JMS Provides Engineering and Design for 420’ Floating Dry Dock

Floating Dry Dock Design

Caddell Dry Dock of Staten Island, NY, contracted JMS to design a floating dry dock capable of handling the largest tank barges in the Northeast. The goal was to maximize lifting capacity consistent with structural requirements and operational considerations in order to be able to service the largest vessel customers in the tug and barge industry. A detailed structural design was developed and JMS provided all structural drawings and calculations consistent with obtaining ABS approval for the dry dock design.

The floating dry dock is 420 feet long with 100 feet between the 30 foot tall wing walls. The dock has a rated lifting capacity of 7,300 LT at 18 LT/ft of keel block loading. It is segregated into 8 pairs of compartments with a safety deck 12’ above the pontoon deck. The design incorporated features such as side access doors through wing walls for moving machinery, pumping system details consistent with the dry docks already in operation at the Caddell Dry Dock facility, generator and control housing.

Letter from the President

Dear Readers,

This year’s newsletter reflects the busy pace at JMS over the past year. Our naval architects have spent as much time inside the bilges of ships as they have in front of computers. The work has been as diverse as the increasing number customers who rely on us. The common thread through all of our projects is the combination of our high-end analytical engineering expertise and practical seafaring experience allowing JMS to deliver rapid and innovative solutions to complex problems.

We’re particularly excited about our launching our first iPhone application. JMS’s very popular U.S. Navy Salvor’s Handbook is now available as an iPhone app. This is the first of several iPhone tools and references we plan to offer.

I hope our record demonstrates that we strive to provide the most reliable and highest quality service in the marine industry. Although we are proud of our past work, we realize that our success depends on our ability to back up our reputation with real results that bring value to our customers every day. Whether it is engineering, marine surveying, marine casualty response, diving support, or marine science, we are committed to a process of continuous improvement in the services we provide.

I hope you find them of interest and I encourage you to send me your comments. Contact me at jack@jmsnet.com or (860) 556-0009 ext. 12.

Regards,

Capt. Jack Ringelberg

Got an iPhone? Make sure you get our app! Read about it on page 8...

Our first iPhone application!

The U.S. Navy Salvor's Handbook

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R/V LAKE GUARDIAN, A-Frame Modification, Genset Re-Power and Galley Re-design

JMS is providing naval architecture, marine engineering and shipyard management support to the Research Vessel LAKE GUARDIAN. The 180-foot vessel is the largest research and monitoring vessel in the US EPA Great Lakes fleet. She is operated by Cetacean Marine and her science missions are carried out by the Chicago-based Great Lakes National Program Office of the EPA. GLNPO monitors the state of the Great Lakes ecosystem through sampling of water, aquatic life, sediments, and air.

Currently, the vessel’s stern mounted 30,000 lb. capacity A-frame that was installed in 1990 during the vessel conversion from an offshore crew boat to research vessel, inhibits access to the rudders through the vessel’s main deck. JMS has been contracted to provide detailed structural modifications to permit permanent access to these plates. This will permit ready-access to the rudder upper bearing and carrier bearing during regular yard periods without requiring the complete removal of the A-frame. JMS developed detailed drawings suitable for bid purposes that detail the modifications to be performed.

Three Caterpillar 3306 135 kW generators are being replaced on the LAKE GUARDIAN with three new Tier 3 compliant 6-cylinder engines including modern electronic controls and instrumentation. JMS has been contracted to provide design services on the generator cooling requirements for the new, Tier 3 engines. JMS has provided detailed structural modifications for the installation of recessed Fernstrum grid coolers (designed for operation in ice) as well as piping schematics and a bid specification for modification to the existing generator cooling system.

JMS is also developing a new galley, mess, and lounge concept design. The existing galley and mess area have a number of restrictive features that are not efficient for the large science complements the ship carries. The objective of the new design is to make the existing space more ergonomic and suitable to servicing up to 40 people at meal times. The new design will also provide additional storage space for provisions. The concept design will make use of the most recent energy-saving devices such as LED fixtures and low flow faucets. The design will also incorporate improved space planning allowing for a larger volume of people to function within the mess/lounge area during meal times.

