UI 2008 CONFERENCE
Manned Submersible Program

January 29, 30 and 31st, 2008 - New Orleans LA, USA

Room 338	DAY 1 – January 29, 2008	SESSION (8:00AM – 9:30AM)
#1 8:00AM	**MTS Overview of Submersible Activity in 2007** by: William Kohnen Marine Technology Society Chairman, Manned Underwater Vehicles Committee Email: will.kohnen@seamagine.com	*The MTS Manned Underwater Vehicles Committee maintains a central database of all manned submersibles operating around the world. The database is maintained through contact with manufacturers, operators and owners. The presentation will provide a short overview of the web site, its features and resources as well as an updated review of submersible activity from operators not able to participate in the conference. This includes new submersible construction activity as well as submersible operations in research, tourism and commercial activity.*
#2 8:30AM	**International Submarine Rescue Exercise Safeguard and Pacific Reach 2007** By: NDC Mark Schleef US NAVY, Deep Submergence Systems Office Portsmouth Naval Shipyard, NH USA Email: mark.schleef@navy.mil By: CDR. J. Dituri US Navy, Deep Submergence Unit San Diego, California USA	*The presentation gives an overview of the Submarine Rescue exercises that were held during Pacific Reach 2007. This includes the use of the ASD 2000 in submarine rescue operations. Important considerations are discussed with respect to Search and Survey issues, rescue tools needed and developed as well as interaction between the ADS, pilot and the Rescue Chamber.*
#3 9:00AM	**NATO Submarine Rescue System** By: John Mortonson Perry Slingsby Systems, Ltd. Kirkbymoorside, United Kingdom	*This paper describes the design and first trials of this remarkable submersible and its place within the overall rescue system. The rescue vehicle uses sodium/nickel chloride battery technology for greater power and endurance at reduced weight. This allows the rescue task to be completed at greater depths and at higher currents and sea states than other rescue systems. All the equipment is designed to be air portable in C130J and C17 aircraft to a ship of opportunity located anywhere in the world. The NATO Submarine Rescue System is jointly funded by the Governments of UK, France and Norway. The UK MoD is responsible for the overall management of the Contract and uses Rolls-Royce Power Engineering PLC as its prime contractor for the design, manufacture and operation of the system. Perry Slingsby Systems Ltd is responsible for the design and manufacture of the rescue vehicle, Divex Ltd the deck decompression chambers and The Engineering Business Ltd for the launch and recovery system.*

Room 338	DAY 1 – January 29, 2008	SESSION (10:00AM – 11:30AM)
#4 10:00AM	**A Compliant Yoke Design for Hatches in Manned Submersibles** By: Jerry Henkener SouthWest Research Institute, San Antonio TX USA Email: jerry.henkener@swri.org By: Matthew W. James SouthWest Research Institute, San Antonio TX USA By: Donald W. Johnson , ETA International Inc. , San Antonio TX USA	*Hatch openings in asymmetric hull sections present unique design challenges. The design is even more challenging when the hatch must open and close at the surface and at depth, such as with a rescue vehicle or lockout submersible. OceanWorks, Southwest Research Institute, and ETA International recently designed and tested a hatch system for the "transfer skirt" opening of the U.S. Navy Pressurized Rescue Module (PRM). The opening is in the cylindrical section of the hull. To accommodate the asymmetric deflections and requirement to open and close on the surface and at depth, the project team developed the "compliant yoke" concept. The concept differs from previous designs in that the position of the hatch is not controlled by the yoke. Rather, the yoke flexes and allows the hatch to be positioned by guide shoes that bear against the sides of the opening in the hull. This paper details the form and function of the compliant yoke concept and presents the results that were obtained in lab tests under simulated dive conditions, hydrostatic tests of the finished pressure hull, and factory acceptance tests of the completed PRM.*
#5 10:30AM	**Advanced Finite Element Methods for Non-Linear Analysis of Interfaces and Pressure Vessels** By: Dr. Stefan Delin SEAmagine Hydrospace Corp., Claremont CA USA Email: stefan.delin@seamagine.com	*The presentation provides an overview along with several examples to illustrate the effects of considering non-linear effects in the analysis of complex objects, specifically interfaces between two parts under pressure. The finite element methods are discussed along with the modeling and material property assignment to find realistic solutions to complex actual situations encountered in the field. The comparison of results using regular linear analysis and the new non-linear method is given along with the explanation of the significance between the results.*
#6 11:00AM	**The Trilobite K250 Submersible: 25 Years of Exploration in California and Mexico** By: Dr. Michael Smith Pasadena, California USA	*The presentation offers a 25 year historical review of the underwater technologies that emerged since the start of this adventure that started in 1974 with the purchase of a K-250 Kittredge submersible. The story covers the search of a missing airplane and its secret cargo that took the submersible and its crew between San Diego and Baja Mexico. Many modifications to the submersible equipment illustrate well the progression of subsea technologies and the struggles of the early beginnings to provide the sophisticated tools we have today. A passionate and unique story of a submersible, its captain and its secret.*

