



UI 2011 CONFERENCE Manned Submersible Program



February 22, 23, 24th - New Orleans LA, USA

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| Room 206 | DAY 1 – Feb. 22, 2011 | |
| 9:00AM | <p style="text-align: center;">MTS Overview of Manned Submersible Activity in 2010</p> <p style="text-align: center;">by: William Kohnen Marine Technology Society Chairman, Manned Underwater Vehicles Committee Email: will.kohnen@seamagine.com</p> | <p>A short summary of the state of the Manned Submersible industry in 2010. The overview will look at developments in all branches of activity, including international research, tourism activity, leisure and security developments. This will include a summary of submarines under Classification, operating and in construction, review of the yachting industry market status and outlook for manned vehicles in the military market.</p> |
| 9:30AM | | |
| 10:0AM | COFFEE BREAK | |
| 10:30AM | <p style="text-align: center;">Fabrication Status for the ALVIN RHOV Personnel Sphere</p> <p style="text-align: center;">By: Jerry Henkener Southwest Research Institute, USA Email: jerry.henkener@swri.org</p> | <p>Woods Hole Oceanographic Institution (WHOI) is developing a new deep diving submersible to ultimately replace the present ALVIN. Southwest Research Institute® (SwRI®) is under contract to WHOI to design, fabricate and test the personnel sphere that will be installed in an upgraded ALVIN submersible. SwRI is nearing completion of the fabrication phase for the personnel sphere. The personnel sphere will be tested for a 6500 MSW operating depth and it will be dual certified by both ABS and NAVSEA. The final machining of the hatch, hatch seat, window seats and penetrator holes is nearly complete. All of the insert weldments have been completed using Electron Beam (EB) welding and all of the major frame attachment lug weldments have been completed using GTAW. All weldments have been inspected and the personnel sphere has been stress relieved in a vacuum oven in accordance with ABS requirements while experiencing no appreciable distortion or change in out-of-sphericity. After final machining is complete SwRI will complete component assembly and testing leading up to the hydrostatic testing. SwRI expects to deliver the sphere to WHOI after hydro in the late summer of 2011 to complete our contract. The status and activities to complete the personnel sphere will be discussed.</p> |