Tank Barge Conversions

JMS has been working closely with Senesco Marine in Quonset Point, RI to develop a pair of unique tank barge conversion designs. The goal is to convert two existing single skin tank barges into deck barges. The single skin tank barges have been phased-out due to the requirements of OPA 90. These two tank barges were state of the art in the 1970’s when they were constructed and entered service, and have been maintained and operated ever since. As a result, they represent significant steel structures to form the basis of new deck barges. The two existing tank barges, the RTC WESTCHESTER and the RTC ROCKLAND are sister barges built by Avondale Shipyards and are 316’-6” long with a 60’ beam and 26’-5” depth. They are manned barges with accommodations aft, a notch for a tugboat’s bow during maneuvering operations in port, and 4 cargo compartments port and starboard. Both barges will be shortened to 215’-4”. The ROCKLAND will be cut down to a depth of 12’-0” and the WESTCHESTER to a depth of 15’-0”. New decks, transom collision bulkheads and headlogs will be installed on both. The tank barges will be end-for-ended, having their original spoon bows cut off and a new vertical transom fitted in its place. The lower portion of the tank barge stern rake will form the new forward or bow raked section of the deck barge with the addition of a headlog. The deck barge ROCKLAND will have a deck rating of 2,500 PSE, deadweight capacity (DWT) of 2,100 LT and a Load Line draft of 8’-0”. The WESTCHESTER will also have a deck rating of 2,500 PSE, but will have a deadweight capacity (DWT) of 2,700 LT and a load line draft of 10’-0”.

Double Hull Tank Barge Conversion

SHEILA O’HARA II is a cargo oil tank barge owned by O’Hara on long-term charter for Boston Towing and Transportation (BTT). Built in 1985, the barge is 52’ long, 30’ wide and 8’ deep, with a raked forepeak void, port and starboard aftpeak voids, and four (2x2) cargo tanks. While SHEILA O’HARA II is not due to be retired until 2015, BTT contracted JMS to develop the concept design for adding a double hull at this time due to customer demand. Lacking any previous drawings, the first step was to perform a complete on-site inspection and develop as-built drawings to document the existing structure. Although the vessel is not classed, the double hull concept was designed to meet ABS Inland Rules with the double hull breadth and depth increased over the USCG requirement to permit access. The new double hull tanks will be used as voids.

Double Hull Tank Barge

RTC-10 was originally built at SENESCO in 1999 for service as an acid barge but the owner never took delivery. After several years laid up at SENESCO, Reinauer Transportation decided to convert it for use as an oil barge. The RTC-10 will carry Category D and below cargoes in the Greater Boston area. JMS performed the engineering and plan review to modify the barge for oil service and submit the relevant drawings for USCG approval. The original barge had one
The Department of Defense Small Business Innovation Research (SBIR) Program, the Navy has requested that R&D be utilized to identify likely materials and fabrications methods that can be used to construct a composite hatch capable of resisting pressure differentials up to 1,000 PSI on either side of the hatch without leaking or failing. JMS, KaZaK Composites and Electric Boat are aiming at reducing the weight and mechanical complexity of the existing steel hatches while reducing corrosion. The new hatch design will reduce the maintenance requirements and costs associated with maintaining the hatch over the life of the ship by reducing the amount of mechanical components as well as the amount of steel exposed to salt water.

**Composite Submarine Escape and Lock-out Chamber Hatch Design**

JMS has teamed with KaZaK Composites Inc. and General Dynamics Electric Boat to develop a high performance, composite based, deep-sea watertight closure for use in submersible lock-out chambers. The existing steel hatch design on board Navy submarines consists of complex linkages and assemblies that are used to secure the hatch. These hatch assemblies are adequate for use on submarines but have proven inadequate for many submersible applications such as locating divers in and out of the submersibles. In these applications the Navy has discovered that lubricants are washed out of linkages and the steel surfaces show a much higher corrosion rate than standard submarine hatches; thus leading to significant increases in maintenance requirements.

Through the Department of Defense Small Business Innovation Research (SBIR) Program, the Navy has requested that R&D be utilized to identify likely materials and fabrications methods that can be used to construct a composite hatch capable of resisting pressure differentials up to 1,000 PSI on either side of the hatch without leaking or failing. JMS, KaZaK Composites and Electric Boat are aiming at reducing the weight and mechanical complexity of the existing steel hatches while reducing corrosion. The new hatch design will reduce the maintenance requirements and costs associated with maintaining the hatch over the life of the ship by reducing the amount of mechanical components as well as the amount of steel exposed to salt water.

