UI 2007 CONFERENCE
Manned Submersible Tract

January 30, 31 and Feb 1, 2007 - New Orleans LA, USA

Room 205	DAY 1 – January 30, 2007	SESSION A-5 (8:00AM – 9:30AM)
#1 8:00AM	**MTS Overview of Submersible Activity in 2006** by: William Kohnen Marine Technology Society Chairman, Manned Underwater Vehicles Committee Email: will.kohnen@seamagine.com Tel. (909) 626-6262	*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 new 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 submersible operations in the areas of research, tourism, commercial diving and submarine rescue.*
#2 8:30AM	**NOAA 2006 Manned Sub Research** By: John McDonough, Deputy Director NOAA Office of Ocean Exploration, Silver Springs MD USA Email: john.mcdonough@noaa.gov Tel: (301)713-9444	*The National Oceanic and Atmospheric Administration (NOAA) has a long history of using manned submersibles to explore and conduct research in the marine environment. Scientists using manned submersibles in support of NOAA's mission have discovered and investigated hydrothermal vents that support unique assemblages of fishes and invertebrates, as well as extensive areas of deep water coral and sponge banks and reefs. In 2005 and 2006, NURP and OE supported several key expeditions using manned submersibles. This presentation will focus on:* *• The New Zealand American Submarine Ring of Fire 2005 – Pisces submersible* *• The Expedition to the Deep Slope – Alvin submersible* *• Project PHAEDRA 2006 – Thetis submersible* *Each of these expeditions exemplifies the unique niche filled by manned submersibles, and demonstrates how they complement the use of other undersea technologies such as remotely operated vehicles (ROV) and autonomous underwater vehicles (AUV).*
#3 9:00AM	**ALVIN RHOV Status of Pressure Hull Construction and Analysis** By: Jerry Henkener SouthWest Research Institute, San Antonio TX USA Email: jerry.henkener@swri.org Tel. (210)684-5111 By: Robert Brown Woods Hole Oceanographic Institution, Woods Hole MA USA Email: rbrown@whoi.edu Tel. (508)289-2786	*Woods Hole Oceanographic Institution (WHOI), funded by the National Science Foundation (NSF), is developing a replacement for the ALVIN called the Replacement HOV (RHOV). The new submersible will have an increased depth capability, from 4500 MSW to 6500 MSW, and more internal space with improved viewing provided for the pilot and two scientists using larger and rearranged viewports. As part of the first phase of this project, WHOI has contracted Southwest Research Institute® (SwRI®) to design and fabricate the RHOV personnel sphere. The personnel sphere is nearing completion of the preliminary design effort and SwRI will be completing detailed design and initiating the fabrication of the spherical hull in 2007. An order has already been placed for the titanium 6Al-4V ELI ingot material in order to help with the fabrication schedule. This presentation will concentrate on the personnel sphere design features, materials selection and fabrication plans. This presentation will include a short discussion of the WHOI plans for the development of the full RHOV vehicle. WHOI is presently soliciting proposals for the design and fabrication of the full RHOV submersible including testing and initial sea trials. WHOI will provide the personnel sphere to the selected prime contractor as owner furnished equipment.*

Room 205	DAY 1 – January 30, 2007	SESSION B-5 (10:00AM – 11:30AM)
#4 10:00AM	**Atmospheric Diving System (ADS2000) in US NAVY** By: Rick Cecchetti US NAVY, Deep Submergence Systems Office Portsmouth Naval Shipyard, NH USA Email: richard.cecchetti@navy.mil Tel. (207)438-3451 Co-Author: David Vervaet Thirkell, A'Beckett & Assoc. Ltd., Maple Ridge, BC, Canada Email: dvervaet@thirkellabeckett.com Tel. (604) 465-5484	*This presentation will be an overview of designing, building and certifying an Atmospheric Diving System to US NAVY requirements (P9290). The co-authors are the US NAVY's Civilian Project Engineer and the former Project Manager the ADS2000 Program at Oceanworks.*
#5 10:30AM	**Submarine Rescue and the USN ADS 2000….. Search and Survey, Rescue Tools and interaction with the Submarine Rescue Chamber.** By: NDC (DSW/SW) Mark Schleef, ADS Operations Manager US Navy, Deep Submergence Unit, San Diego, CA USA Email: mark.schleef@navy.mil Tel. (619) 545-9269	*The presentation gives an overview of 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. The review will focus on the operational aspect of the ADS technology and the interface with the underwater work.*
#6 11:00AM	**Submarine Rescue and the USN ADS 2000….. Shipping Configurations, Aircraft Selection and Vessel of Opportunity Requirements** By: NDC (DSW/SW) Mark Schleef, ADS Operations Manager US Navy, Deep Submergence Unit, San Diego, CA USA Email: mark.schleef@navy.mil Tel. (619) 545-9269	*A review of the logistics and support equipment needed to deploy submarine rescue capabilities such as the ADS system. From shipping and crating issues to transport by air and finally interfacing and adapting to an appropriate vessel of opportunity.*