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| <p>11:00AM</p> | <p>Status Update for ALVIN Submersible Upgrade Program</p> <p>By: Kurt Uetz Woods Hole Oceanographic Institution, USA Email: kuetz@whoi.edu</p> | <p>Woods Hole Oceanographic Institution (WHOI) is developing a new deeper diving submersible by upgrading the present ALVIN in stages. The upgraded ALVIN will ultimately have an increased operating depth from 4500 MSW to 6500 MSW. The project at WHOI is being accomplished in two phases. The first phase will replace the personnel sphere, the syntactic foam, some of the pressure housings and all of the primary penetrators with new components that will be certified for a 6500 MSW operating depth. The remaining vehicle subsystems will be upgraded or replaced at a later date. The status of the ALVIN upgrade activities and plans for the future upgrade activities will be discussed.</p> |
| <p>11:30AM</p> | <p>Performance and Safety of Large Format Pressure Tolerant Lithium Ion Batteries for Human Occupied Vehicles</p> <p>By: Daniel Gomez-Ibanez Woods Hole Oceanographic Institution Email: dgi@whoi.edu</p> | <p>Human occupied underwater vehicles demand high density energy storage systems and unconditional safety assurance. A new generation of underwater vehicles replaces present lead-acid batteries with new lithium-ion batteries. For full ocean depth vehicles, large pouch cells are preferred over other types because they can be used safely in a lightweight, pressure tolerant package. Although they have been used in many other applications, performance and safety of these cells in a submarine is not well characterized. What performance can be expected over many deep cycles? What fire barriers are effective? Information from these tests will be used in the future to select cells and design safe battery packages for use in deep submergence vehicles. These tests will provide a benchmark of the present state of lithium ion cell technology. Classification societies, Navy and Coast Guard authorities will benefit from the validation of proposed safety criteria for pressure tolerant pouch lithium ion cells, which will facilitate the integration of similar batteries in classed or approved vehicles.</p> |
| <p>12:00PM</p> | <p>LUNCH</p> | |
| <p>1:30PM</p> | <p>Diving Lake Baikal, Siberia, with Dr. Anatoly Sagalevich</p> <p>By: Paul Isley Botanical Press, Rainforest Flora Inc, USA Email: pti@rainforestflora.com</p> | <p>The two Russian MIR submersibles (MIR 1 and MIR 2) started their third stage of an international research expedition of Lake Baikal. A total of 60 dives were scheduled for 2010 to explore the western, central and southern ends of the lake to explore its fauna, archaeological objects, underwater mud volcanoes and tectonic activity on the lake bottom. In August of 2008, Paul Isley met with Dr. Anatoly Sagalevich and his Russian crew at Lake Baikal where they were escorting scientists to the bottom of the lake. Paul Isley will present his trip and dive with Anatoly in both a PowerPoint presentation and HD video.</p> |
| <p>2:00PM</p> | <p>Sea Trials: Lessons Learned During Our First Year Operating Research Submersible Antipodes</p> <p>By: Guillermo Söhnlein OceanGate Email: guillermo@opentheoceans.org</p> | <p>On January 6, 2010, OceanGate took possession of our new manned submersible, Antipodes. An ABS-classed sub capable of taking 5 people to 936 feet, she was perfectly suited to our mission of supporting ocean exploration and marine research. As the third owners of the sub but the first to operate her in U.S. waters and for research purposes, we treaded into unfamiliar waters. One year later, we learned many lessons about successfully operating a submersible as a business venture. The presentation will share experiences, opportunities and challenges faced with technology, staffing, classification, USCG, operations, and business planning. We continue to learn, but ... "if we had only known then what we know now ..."</p> |

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| <p>2:30PM</p> | <p>Project Palau: Deployment of Manned Submersibles in a Remote Pacific Outpost for Medical Research</p> <p>By: Bobby Adams Expedition Director Email: seadragon59@gmail.com</p> <p>By: Chris Hartman American Aquanaut, USA Email: Chris.Hartman@AmericanAquanaut.com</p> | <p>Join us for a one-hour presentation that will retrace the steps of expedition leaders, scientists, organizations and agencies involved with participating in what set out to be one of the most comprehensive manned submersible expeditions in U.S. history. The presentation will explain the inner workings of critical infrastructure needing to be in place for a successful outcome of a project this scale. Learn from the expedition leaders as they reveal their personal experience about this seven year planned project, what they learned during the year of operation and how to better prepare your expedition for long-term sustainable success.</p> |
| <p>3:00PM</p> | <p>COFFEE BREAK</p> | |
| <p>3:30PM</p> | <p>Filming Humboldt Squid Behavior Using Red-Light Technology Remotely And With Manned Submersibles</p> <p>By: Scott Cassell Undersea Voyager Project, USA Email: scottcassell@live.com</p> | <p>This paper will present experience and findings of the NATIONAL GEOGRAPHIC Expedition led by the author during March 2010. The CDF&G have disputed eye-witness accounts of commercial salmon fishermen of Humboldt squid (<i>Dosidicus gigas</i>) attacking and eating Pacific salmon species. The expedition goal was to film (<i>Dosidicus gigas</i>) attacking and feeding on a salmon. Using newly developed hi intensity LED tuned to emit only visible red-light and cameras balanced to the red, the author was able to capture footage of <i>Dosidicus gigas</i> eating a placed salmon (in a region no salmon occur naturally) and juvenile shark shapes. Sharks and Tuna are principal predators of <i>Dosidicus gigas</i> and with their historical decline due to overfishing the population of <i>Dosidicus gigas</i> has exploded and expanded. (Increase Population + Decrease in Biological Boundary {Indigenous Predators} = Geographic Expansion). The footage and observation of <i>Dosidicus gigas</i> behavior captured during this expedition validates the fisherman's observations and expresses a great challenge of how to mitigate this new environmental threat.</p> |
| <p>4:00PM</p> | <p>Underwater Thruster Technology – How to Interpret and understand Performance Capabilities</p> <p>By: Omar Rafeh Engineering Manager Innerspace Corporation, USA Email: omar@innerspacethrusters.com</p> | <p>The presentation, and associated Innerspace product training seminar, is aimed at raising the general level of understanding of any underwater thruster system, electric or hydraulic, and to gain the specific knowledge needed to take full advantage of its capabilities. This includes an overview of important performance parameters and how these are used in establishing compatibility with specific mission or vehicle requirements: Review of thrust, hydrodynamics, power and mechanical efficiencies.</p> |