**Finite Element Analysis (FEA) of the hypo/hyperbaric chamber hatch design.**

Through the Department of Defense Small Business Innovation Research (SBIR) Program, the Navy has requested that R&D be utilized to identify likely materials and fabrications methods that can be used to construct a composite hatch capable of resisting pressure differentials up to 1,000 PSI on either side of the hatch without leaking or failing. JMS, KaZaK Composites and Electric Boat are aiming at reducing the weight and mechanical complexity of the existing steel hatches while reducing corrosion. The new hatch design will reduce the maintenance requirements and costs associated with maintaining the hatch over the life of the ship by reducing the amount of mechanical components as well as the amount of steel exposed to salt water.

**Hypobaric/Hyperbaric Chamber Hatch Design**

JMS was contracted to design a new lightweight aluminum hypobaric hatch cover and hinge mechanism for the Hypobaric/Hyperbaric Chamber at the Naval Submarine Medical Research Laboratory at the SUBASE New London, CT. Currently the chamber can only be used at depth. With the addition of the new hypobaric hatch cover the chamber will be suitable for use at altitude as well as at depth. The hatch cover and hinge will be constructed of aluminum to guarantee a lightweight structure that is easily maneuvered and handled by a single operator. A finite element analysis (FEA) of the structure was performed to ensure that the design is in accordance with the requirements of the Safety Standard for Pressure Vessels for Human Occupancy, Unified Facilities Criteria Design: Hyperbaric Facilities, and the Boiler and Pressure Vessel Code. The use of FEA tools allowed JMS to optimize the design to best meet the objectives of the Naval Submarine Medical Research Laboratory and achieve an adequate level of safety and reliability.

**JMS Publishes SNAME Paper “Implications of Performing Tugboat Stability Analysis With Fixed Trim Assumptions”**

JMS has published a technical paper titled, Implications of Performing Tugboat Stability Analysis with Fixed Trim Assumptions (www.JMSnet.com/SNAME.htm) that will be presented at the Society of Naval Architects & Marine Engineers (SNAME) 2010 Annual Meeting in Bellevue, WA.

Tugboat and towboat stability analysis may be performed with either “fixed trim” or...
“free to trim” methodologies under the current Code of Federal Regulations (CFR). The “fixed trim” method allows the vessel's draft to change with increasing heel angle, while maintaining constant trim until the trimming moment is zero. The “free to trim” method is representative of how the vessel will behave, allowing the vessel to trim until the trimming moment is zero, with no restrictions on draft or trim. The use of the fixed trim method originally simplified the calculations performed by naval architects and produced accurate results for traditional model bow tugboats that were predominant. However, as tug styles and computers have evolved, the methodology is no longer as relevant or necessary.

The paper quantifies what affect the fixed trim method has on the calculated righting energy at large angles of heel and determines when the method is no longer valid. The analysis looks at tugboats currently in operation representing a range of design characteristics and ages. The results show that the fixed trim method may provide a reasonably accurate righting arm curve for traditional model bow tugboats in some loading conditions. However, the fixed trim method can result in unrealistic and exaggerated righting arm curves for many foc'sle bow tugboat designs, particularly in the intermediate and load line conditions. As older tugs are modified and new design trends evolve, it is important that naval architects understand the underlying reasoning behind the regulations that are applied to these vessels. The issue has become particularly relevant as older Load Line tugs are being repowered, modernized and, in many cases, converted into modern articulated tug and barge (ATB) units. These older tugs were not originally designed to the current stability standards and it is often a challenge for these vessels to comply. JMS has extensive experience providing engineering and design services to convert conventional towline tugboats to modern articulated tug and barge (ATB) units and has calculated the affects “fixed trim” assumptions can have on the righting arm curves for dozens of traditional and modern tugboats.

Other Engineering Projects

JMS Naval Architects & Salvage Engineers has unique expertise in naval architecture, marine engineering, shipboard operations, salvage engineering, towing and shipyard construction. JMS maintains a fulltime staff of naval architects and engineers with sea-going and vessel operations experience. This combination of high-end analytical engineering expertise and practical seafaring experience allows JMS to deliver rapid and innovative solutions to complex problems, only a few of which are described in this year's newsletter.