Room 338	DAY 1 – January 29, 2008	SESSION (1:30PM – 3:00PM)
#7 1:30 PM	MTS MUV SPECIAL FEATURE **Deep Ocean Under Ice Operations of the MIR Submersibles on the North Pole** By: Dr. Anatoly Sagalevich, P.P.Shirshov Institute of Oceanology Russian Academy of Sciences, Moscow, RUSSIA Email: sagalev1@yandex.ru	*On August 2nd 2007 two deep dives of the MIR-1 and MIR-2 submersibles in the point of Geographic North Pole on 4300 meters depth were provided. The dives were done to narrow free water hole (100 m x 50 m) in entire ice cover of 2-2,5 m thick. The expedition was provided by the nuclear icebreaker "Rossia", which broken ice to pave the way for R/V "Akademik Fedorov" – support vessel of the MIRs in this operations. The submersibles were located in the hold of r/v "Akademik Fedorov". Hydroacoustical means like LBL and USBL navigation systems, special directional systems for the searching of the lead were used to provide the safety of the dives. The methods of the dives under thick ice and searching operations to provide the accent of the submersibles in narrow free water hole in ice dome are described in the paper.*

Room 338	DAY 1 – January 29, 2008	SESSION (3:30PM – 5:00PM)
#8 3:30 PM	**The Design and Build of the First Full Ocean Depth Submersible** By: Graham Hawkes, Hawkes Ocean Technologies Richmond, CA 94801 USA Email: graham@deepflight.com	*This paper gives the technical account of the design, testing and construction through to final assembly of a "Deep Flight"- type single-person submersible intended for full ocean depth, with design failure pressure at 74,000 fsw. The several design/materials alternatives for the pressure hull which were considered and rejected based on manufacturability will be discussed, as well as principle configuration chosen.*

Room 338	DAY 2 – January 30, 2008	SESSION (8:00AM – 9:30AM)
#9 8:00AM	**Submersibles Petershark – A Company Outlook Into The Future** By: Pierre Lachance Submersibles Petershark Inc. l'Assomption, Québec, Canada Email: pierre.lachance@submersiblespetershark.com	*During the year 2011, a three person, acrylic hull TRIUMPH submersible rated to 3000 feet (914M), manufactured by SEAmagine Hydrospace Corporation will be available and put into service in Quebec, Canada. The submersible will be owned and operated by Submersibles Petershark Inc., a private / public partnership to serve the scientific interests, commercial and tourism from Canada and elsewhere. Mr. Pierre Lachance, president and owner of the company, will provide an overview of the company's objectives and opportunities related to such a project.*
#10 8:30AM	**Review of 2007 Field Operations with the Experimental Submarine, S201 (Marian)** By: Brett Phaneuf ProMare Inc., Chester, CT USA Email: Brett@promare.org	*Beginning in mid 2005 ProMare drafted a concept design proposal for the construction of a small, manned submarine with significant submerged endurance far exceeding other manned submersibles of similar size and displacement. This concept was brought to fruition in concert with MSubs LTD (Plymouth, UK), having completed detailed design, development and fabrication of the vehicle in the fall of 2006. The vehicle, S201 (Marian), entered service in the spring of 2007 under contract to NAVSEA073R (Team Submarine) and provided research services in support numerous R&D projects managed by the Office of Naval Research, the Special Operations Command, and in concert with private corporations. A detailed review of S201 performance, maintenance vs. duty-cycle and operational successes will be presented. Follow-on research scheduled for 2008 and additional submarine construction programs initiated by ProMare will also be discussed.*
#11 9:00AM	**DeepWorker and Dual DeepWorker Submersible Field Operations in 2007** By: Phil Nuytten, Nuytco Research Ltd., North Vancouver, BC CANADA Email: nrl@direct.ca	*An overview of activity in 2007 of the DeepWorker 2000 and Dual DeepWorker 2000 submersibles. The DeepWorker and Dual DeepWorker are one and two-person manned submersibles rated to a maximum depth of 2000ft. Equipped with a wide array of lights, video and robotic manipulators, the submersibles are in use for a wide range of applications.*