Room 205	DAY 1 – January 30, 2007	SESSION C-5 (1:30PM – 3:00PM)
#7 1:30 PM	**AQUARIUS: A New Era for the World's Only Undersea Laboratory** By: Karen Kohanowich, Deputy Director NOAA Undersea Research Program, Silver Springs MD, USA Email: Karen.Kohanowich@noaa.gov Tel: (301) 713-2427 x 109Tel. (604) 465-5484	*In addition to supporting marine research, NOAA's AQUARIUS - the only operational undersea laboratory in the world - is used for NASA space simulation, Navy training, and educational missions. A NASA mission provides the backdrop to discuss the capabilities of the AQUARIUS, and opportunities for the future of NOAA's "Inner Space Station".*
#8 2:00 PM	**Ergonomics Design for Manned Vehicles, NASA JSC** By: Matthew Soltis NASA/Johnson Space Center, Houston TX USA Email: matthew.g.soltis@nasa.gov Tel: (281) 483-8607 Co-Author: James Maida, NASA, Houston TX USA Email: james.c.maida@nasa.gov Co-Author: Sherry Thaxton, Lockheed Martin Email: sherry.s.thaxton@nasa.gov Co-Author: Terry Mayes, Barrios Technology Inc Email: terrence.j.mayes1@jsc.nasa.gov	*The Concept Exploration Laboratory (CEL) is a simulation, test and analysis facility where the primary emphasis resides in concept, requirement, developmental and operational test. To accomplish this, CEL functions primarily as a host environment where real-time computer-based tests are conducted, analyzed and cataloged with data driven visualizations of results. The Anthropometry and Biomechanics Facility (ABF) is located at the Johnson Space Center in Houston, Texas, and has been tasked to research and evaluate flight equipment, procedures, and systems from the perspective of biomechanics, human performance, and ergonomics. The Graphics Research and Analysis Facility (GRAF) performs computer-aided human factors analyses using modeling and simulation of humans and their environments in space. The above laboratories, which are associated with space human factors, are currently collaborating on a project to explore the use of human modeling software in the design process as well as for testing and verification purposes.*

Room 205	DAY 1 – January 30, 2007	SESSION D-5 (3:30PM – 5:00PM)
#9 3:30 PM	**Technology Exchange between Subsea and Space** By: Michael Gernhardt NASA, Houston TX, USA	

Room 205	DAY 2 – January 31, 2007	SESSION E-5 (8:00AM – 9:30AM)
#10 8:00AM	**Deepworker Field Operations in 2006** By: Phil Nuytten, Nuytco Research Ltd., North Vancouver, BC CANADA Email: nrl@direct.ca Tel. (604)980-6262	*A brief overview of submersible manufacturing activity, pilot training programs, and some interesting field operations with the DeepWorker 200, Dual DeepWorker 2000, Deep Rover, and Aquarius submersibles in the 2006 season.*
#11 8:30AM	**HCMR's Submerged Operations with the S/M "THETIS" and ROVs"** By: Commander HN (ret) Spyros Volonakis, Marine Engineer PhD Cand, MEng, NTUA Hellenic Center for Marine Research, Athens, Greece Email: volonaki@ath.hcmr.gr Tel: +30 22910 76405	*During the last years, the team of Underwater Activities (UWA) of the Hellenic Centre for Marine Research (HCMR) has undertaken, among scientific research projects, a number of technical operations. The paper briefly describes these projects and the capabilities of the HCMR UWA and present some of the most difficult operations. This presentation not only refers to the scientific and operational part, but also to the engineering part of the projects. For these operations some very simple equipment (prototypes constructed on-site) and innovative methodologies were used with local environmental conditions always considered. Will also present some future plans.*
#12 9:00AM	**Operations in 2006 of SEAmobile Submersibles in Research and Tourism** By : Charles Kohnen SEAmagine Hydrospace Corp., Claremont CA USA Email : charles.kohnen@seamagine.com Tel : (909) 626-6262	*SEAmagine Hydrospace Corporation is a manufacturer of manned submersibles and has delivered six vessels to date which operate in five countries and has a seventh hull currently under construction. This paper is an executive overview of the company's submersible activities during 2006 in research and tourism applications in Costa Rica, Turkey, Grand Cayman and Australia.*