<table>
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<th>Customer</th>
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<td>Containership Salvage Plan</td>
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<td>Crowley Liner Services</td>
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<td>Crowley Liner Services</td>
<td>TS KENNEDY Lifeboat Platforms Design</td>
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<td>Maritime Attorney</td>
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<td>Southern Marine</td>
<td>Crane Barge Stability Analysis</td>
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<td>Reinauer Transportation</td>
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<td>National Crane</td>
<td>Heavy Lift Beam Structural Analysis</td>
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<td>Boston Towing &amp; Transportation</td>
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<td>Fire Detection System Plan Approval</td>
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<td>Maritime Attorney</td>
<td>Tug Casualty Expert Witness Report</td>
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<td>National Crane</td>
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<td>City Of Yonkers</td>
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<td>Herrera Construction</td>
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<td>Reinauer Transportation</td>
<td>Tank Barge Computerized Stability Programs</td>
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<td>BTT Marine</td>
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<td>Boston Marine</td>
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<td>National Science Foundation</td>
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<td>Sound Mobile Marine</td>
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<td>Maritime Attorney</td>
<td>Passenger Vessel Collision Expert Witness</td>
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JMS conducts marine surveys and vessel inspections to provide valuable information to vessel owners enabling them to manage their fleet safely and efficiently. JMS personnel are certified by the American Waterways Operators (AWO) as Responsible Carrier Program (RCP) auditors and the Society of Marine Surveyors (SAMS). Surveys conducted by JMS this past year include:

- 8 research vessel inspections for the National Science Foundation
- 4 research vessel condition assessments for the US Geological Survey
- General condition survey of the MV SITKA RANGER in Sitka Alaska for the US Forest Service
- Preacquisition survey of the RV MOANA WAVE for the São Paulo Research Foundation in Brazil
- Valuation survey of the RV SEWARD JOHNSON for Harbor Branch Oceanographic Institute
- Preacquisition surveys of 2 Rigid Hull Inflatable high speed patrol boats for the Indian Navy
National Science Foundation Ship Inspection Program

The National Science Foundation (NSF) awarded JMS a 4-year contract to inspect all the oceanographic research vessels owned by the NSF and selected vessels owned by academic institutions and for which the NSF provides operating funds. The primary purpose is to ensure the research vessels in the academic fleet are capable of effectively conducting NSF-sponsored research cruises and in particular, that the scientific equipment and systems are both fully operational and state-of-the-art with those being utilized within the scientific community and industry.

This past year JMS conducted ship inspections for the National Science Foundation aboard:

<table>
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<th>Vessel</th>
<th>Length</th>
<th>Location</th>
<th>Operating Institution</th>
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<tr>
<td>RV PELICAN</td>
<td>116'</td>
<td>Cocodrie, LA</td>
<td>Louisiana Universities Marine Consortium</td>
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<tr>
<td>RV MARCUS LANGSETH</td>
<td>235'</td>
<td>Portland, OR</td>
<td>Lamont-Doherty Earth Observatory</td>
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<tr>
<td>RV WECOMA</td>
<td>185'</td>
<td>Newport, OR</td>
<td>Oregon State University</td>
</tr>
<tr>
<td>RV BLUE HERON</td>
<td>86'</td>
<td>Duluth, MN</td>
<td>University of Minnesota - Duluth</td>
</tr>
<tr>
<td>RV ATLANTIC EXPLORER</td>
<td>168'</td>
<td>Bermuda</td>
<td>Bermuda Institute for Ocean Sciences</td>
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<tr>
<td>RV HUGH SHARP</td>
<td>146'</td>
<td>Lewes, DE</td>
<td>University of Delaware</td>
</tr>
<tr>
<td>RV NEW HORIZON</td>
<td>170'</td>
<td>San Diego, CA</td>
<td>Scripps Institution of Oceanography</td>
</tr>
<tr>
<td>RV GORDON SPROUL</td>
<td>125'</td>
<td>San Diego, CA</td>
<td>Scripps Institution of Oceanography</td>
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</table>

The missions supported by these vessels are multidisciplinary oceanographic research and range from water-quality monitoring in the Great Lakes to deep-ocean drilling for geophysical research. The fleet includes vessels longer than 230 feet that are able to work worldwide, intermediate size regional vessels which carry about 20 scientists for up to a month, and smaller local vessels are vessels under 130 feet. The JMS inspection team surveys each vessel on a biennial basis and conducts roughly ten surveys per year. Each research vessel is surveyed alongside and underway during a two day inspection.