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| 4:30PM | <p align="center">NUYTCO Overview of Submersible Operations in 2010</p> <p>By: Phil Nuytten Nuytco Research Ltd., Canada Email: nrl@nuytco.com</p> <p>By: Jeff Heaton Nuytco Research Ltd., Canada Email: Jeff@nuytco.com</p> | <p>The presentation provides an overview of the submersible activity at Nuytco for 2010. The review will include: 1) Delivery of a 1000-foot tourist sub for Curacao, and logging more than 200 dives in the first months. 2) Fulfillment of a multi-year contract with NASA and the Canadian Space Agency in 2010, and training of various astronauts as sub pilots. 3) Deployment of the 'Aquarius' and 'Dual DeepWorker' to perform scientific surveys for the University of California, National Marine Fisheries and NOAA. 4) Start of fabrication of a new Exosuit rated to 1000fsw scheduled for delivery in 2011. 5) Re-certification of a number of DeepWorkers and Dual DeepWorkers submersibles and overhaul of a large North Sea lock-out sub to be rebuilt in 2011. Nuytco was also heavily involved in the 2010 formation of the 'Deep Ocean Group', comprising 28 experts in marine engineering and science assembled to provide technical input to NOAA and the US Environmental Protection Agency on the methodology for control of the BP spill and sub-sea monitoring of the spill effects on the bottom of the Gulf of Mexico.</p> |
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| <h2 style="margin: 0;">DAY 2 – Feb 23, 2011</h2> | | |
| Room 206 | <p align="center">Development and Construction of the FC-01 Submersible</p> <p>By: Brett A. Phaneuf Submergence Group LLC, USA Email: Brett@promare.org</p> | <p>The presentation will discuss design and construction of the FC01, a two-person diesel electric submersible to be operated and stationed in Plymouth and the hull is being built at the MSubs Facility in the UK. Discussion of the design addresses many of the shortcomings of traditional mini-subs. The ability to transit out under diesel power requires good freeboard and stability whilst making the trip enjoyable for two crew. A 200° 'hyper-hemisphere' on the deck provides comfortable car type seating, slightly staggered to make best use of the available shoulder room. The steel hull is designed to BS5500 for a maximum operating depth of 100m to simplify rescue asset requirements. Advanced navigation suite is fitted, GPS whilst on the surface and a 4 beam Doppler velocity log whilst dived that will track to an accuracy of a few meters per hour. A forward scanning sonar is used to locate and film ship wrecks. The sub is due to be launched sometime in 2010.</p> |
| 8:30AM | <p align="center">VAS 525 – A 30 Year Heritage of Submersible Vehicles with Diver Lockout Capability</p> <p>By: Sean Dooley Nautilus Systems Inc., USA Email: nus2@mac.com</p> | <p>The VAS submarine by GSE opens a world of underwater exploration with full lock-out diving capability. These submarines are adapted to operate from private ships and can accommodate up to 12 passengers depending upon the length and model. Designed for a maximum depth of 525 ft, the VAS submarine is both USCG and CISR compliant and features 96-hours of emergency life support (in addition to it's 8-hour mission time). The VAS minisub offers a range of up to 50 nautical miles at three knots, or 15 miles at six knots and can be towed on the surface at up to 8 knots. The presentation will review the design features that make this the only recreational submarine that can carry out visual and instrumental searches, as well as the safe launch and retrieval of SCUBA divers. The VAS minisubs are RINA approved and engineered with a combat-proven technology that is continually improved over 30 years of design.</p> |
| 9:00AM | | |

