

W&O Named Exclusive North American Distributor for Perma-Pipe

W&O has been named the exclusive North American marine distributor for Perma-Pipe, Inc., the largest North American manufacturer of pre-insulated piping systems and a subsidiary of MFRI, Inc.

W&O will offer Perma-Pipe Fuel-Gard, an all stainless construction, pre-engineered and pre-fabricated piping system, for maritime Liquid Natural Gas (LNG) bunker fuel, and gas piping applications, as a solution for marine companies throughout North America.

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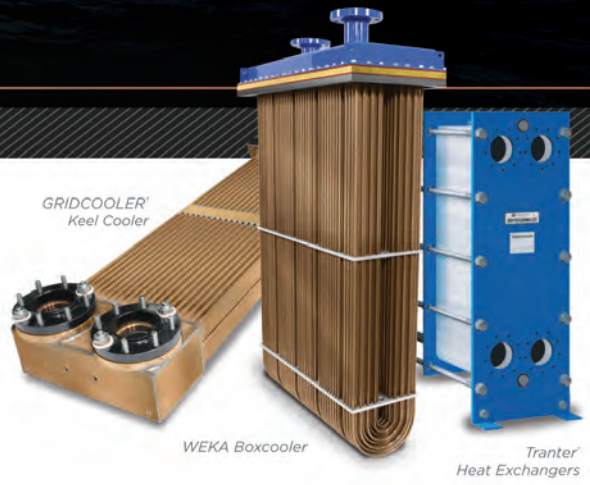

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