A 3-man JMS inspection team surveys all scientific support equipment, ship machinery, hull, superstructure, decks, interior tanks, voids, other spaces and equipment that are accessible, navigation and communications equipment, lifesaving and firefighting equipment. Onboard scientific instrumentation and laboratory spaces, as well as shore-side shared use equipment, are also inspected for operational suitability and adequacy. All deck equipment and machinery dedicated to scientific effort including cranes, over-the-side handling systems, winches, wire and cable are inspected and exercised for suitability, operational performance and general condition. Documentation relating to vessel equipment, operations and procedures are reviewed as part of the inspection. The survey ensures the ship is compliant with the University-National Oceanographic Laboratory System (UNOLS) Research Vessel Safety Standards (RVSS) and the regulatory requirements of the United States Coast Guard (USCG), American Bureau of Shipping (ABS) and international regulatory bodies as applicable.

JMS has been conducting research vessel inspections for the National Science Foundation since 1997. JMS recognizes that the sea-going scientist is the end customer aboard UNOLS vessels and the inspections must ensure that the ship can serve the science mission effectively and safely. The JMS inspection team understands the importance of understanding the science mission requirements of the vessel and balancing them with the operational, regulatory and budget constraints.

JMS provides the NSF with current documented reports that assist in the evaluation of vessel condition and in developing funding objectives for maintaining the vessels and the scientific equipment in a high degree of operational readiness to meet oceanographic research objectives.
U.S. Geological Survey Research Vessel Fleet Condition Assessment

JMS has been conducting comprehensive vessel condition assessments for the U.S. Geological Survey (USGS) since 2003 and provides USGS with documented condition reports evaluating the state of each of its research vessels as well as the funding required to maintain the fleet’s advanced state of readiness to meet the scientific research objectives of USGS. The condition assessments include vessel machinery, hull and hull penetrations, superstructure, decks, interior tanks & voids, all navigational equipment & aids, communications, lifesaving and fire fighting equipment, and all other spaces aboard the vessel including any accessible equipment and material within. The vessels are surveyed underway in an operational environment observing performance of the vessel’s deck machinery, and navigational equipment and testing propulsion power machinery.

The final report identifies all deferred maintenance items, complete with cost estimates for repair or replacement, which enables the USGS to plan and budget work required to maintain the satisfactory operation and appearance of these vessels. Vessel modification projects are proposed to ensure the short-term (up to five years) operational continuity of the research vessel for its intended use and to plan for long-term (over five years) major capital reinvestment utilization.

This past year JMS conducted condition assessments on four of the vessels in the USGS fleet. The primary mission of the fleet is to provide offshore work platforms for the support of fisheries related research. The vessels conduct biology, water quality and fisheries research on the Great Lakes and U.S. coastal waters.

The condition assessments of the R/V POLARIS and R/V TURNING TIDE were conducted last November in Redwood City, CA and Isleton, CA, respectively. The POLARIS is a 97’ wooden vessel originally constructed in 1926 as a personal yacht. She was acquired by the USGS in 1966 and is currently used for estuarine research in the San Francisco Bay. She is arguably the oldest active vessel in the Federal service. The TURNING TIDE is a 53’ fiberglass vessel, constructed in 1977, and is used for fisheries research in Suisun Bay.

The condition assessment of the R/V GYRE was conducted this past June in Whittier, AK. The GYRE is a 50' fiberglass vessel used for fisheries research in Prince William Sound and along the Alaska coastline.

JMS conducted a dry dock survey of the R/V STURGEON in July 2010 while the vessel was undergoing work at MCM Maine in Sault Ste. Marie, MI. The full condition assessment of the vessel was conducted in August 2010 in Cheboygan, MI. The STURGEON is a 104' steel vessel constructed in 1974. The USGS rechristened the vessel in 2004 following an extensive vessel conversion. The vessel is currently being used for fisheries research on Lake Huron and Lake Michigan.
Salvage and Survey of RTDI DUCK NO.34

JMS was engaged to oversee the salvage and survey of DUCK NO.34 which was sunk in the Delaware River tragically killing two passengers. DUCK NO.34 is a WWII amphibious landing vehicle (DUKW) which has been converted to a passenger vessel and used to conduct popular tours through the streets of Philadelphia and in the water off of Penn's Landing. The DUKW was carrying 35 passengers and two crew and was anchored on the edge of the shipping lane after its motor failed during the water portion of the tour. It was struck by a 250-foot-long barge being pushed by a tug, spilling the passengers into the river and rapidly sinking.