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| <p>9:30AM</p> | <p>The Evolution of a High Energy Density Silver Zinc Rechargeable Battery: The History of the MK89 Propulsion Cell and Battery and Current Technology Capabilities.</p> <p>By: Zoe Adamedes, BST Systems Inc., USA Email: zadamedes@bstsys.com</p> | <p>The silver zinc chemistry has safely and reliably been utilized in many underwater applications over the past 60 years. Its high power, high energy and excellent safety record have made its use most attractive. Although the use of newer chemistries have been considered, recent circumstances have caused the Navy to take a “second look” at this technology. The Navy has selected the MK89 Silver Zinc Battery to power its next generation of wet and dry combat submersibles. The evolution of this cell and battery, its design and capabilities will be presented, along with an overview of silver zinc technology improvement initiatives.</p> |
| <p>10:00AM</p> | <p>COFFEE BREAK</p> | |
| <p>10:30AM</p> | <p>SEAmagine Ocean Pearl Submersibles Delivered in 2010.</p> <p>By: Charles Kohnen SEAmagine HydroSpace Corp., USA Email: charles.kohnen@seamagine.com</p> | <p>SEAmagine HydroSpace Corporation delivered its 8th and 9th submersible in 2010 both are 2 person submersibles, classed by ABS, and depth rated to 1250ft (330m). These new generation submersibles have been equipped with a wide range of tools that provide its occupants a powerful 1 atmosphere underwater platform. This presentation will concentrate on the basic overview of the crafts and primarily on the subsea tools have been selected and how they have been integrated. These include a Fly out ROV with HD camera, a 5 axis manipulator, HD Cameras and HD recording system over fiber-optic inside the hull. Other tools include forward looking sonar, USBL tracking with underwater GPS transmission. An overview will be given on how the human compartment and layout was organized for maximum efficiency.</p> |
| <p>11:00AM</p> | <p>Applications for ROVs on One Atmosphere Submersibles</p> <p>By: Sean Newsome SeaBotix, USA Email: sean@seabotix.com</p> | <p>Small, one-atmosphere submarines are becoming more prevalent in government, commercial, and personal applications. There are always risks involved with manned submersibles; thrusters and other sensitive control systems can be fouled. Lost fishing nets and natural and manmade physical hazards can entangle the sub making surfacing difficult or impossible. In order to minimize the risk, submarine manufacturers are turning to adding flyout ROVs with specialized rescue functions as a necessary part of the mission toolkit. In addition, an ROV provides an extension of the submarine’s capabilities in terms of being able to extend beyond the depth range of the manned component, serve as a second camera system for documentary work, explore the interiors of shipwrecks and natural benthic features such as caves, as well as collect and deliver samples from the surrounding environment to the submarine.</p> |