Room 205	DAY 2 – January 31, 2007	SESSION F-5 (10:00AM – 11:30AM)
#13 10:00AM	**ABS Classification and IMO Diving System Safety Certificate for Diving Systems** By: Ravi Tanwar American Bureau of Shipping, Houston TX USA Email: rtanwar@eagle.org Tel: (281)877-6472 Co-Author: Roy Thomas American Bureau of Shipping, Houston TX USA Email: rthomas@eagle.org Tel: (281)877-6384	*The reconstruction efforts in the Gulf of Mexico in the wake of the Katrina and Rita disasters have led to an increased demand for Diving Systems in the Gulf and worldwide over the last year or so. Many of these Diving Systems are now required to have an IMO Diving System Safety Certificate (IMO DSSC) due to Diving Support Vessel's (DSV) Flag State requirements, SOLAS requirements, etc. Therefore, Diving System Owners and Operators are increasingly using the services of the American Bureau of Shipping (ABS) in order to obtain the IMO DSSC. This paper provides a brief introduction to ABS and further discusses the Bureau's experience in the field of Classification of Diving Systems in accordance with the requirements of the ABS Underwater Rules, IMO Code of Safety for Diving Systems.*
#14 10:30AM	**Submersible Surface Stability Analysis** By: Lin Li American Bureau of Shipping, Houston TX USA Email: LLi@eagle.org Tel: (281)877-6638 Co-Author: Roy Thomas American Bureau of Shipping, Houston TX USA Email: rthomas@eagle.org Tel: (281)877-6384	*The stability of the passenger submersible generally includes submerged stability, transition stability and surface stability. In order to safely operate while on the surface, the stability of the submersible must be sufficient to safely withstand the heeling moments caused by wind action, wave action and movement of passengers. For passenger submersibles Classed by ABS and inspected by the US Coast Guard, a surface stability analysis is required in order to document compliance with the stability requirements of the ABS Underwater Rules and the USCG Guidelines for Passenger Submersibles. This paper discusses the surface stability analysis for the typical passenger submersible when subjected to the worst loading and environmental conditions. The paper also discusses the numerical analysis carried out to determine the hydrostatic properties and the hydrostatic and hydrodynamic surface stability of the typical passenger submersible.*
#15 11:00AM	**Membership of Deep Submergence Pilot Assoc – The Next 20 years** By: Mike MacDonald International Submarine Engineering Ltd. Port Coquitlam, BC CANADA Email: mmacdonald@ise.bc.ca Tel: (604)942-5223	*The Deep Submergence Pilot Association was formed in 1967 to gather the knowledge acquired by a growing group of professionals operating and maintaining a broad range of deep submergence manned underwater vehicles. The past 20 years has seen a lot undersea work and research being done by ROV's. The presentation will review the charter of the Deep Submersible Pilot Association and discuss ways it can extend into the future with services that would benefit the modern manned submersible industry and presents options for discussion by the submersible community.*