JMS provided an on-site salvage engineer to work with the owners, Ride the Ducks Inc. (RTDI), the National Transportation Safety Board, and the US Coast Guard to rapidly develop a salvage plan. Upon JMS’s recommendation, Weeks Marine was engaged to provide lifting, diving and underwater video services. Weeks Crane Barge NO.573 was loaded with appropriate diving and rigging gear and departed Weeks’ Camden Facility. The 573 was moved by Hayes Towing and spudded-in over the wreck off of Penns’ Landing to facilitate diving, rigging and lifting as per the approved mooring plan. JMS consulted with the divers, Salvage Master and RTDI principals on-scene throughout the salvage operation. The salvage consisted of a simple lift with divers rigging slings so a barge mounted crane could lift the DUKW onto a deck barge.

Once the vessel was raised, JMS conducted a thorough damage survey to be used in the subsequent investigation and litigation.

Capsizing of M/V ANGELN

The M/V ANGELN was a 132 meter container vessel equipped for the carriage of dangerous goods. On 21 February 2010, the vessel departed Vieux Fort, Saint Lucia bound for Barbados under questionable loading conditions. Shortly after departure, a problem with stability developed and the vessel took a considerable list. The weather conditions at the time of the accident were fair, the ship did not touch ground and a collision did not take place. The order was given to abandon ship, which all 15 crew did successfully. The vessel capsized and sank approximately two miles beyond the sea buoy. The ship was lying on its starboard side.

JMS specializes in marine casualty response and, perhaps most importantly, prevention. Through the Emergency Response Network (ERnet), JMS engineers respond rapidly, 24 hours a day, providing salvage engineering support to oil transportation customers for OPA 90 compliance. The Emergency Response Network (ERnet) complies with US and international recommendations for maritime safety including US Coast Guard requirements of OPA 90. The regulation states that shipowners must have prearranged, prompt access to computerized, shore-based damage stability and residual structural strength calculation programs.

JMS maintains an organized team of salvage engineers and naval architects for responding to marine casualties. JMS utilizes advanced salvage engineering software and has modeled thousands of vessels including tankers, bulk carriers, container ships, cruise ships and gas carriers. JMS maintains a database containing thousands of hull files that can be used to generate computer models of vessels used in salvage engineering. JMS personnel have responded to major incidents including collisions, groundings and sinkings. In addition, JMS is often called upon to respond to minor incidents involving structural damage or flooding.

Decisions made within the first few hours following a maritime casualty can determine the outcome, often whether or not the vessel will remain intact and the potential environmental impact. JMS assists the Master and the vessel owner by rapidly assessing intact and damaged stability, residual hull stress and strength, grounding and freeing forces, and of oil/hazardous substance outflow. This allows JMS to devise lightering and salvage plans to minimize further stressing of the hull, prevent loss of the vessel due to inadequate stability and mitigate environmental damage. JMS also interfaces with the vessel’s class society, flag or port State officials, the US Navy Supervisor of Salvage (SUPSALV), and salvors to provide technical support for temporary repairs, towing and other related requirements.
side in 32 meters of water with approximately 13 meters of clearance between the hull and high water. Several containers washed up on the St. Lucia coastline. A salvage agreement was made with Titan Maritim under Lloyd's Open Form rules, but it was later decided that the ship was a constructive total loss. Titan eventually removed the pollutants from the wreck. JMS provided salvage engineering analysis for the St Lucia Air and Port Authority. After reviewing the available data and cargo manifests, the JMS salvage engineer advised the Port Authority of the feasibility of various wreck removal options from refloating to cutting and lifting in place in order to prevent the wreck from becoming a hazard to navigation.

JMS Naval Architects & Salvage Engineers first authored the U.S. Navy Salvor's Handbook for the Supervisor of Salvage in 1990, and since its initial publication, JMS has received thousands of requests for the handbook from commercial mariners and salvors all over the world.

Commercial and military marine salvors are not the only ones who find this ready-reference indispensable. Owners and operators of both commercial and recreational vessels of almost any size and purpose will find this practical compendium of marine casualty response know-how very handy - if not invaluable - before, during and after a ship casualty. Naval architects, marine engineers and other maritime professions rely on it as a handy diagnostic, repair, design and engineering reference; while at the office, and on the water.

JMS now makes the same expert guidance available for your iPhone. To get your copy, simply visit our website: www.JMSnet.com or search “JMS” or “Salvors Handbook” in the App Store icon right from the iPhone!