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| <p>11:30AM</p> | <p>NMEA 2000 an ideal network for underwater applications</p> <p>By: Jeff Hummel Rose Point Navigation Systems Inc., USA Email: jeff@rosepointnav.com</p> | <p>NMEA 2000 is an ideal instrumentation network for underwater applications. The system is based on the Controller Area Network (CAN) architecture that supports both power and data on the network. Users can add the NMEA 2000 network to a submarine or ROV to easily acquire and display information as well as control motors and powered circuits. Off the shelf software and hardware are available and can be easily customized to meet various system requirements. Industry standards and wide acceptance has resulted in highly reliable, low costs solutions.</p> |
| <p>12:00PM</p> | <p>LUNCH</p> | |
| <p>12:30 PM – 1:15PM</p> | <p>SPECIAL “Bring your Lunch” Presentation</p> <p>Diving in Mongolia: Adventures in the Land of Chinggis Khan Over, Under & Across Mongolia</p> <p>By: Gregg Mikolasek In Depth International Inc. Email: scanman@indepthconsulting.com</p> | <p>Join us for a photo journey across, above and under Mongolia. In 2007, Gregg Mikolasek had the opportunity to take part in the first ever diving expedition to Lake Hovsgol, a high altitude lake in outer Mongolia representing more than 1% of the Earth's fresh water supply. This resulted in the production of the 2009 documentary 'Hovsgol Nuur: Diving in the Land of Chinggis Khan'. On a return trip to the region in 2010 by (very) small truck, Gregg had the opportunity to experience Mongolia in a way few have, by driving there from England! Whether it was jumping out of Russian helicopters with the Mongolian Special Forces, talking his way out of bribes to officials inventing new traffic laws, or exploring shipwrecks 1000 miles from the nearest ocean, Gregg always tried to have his camera ready to capture the moment on film. Bring your lunch and join us for this very informal look at life, gravity and diving on the other side of the planet. Towards the end of the presentation, Gregg will also touch on his company's plans for a return trip to Lake Hovsgol to take on some challenging environmental work with the Mongolian Government.</p> |

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| <p>1:30PM</p> | <p align="center">Studying the Cost of Navy Certification on Manned Submersibles</p> <p>By: Lorri Bennett Applied Research Lab Penn State Univ., USA Email: lab27@arl.psu.edu</p> | <p>The Applied Research Laboratory (ARL) at Penn State under direction by NAVSEA was tasked to investigate the perception that the cost, time, and effort required to certify manned combatant submersibles to Navy standards was unnecessarily expensive. To shed light on this perception, ARL attempted to identify the costs of certification on Navy Deep Submergence Systems, determine if these costs are excessive, and the underlying cause. The original goal of this work was to survey Navy DSS programs and to identify costs which were associated with the Navy certification process. However, program unique issues limited the platforms available for cost consideration, and the lack of details in the cost data that could be acquired prevented isolation of certification costs. Yet, with input from industry and Navy representatives, key process differences were identified between commercial classification and the Navy certification requirements; costs of manned submersibles were decomposed into more discrete cost categories; the cost differences between a Navy certified rescue vehicle and a commercially classed vehicle of similar function were investigated; and recommendations were provided for isolating Navy certification costs and reducing costs on Navy DSS programs. This presentation will provide an overview of the Study of the Cost of Navy Certification, the study methodology, cost data collection and analysis challenges, and the final study results and recommendations.</p> |
| <p>2:00PM</p> | <p align="center">The US Navy's Deep Submergence Systems Safety Certification Program</p> <p>By : R.Adm David M. Duryea Deputy Commander for Naval Warfare Naval Sea Systems Command, USA</p> <p>By : Alfred H Ford PE Submarine Safety & Quality Assurance Naval Sea Systems Command, USA Email : Alfred.ford@navy.mil</p> | <p>The principal objective of this audio visual presentation is to provide participants an overview of the U.S. Navy's Manned Deep Submergence Systems Program and the Navy's approach to manned deep submergence systems safety. The events leading to the inception of the program will be discussed as well as a history of the program, including mishaps and how they shaped the program. The Navy's System Certification Procedures and Criteria Manual for Deep Submergence Systems will be introduced and a synopsis of each chapter will be provided. The Navy's fundamental principles for safety certification of manned deep submergence systems will be reviewed and key terms will be defined, such as "Certify", "Deep Submergence System", "Scope of Certification", "OQE", "Re-entry Control", "Functional Audits" etc. Navy requirements for systems design, material control, fabrication, testing, operational procedures, emergency procedures, and maintenance procedures will be addressed. The Navy's Deep Submergence System safety certification process and its flexibility will be outlined, including the importance of objective quality evidence in the process. Requirements and procedures for initial certification and sustaining certification throughout the life cycle of a deep submergence asset will be summarized. The Navy desires to familiarize the maritime industry with Navy procedures and criteria for its deep submergence systems in order to broaden the base of potential providers in the private sector.</p> |
| <p>3:00PM</p> | <p align="center">COFFEE BREAK</p> | |