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#12 10:00AM	**2007 Review of SEAmagine Submersible Operations in Research and Tourism** By : Charles Kohnen SEAmagine Hydrospace Corp., Claremont CA USA Email : charles.kohnen@seamagine.com	*SEAmagine Hydrospace Corporation completed delivery of Hull No. 7 to Europe with six other submersibles to date which operate in five countries. This paper is an executive overview of the company's submersible activities during 2007 which include the ABS testing of No. 7, review of the pilot training program and activities in research and tourism applications in Costa Rica, Turkey, Grand Cayman and Australia.*
#13 10:30AM	**International Regulatory Requirements for Submersible Operations on Yachts** By : Richard S. Boggs Camper & Nicholsons International Fort Lauderdale, FL USA Email : rb@ftl.cnyachts.com	*For over 230 years, Camper & Nicholsons has managed the design and build of the world's most acclaimed yachts, pushed the boundaries of naval architecture and design, raised the benchmark of technology, led the way in safety standards and guided luxury yachting into the multi-billion dollar industry it is today. Whereas in 1993 there were fewer than 700 privately owned yachts over 24 meters (~80 ft) in length in the world, at the end of 2007, there were 777 new yachts over 80 feet in length on the order books. The integration of submersible and megayacht brings a new dimension to both industries. The market for lightweight and easily maintained submersibles is growing along with the number of yachts capable of supporting them. In order to achieve a safe and successful integration there needs to be a convergence of the submersible and the yachting industry together with government and class agencies, to open a discussion of the most satisfactory means of establishing operational guidelines for the integration of manned recreational submersibles aboard large yachts. The presentation will encourage the beginning of this needed dialogue.*
#14 11:00AM	**Introduction to the Personal Submersibles Organization** By: Jonathan Wallace PSUBS LLC, Weare, NH USA Email : jon@psubs.org	*The Personal Submersibles Organization (PSUBS) was founded in 1996 to promote discussion of the design, construction, and operation of small submersibles for recreational use. The organization is comprised primarily of people who are interested in fabricating home-built submersibles capable of depths of up to 600 feet either from a pre-designed kit, or a custom design. All discussion is "cyber-based" via the Internet through an interactive website and mailing list, with participants worldwide. Since 2002, PSUBS has held annual conventions in various US locations to discuss topics of interest in person, attend seminars, and join together in submersible diving activities. Learn more about our charter, accomplishments, and goals as we introduce you to the Personal Submersibles Organization.*

Room 338	DAY 2 – January 30, 2008	SESSION (1:30PM – 3:00PM)
#15 1:30 PM	**Regulatory Panel Discussion** **Luxury Yacht Management – Safety Guidelines for Integration of Manned Submersibles on Yachts** Panelist : Richard S. Boggs Camper & Nicholsons International Panelist : Roy Thomas American Bureau of Shipping Panelist : Harald Pauli Germanischer Llloyds AG Panelist : William Kohnen MTS Manned Underwater Vehicles Committee	The integration of submersible and megayacht brings a new dimension to both industries. The market for lightweight and easily maintained submersibles is growing along with the number of yachts capable of supporting them. This panel discussion is to foster an open discussion on how both industries best prepare for these upcoming challenges and invites the Manned Submersible community to consider the opportunities from a manufacturer standpoint. Discussion will include the proposal to establish of a sub-committee within the MTS Manned Underwater Vehicles Committee, comprised of representatives from submersible manufacturers, the yachting industry, and government agencies, to study the most satisfactory means of establishing operational guidelines for the integration of manned recreational submersibles aboard large yachts.