**New Ernet Vessels Get HECSALV and CMAX**

This year JMS’ Emergency Response Network (ERnet) welcomed aboard a number of newly built or acquired vessels and dozens of HECSALV computer models were developed specifically for salvage engineering response by JMS engineers. Many of these vessel owners asked JMS to develop companion CargoMax loading programs for the vessels. Some of the more notable projects:

PROVMAR Inc., Hamilton Ontario

PROVMAR, an ERnet member company since 2005, this year asked JMS to upgrade and seek ABS approval of their CargoMax loading program for their LR classed ATB double-hull asphalt/oil tank barge JOHN CARRICK. The CargoMax required custom programming to accommodate high-temperature asphalt cargoes and is the first loading program installation JMS has developed in CargoMax's new major release Version 2.0. All of Provmar's tugs and barges are enrolled in JMS' 24/7 ERnet. As part of Provmar's annual oil spill and salvage response drill, this past December JMS provided
real-time salvage engineering calculations and response planning remotely from JMS offices in Mystic, CT.

**OSG**

**Overseas Shipholding Group, Inc.**

**OSG Ship Management**

JMS developed HECSALV and CargoMax models for OSG’s new build ATB, which OSG says is the largest in the U.S.-flag fleet. The 335,000 bbl OSG 350 double hull tank barge is mated with the 12,000 hp OSG Vision. The CargoMax program for the tank barge includes an Ian Conrad Bergan Gauging System Interface which provides live feedback of tank loading and discharging quantities directly into the CargoMax program. The CargoMax also includes the Direct Damage Stability feature which examines potentially hundreds of possible damage scenarios for every load condition designed by the Master. JMS also developed a CargoMax program for the tug.

**Reinauer Transportation Companies (RTC)**

RTC added 5 new CargoMax installations and companion HECSALV models for each of their new build double hull tank barges this year. During a marine casualty one of the most important things to enter into your salvage response planning, as quickly as possible, is an accurate accounting of cargo and other liquid and non-liquid loads that were on-board the vessel before it got into trouble. Because the CargoMax loading program and the HECSALV salvage response program are designed to work together, ERnet members realize the intrinsic value of paired programs designed to share accurate, pre- and post-damage information between each other during a marine casualty response.

**Diving Support**

**Divers Institute of Technology**

Diver's Institute of Technology (DIT), located in Seattle, WA, is a subsidiary of JMS and provides a fully accredited program of commercial dive training. DIT is on track to train and graduate over 250 students in 2010 with an average of 180 students training and diving on-site at the waterfront school at one time.

After 42 years as a Ballard landmark, DIT is moving to a new waterfront facility in Fremont. The new facility provides additional and larger classrooms, enhanced diving platforms with deeper depths, a new welding tank platform, and more and expanded student facilities. The new Fremont facility will provide for additional growth from our core curriculum into expanded and new courses that will initially address advanced NDT, Diving Medical Technician, advanced welding, and Clinical Hyperbaric Technician requirements, with an eye toward providing advanced training in new technologies and disciplines.

The 28-week Commercial Diver’s Course meets all ANSI requirements as well as the Commercial Diver Training requirements set forth in the Canadian Standards Association (CSA) for qualification as an Unrestricted Surface Supplied Air Diver. Graduates receive their Unrestricted Surface Supplied Air Diver certification from the Diver Certification Board of Canada (DCBC). The DCBC has reciprocity agreements with the HSE, ADAS, and IMCA, and is both recognized and accepted globally.

Students receive deep diving training to 165 feet off DIT’s diving vessel RESPONSE. The RESPONSE is fully-equipped to support air, mixed gas and oxygen diving operations. DIT is the only U.S. diving school offering real-to-life, at-sea operations. This capability is combined with shore side technical training in welding, NDT, HazMat, hydraulic tools, photography/videography, salvage, and commercial SCUBA modules making DIT the leader in commercial diving training.
Diving Operations at Bath Iron Works