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| <p>3:30PM</p> | <p>ABS Rule Changes Overview for 2011 By: Roy Thomas ABS Americas, USA Email: rthomas@eagle.org</p> | <p>Open meeting of the American Bureau of Shipping (ABS) with the subsea industry to review proposed rule changes to the ABS Rules for Building and Classing Underwater Vehicles, Systems and Hyperbaric Facilities, 2010. The proposed rule changes address the following areas:</p> <ul style="list-style-type: none"> • New Definitions • Gas Reclaim Systems • Internal Combustion Engines • Lock-Out Submersibles • Diving Systems • Batteries <p>The meeting facilitates an open dialogue with the industry on current issues that work well or do not work. All active designers, fabricators, owners and operators are invited to attend and provide feedback.</p> |
| <p>4:00PM</p> | <p>OPEN DISCUSSION</p> | <p>Industry Discussion ABS – NAVSEA - MUV Community</p> |
| <p>5:00PM</p> | <p>END of DAY 2</p> | |

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| <p>8:30AM</p> | <p>PSUBS – Personal Submersibles Organization Overview By: Jon Wallace P-Subs Organization, USA Email: Jonw@psubs.org</p> | <p>This presentation will provide an update of PSUBS (Personal Submersibles Organization) activities for the past two years including various submarine and electronic projects under development, organization roadmap and interaction with other industry organizations, and technical issues we have addressed as a group.</p> |
| <p>9:00AM</p> | <p>Atmosphere Monitoring for Manned Submersibles By: Simon Lunt Email: simon.lunt@analox.biz By: Michelle Hudson Email: michelle.hudson@analox.biz Analox Sensor Technology Ltd, UK</p> | <p>Space and Life Support monitoring are two of the prime design drivers in any submersible cabin. The Analox Sub Aspida is a purpose designed compact portable gas monitor capable of detecting both carbon dioxide (CO2) and oxygen (O2). The unit offers continuous monitoring of partial pressure O2 and volumetric CO2, making it ideal for confined space entry onboard submarines and monitoring of portable or transportable decompression chambers. The presentation will describe the features and attributes of this new configuration and offer an overview of its full range of capabilities.</p> |
| <p>9:30AM</p> | <p>Protecting Intellectual Property Around the World By: Mitchell Brook Esq, Luce, Forward, Hamilton & Scripps LLP., USA Email: zadamedes@bstsys.com</p> | <p>Where there is innovation and creativity, intellectual property rights are created. These rights include patents, trademarks, and copyrights. Developing a business strategy for protecting these rights, as well as avoiding infringing the rights of others is part of a growth strategy expected by investors. The speaker, Mitchell Brook, is a partner in a leading law firm, and has developed IP strategies for emerging companies and already established companies.</p> |
| <p>10:00AM</p> | <p>COFFEE BREAK</p> | |