Room 338	DAY 2 – January 30, 2008	SESSION (3:30PM – 5:00PM)
#16 3:30 PM	**FILM PRESENTATIONS** **1. Return to the TITANIC** **2. Return to the BISMARCK** By: Daniel Petry Context TV GmbH, Berlin GERMANY Email: petry@context.tv	*RETURN TO THE TITANIC* *A film by Andreas Sawall* *Return to The Titanic follows adventuerer Michael McDowell and his Russian partners to the most famous shipwreck in the world, exlusively using the entire HD archive shot by the famous Russian MIR submersibles on their trips to a shipwreck that will be gone within the next 20 years – the ultimate HD experience of the Titanic.* *RETURN TO THE BISMARCK* *A film by Julia Knobloch and David Ash* *She was a steel colossus. The world's biggest, fastest and strongest battleship, designed to kill: The Bismarck, Hitler's joker in the Battle of the Atlantic. Her mission was to destroy the utterly needed lifelines of Great Britain, the convoys that were bringing food and supplies from Canada to a starving and devastated country.*

Room 338	DAY 3 – January 31, 2008	SESSION (8:00AM – 9:30AM)
#17 8:00AM	**Submerged Oil Recovery Operations using Manned Submersible Vehicles** By : David Usher Marine Pollution Control Inc. Detroit, MI USA Email : dusher@marinepollutioncontrol.com	*Certain types of oils, or oils mixed with sediment,are heavier than water and will sink to the bottom or be suspended in the water column when spilled. As more and more refined petroleum products and heavy crude oils are shipped, the problems associated with submerged oil spills are likely to increase. Recovery of submerged oilcan be accomplished using diver-assisted pumping techniques, but these operations can be costly, time consuming and inherently dangerous to perform. Marine Pollution Control (MPC) envisions using manned submersible vehicles as the primary logistic support platform for underwater oil recovery operations and has completed two tests of this concept to date. An added advantage of this concept is that the submarine, which can hover in position, need not disturb the oil and complicate its recovery.*
#18 8:30AM	**High Efficiency Submersible Electric Thruster Design** By: William Kohnen SEAmagine Hydrospace Corp., Claremont CA USA Email: will.kohnen@seamagine.com	*Underwater electric propulsion has been a primary drive system for a large variety of submersible systems. As battery capacities increase, space and weight consideration mount, it is ever prescient to optimize the efficiencies obtained from the power conversion of electrical to mechanical power. Innerspace is the world leader in high efficiency propeller designs. The ability of matching the mechanical power properties of the propellers to electrical power bus of the vehicle is a simple yet effective method to improve efficiencies by minimizing the need for multiple power conversions to obtain the right speed and power to the propeller. The motor design is engineered to match the appropriate propeller model to the existing power system through the motor winding configuration.*

Room 338	DAY 3 – January 31, 2008	SESSION (10:00AM – 11:30AM)
#19 10:00AM	**TECHNICAL PANEL DISCUSSION** **Underwater High Definition Imaging Systems** Chaired By: Donna Kocak MTS Underwater Imaging Committee Email: dkocak@greenskyimaging.com **Panelist No. 1:** Frank Caimi, SkyCross, Inc. **Panelist No. 2:** John Kloske, SRI International **Panelist No. 3:** Donna Kocak, Green Sky Imaging, LLC **Panelist No. 4:** Leonard Pool, Sidus Solutions, Inc.	*Industry professionals are invited each year to discuss a pertinent technology and its development in the future as it applies to the operation, design and maintenance of manned submersibles. The emergence of evermore sophisticated high definition imaging systems has brought a wide range of technologies being offered on the market and the lines of demarcations blur between the various systems that claim video and still photography with just as broad a range of digital recording systems/protocols.* *This panel discussion bring together leaders in the field of imaging, image processing and filed operations to bring a basic understanding of the fundamental differences between the various technologies, the advantages of each and the considerations that should be taken in the evaluation of each application.*

Room 338	DAY 3 – January 31, 2008	SESSION (1:30PM – 3:00PM)
#20 1:30PM	**MARINE TECHNOLOGY SOCIETY** **Manned Underwater Vehicle COMMITTEE MEETING** by: William Kohnen Marine Technology Society Chair, Manned Underwater Vehicles Committee Email: will.kohnen@seamagine.com	*Annual meeting of the MTS MUV committee. Annual review of 2007 and objectives for 2008. 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.*

Room 338	DAY 3 – January 31, 2008	SESSION (3:30PM – 5:00PM)
#21 3:30PM	**AMERICAN BUREAU of SHIPPING** **ABS Industry Meeting with Submersible Users – A year's progress in review** By: Roy Thomas American Bureau of Shipping, Houston TX USA Email: rthomas@eagle.org	*Open meeting of American Bureau of Shipping with the subsea industry to review regulatory changes in the past year, look forward to coming changes in 2008 and provide an open dialogue with industry on current issues that work well or that do not work. All active operators, manufacturers and owners are invited to learn and provide inputs in search of more effective regulations and field surveys.*