Another successful year has passed with JMS providing onsite supervision and project management supporting all diving operations at Bath Iron Works. During our eighteenth year 2009/2010, underwater operations supported the manufacture of three new Arleigh Burke destroyers and the shipyard infrastructure to launch and maintain these modern and highly sophisticated warships. The 13 acre Land-Level Transfer Facility (LLTF) and the 750-foot floating dry-dock, now employed in full production, require continuing annual preventative maintenance inspections and occasional underwater minor repair. Since the shipyard is situated on the Kennebec River in Maine, extreme seasonal climatic variations coupled with very large tidal fluctuations and heavy silting can and do require continued underwater maintenance actions. As noted in the past, this year the majority of the dives/tasks undertaken at BIW supported pier/piling, sacrificial/cathodic anode, fire pump inlet cleaning and inspection operations. Mid January snow, ice and frigid temperatures found the dive team inspecting the first two dry-dock landing grids at Launch-Way 1 for silting levels that were being dredged. The dive team removed the final inches of silt that remained on the top of the wood-covered concrete grids with fire hoses. A portable salt water pump was employed for this operation and allowed for quicker and better control since the LLTF fire main would have been too difficult to keep from freezing up hard. Numerous other dives were in support of new ships construction. Besides the numerous hull inspections performed on ships following launch and sea trials, some minor ship’s husbandry was performed to clean fouled masker belt and prairie air holes. Additionally sonar domes, with their inherent design utilizing rubber windows, required frequent inspections and, on occasion, a few minor grooming repairs. JMS maintains an underwater camera and DVD recording capability onsite that was employed several times to document quality assurance of the dive tasking and, in some cases, provide evidence of several promising targets. One in particular is clearly a debris field with some large man-made objects scattered on the ocean floor. OTF will return to the North Sea again next summer with a Remotely Operated Vehicle (ROV) to get a closer look at the sites of interest.

The Military Sealift Command’s oceanographic survey ship USNS HENSON (T-AGS 63) served as the platform for the search off the coast of Flamborough Head, England, while a team of representatives from OTF, the Naval Oceanographic Office, the U.S. Naval Academy, and the Naval History and Heritage Command conducted the search and identification. The team used state-of-the-art underwater survey technology to map the ocean floor and a free-swimming underwater vehicle, a REMUS 600 equipped with side-scan and multibeam radar, to conduct underwater searches. The Office of Naval Research’s underwater vehicle Bluefin BMI equipped with bottom object scanning sonar, was also used. A computer program developed by the faculty of the U.S. Naval Academy integrated historical data, weather and tidal information, crew actions and last known position to establish where the ship might have sunk. Four midshipmen from the U.S. Naval Academy participated in the survey. They made significant contributions to the mission, and the survey team appreciated having four extra sets of eyes and hands to help out 24/7. All of the midshipmen had excelled the Academy’s online course, titled “Historic Shipwrecks,” which was

BONHOMME RICHARD Expedition

This past September, the Ocean Technology Foundation (OTF) partnered with the U.S. Navy, the British Royal Navy, and the French Navy, to conduct a 10-day search for the remains of the Revolutionary War ship BONHOMME RICHARD. They searched an area approximately 70 square miles, and located 35 sonar targets that were deemed worthy of further investigation. The location of the wreck is presumed to be in approximately 180 feet of water off Flamborough Head in Yorkshire, a headland near where her final battle took place. This year’s search yielded
developed by the Ocean Technology Foundation.

**BONHOMME RICHARD**, the ship commanded by U.S. naval hero John Paul Jones, was lost off the coast of England in 1779 after a decisive battle with HMS SERAPIS, during which Jones shouted his famous words “I have not yet begun to fight.” Although Jones emerged victorious, his ship was damaged in the battle and sunk 36 hours later.

The BONHOMME RICHARD was originally a merchant ship built in France in 1765 for the French East India Company. In that capacity she sailed between France and the Orient until purchased by King Louis XVI of France in early 1779 and placed under the command John Paul Jones. Jones renamed the ship BONHOMME RICHARD, to honor Benjamin Franklin, the American Commissioner at Paris whose Poor Richard’s Almanac had been published in France. At a length of 152 feet, the vessel had a complement 380 men and an armament of six 18-pounders, twenty-eight 12-pounders, and eight 9-pound cannons.

This is the fifth expedition organized by the Ocean Technology Foundation and the most substantial support by Navy assets. The number of other wrecks in the area and a century of fishing trawling operations have complicated previous searches. The Office of Naval Research has previously provided some funding and the NR-1 research submarine to the 2008 expedition. The Naval History and Heritage Command’s underwater archeology branch has been involved in all previous expeditions but this is the first time the U.S. Navy’s Military Sealift Command has provided an oceanographic survey ship and crew.

**Other News...**

**Welcome Aboard!**

Kylee Weir joined JMS in June 2010 as a Naval Architect. She graduated from Memorial University of Newfoundland in May 2010 with a degree in Ocean and Naval Architectural Engineering. Kylee worked with JMS in the fall of 2009 as an intern. Prior to working with JMS and as part of the engineering program requirements at Memorial University, Kylee completed work terms with various companies including Houlder Ltd., Chevron Shipping Co., Robert Allan Ltd., and Fleetway Inc. Kylee’s work terms have offered her experience in vessel structure, stability, vessel design and classification society rules.
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