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| <p>10:30AM</p> | <p style="text-align: center;">TECHNICAL PANEL DISCUSSION</p> <p>Technology Panel Discussion: High Energy Density Battery Systems for Manned Submersibles</p> <p>Chaired By: William Kohnen MTS Manned Underwater Vehicles committee Email: will.kohnen@seamagine.com</p> <p>Panelist No. 1: Brent Perry, CEO, Corvus Energy Panelist No. 2: Kevin Cook, NAVSEA 05 Panelist No. 3: Zoe Adamedes, BST Systems Inc.</p> <p>Panelist No. 4: Daniel Gomez-Ibanez, Woods Hole Panelist No. 5: Roy Thomas, ABS America</p> | <p>Sponsored by the MTS Manned Underwater Vehicles committee, the Technology Panel in 2011 will discuss the challenges involved in design, development, safety and regulatory approval of high energy density battery systems. A number of commercial, research and government organizations present the art of the possible viewed from different points of view.</p> <ol style="list-style-type: none"> 1. CORVUS ENERGY will present technology history, engineering heritage and existing applications of Lithium based battery systems. The presentation will offer new solutions for subsea applications, address safety and regulatory issues and elaborate on its consortium and collaborative engineering approach. 2. NAVSEA has a broad experience in designing and utilizing Lithium based battery systems. The presentation will provide an overview of present NAVSEA certification requirements and control protocols and expand on the safety challenges remaining to bring the technology to main stream commercial use. 3. BST Systems produces Silver Zinc battery systems, which have been and continue to be in use with a wide range of applications, including Sub Sea systems. The earlier presentation in the program will provide a reference point for setting a benchmark and expand the discussion beyond the boundaries of Lithium technology. 4. WHOI is planning the development of ambient pressure Lithium Ion batteries for the New ALVIN. The earlier presentation in the program discussed possible solutions and test protocols to generate an industry recognized safety validation for such batteries by pursuing an ABS approval procedure for such technology. 5. ABS supports an ever growing range of technologies as they apply to manned submersibles through their Rules and Standards for Building and Classing Manned Underwater Vehicles. ABS is the main regulatory authority to establish the safety of such batteries in commercial and private submersible applications by creating and adopting a new set of rules regarding Lithium batteries. |
| <p>11:00AM</p> | <p style="text-align: center;">PRESENTATIONS</p> | |
| <p>11:30AM</p> | <p style="text-align: center;">PANEL DISCUSSION</p> | |

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| 12:00PM | LUNCH | |
| 1:30PM | <p style="text-align: center;">MARINE TECHNOLOGY SOCIETY Manned Underwater Vehicle COMMITTEE MEETING</p> <p>by: William Kohnen Marine Technology Society Chair, Manned Underwater Vehicles Committee Email: will.kohnen@seamagine.com</p> <p>Co-Chair: Vance Bradley Email: vbra676539@aol.com</p> <p>Secretary: Daniel Lance Email: lanceind@gmail.com</p> | Annual meeting of the MTS MUV committee. Annual review of 2010 and objectives for 2011. All subsea community members are invited to attend and help grow the organization of the Manned Underwater Vehicles world for its board structure, conference planning, web site content, regulatory discussions and industry support resources. |
| 3:00PM | END of DAY 3 | |

WEDNESDAY Feb. 23rd, 2011

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| Room 214 | WORKSHOP | |
| 10:30AM to 11:30AM | <p>The Sub Aspida Portable Instrument for Atmosphere Monitoring of Manned Submersibles</p> <p>By: Simon Lunt, Analox Sensor Technology Ltd, UK Email: simon.lunt@analox.biz</p> | <p>WORKSHOP: Space and Life Support monitoring are two of the prime design drivers in any submersible cabin. The Analox Sub Aspida is a purpose designed compact portable gas monitor capable of detecting both carbon dioxide (CO2) and oxygen (O2). The unit offers continuous monitoring of partial pressure O2 and volumetric CO2, making it ideal for confined space entry onboard submarines and monitoring of portable or transportable decompression chambers. The workshop will teach users to use all the features and attributes of this new configuration and show how to program the units for specific needs.</p> |

THURSDAY Feb 24, 2011

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| Room 211 | WORKSHOP | |
| 8:30AM to 10:00AM | <p>INNERSPACE THRUSTER TUTORIAL</p> <p>By: Omar Rafeh Engineering Manager Innerspace Corporation, USA Email: omar@innerspacethrusters.com</p> | <p>WORKSHOP: This is a training course aimed at raising the general level of understanding of any Thruster and to gain the specific knowledge needed to take full advantage of the advanced features of Innerspace's products. The workshop will demonstrate how to take apart and to rebuild a 1002 Hydraulic Thruster With Motor. All tools and instructions will be provided. Participants will have the chance to do hands-on work and practice.</p> |