Room 205	DAY 3 – February 1, 2007	SESSION I-5 (8:00AM – 9:30AM)
#16 8:00AM	**New horizons for the DeepWorker 2000** By: James Pearl Deep Marine Technology, Houston TX USA Email: jpearl@deepmarinetech.com Tel: (713)896-8555	*Deep Marine Technology, INC. (DMT) currently owns and operates two DeepWorker 2000 submersibles. DMT has used the DeepWorker to conduct several platform inspections. These inspections received rave reviews due to the speed and quality. However the oil and gas industry is very reluctant to use manned submersibles. One of the major avenues for the use of submersibles has always been the scientific research industry. However with budget cuts that all of the research facilities have experienced over the past few years, major expeditions have become fewer and fewer. In early September, DMT took the DeepWorker 14 and 17 to Lake Travis in Austin, Texas. There were several purposes for this mobilization. They included additional training for DMT personnel, testing of optional equipment, and proving the subs would work for our new markets. DMT teamed up with Marine Pollution Control (MPC) out of Detroit, Michigan to demonstrate to effectiveness of using the subs for oil spill recovery. After two trials of marrying the two companies' equipment and collecting simulated oil, the demonstration was deemed a major success.*
#17 8:30AM	**SEAmobile I Submersible Research Expedition to Farallon Islands on OR/V White Holly** By: Adam Compton Submarine Technologies Inc., Van Nuys CA USA Email: subman4@hotmail.com Tel. (818)905-6040 Co-Author: Cpt. Vincent Backen ORV White Holy, Sausalito CA USA Email: vbacken@seamenstrainingcenter.org Tel. (707)552-60535	*Located 30 miles west of the Golden Gate Bridge, the Farallon Islands hosts one of the world's most diverse marine ecosystems. Situated in a unique geographical location, on the edge of the continental shelf, these mysterious islands are one of the few "hot spots" in the world for the massive gathering of marine wildlife. This extraordinary marine eco-system includes whales, dolphins, sea lions, and seals is home to the great white shark. On October 14-15th, 2006, aboard the 133ft Oceanographic Research Vessel White Holly, the two-person SEAmagine submersible was deployed for coastal observations around the islands. The dives identified 11 species of fish, 12 species of invertebrates and allowed easy video recording and identification throughout the dives. The presentation will review the results and discuss the operating logistics of manned submersibles for offshore and inland operations.*
#18 9:00AM	**Reconstruction of the Manned Submersible PC1201** By: Robert W. Wicklund Deep Sea Adventures, Florida USA Email deepseaops@aol.com Tel: (561)358-0725	*A summary of doing a total reconstruction of a 305 meter(1000 feet) rated manned submersible PC1201. Topics will cover the reasons behind purchasing an older submarine, background of the original builder, the whole rebuild process including issues with ABS and ending with the certification dive.*

Room 205	DAY 3 – February 1, 2007	SESSION J-5 (10:00AM – 11:30AM)
#19 10:00AM	**Development of a Manned Submarine for use as a Large Diameter Unmanned Underwater Vehicle Development Platform** By: Brett Phaneuf ProMare Inc., Chester, CT USA Email: Brett@promare.org Tel. (979)324-7081	*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), provides unparalleled power and integration capabilities and will be utilized by the United States Navy to test new sonar systems as well new autonomy and obstacle avoidance algorithms. A thorough overview of the capabilities and performance characteristics will be presented along with a concept of operations for future deployments of the S201.*
#20 10:30AM	**Triton 1000 - A versatile yacht-based manned submersible** By: Patrick Lahey US Submarines Inc., Florida USA Email: patrick@ussubmarines.com Tel. (772) 770-1995	*The US Submarines Triton 1000 is a versatile yacht-based manned submersible designed and engineered to minimize displacement (crane weight), maximize visibility, and reduce maintenance while offering owners exceptional reliability, intuitive operation and safety consistent with ABS certification. The presentation will include details of the main design concept and features required to achieve these goals.*
#21 11:00AM	**Construction of a 6 Passenger Submarine – Lessons learned** By: Peter Robbins Alicia Submarines LLC, Tucson, AZ USA Email: aliciasub@aliciasub.com Tel: (520)394-2414	*A review of the construction and company's experience in developing a new class of manned submersibles. Alicia Submarines was formed in 1999 to develop a replacement boat to the famous Perry Submersible series which were first constructed in the 1960's. Designed to a diving depth of 305 m with seating for 2 crew members and 4 passengers the diesel-electric submarine is highly mobile, compact, light weight and provides unusual visibility. It is designed as an industry work horse to fulfill a variety of rolls from research, filming, wide area survey, tourism and perhaps even some military roles.*

Room 205	DAY 3 – February 1, 2007	SESSION K-5 (1:30PM – 3:00PM)
#22 1:30PM	**MARINE TECHNOLOGY SOCIETY** **Manned Underwater Vehicle COMMITTEE MEETING** by: William Kohnen Marine Technology Society Chairman, Manned Underwater Vehicles Committee Email: will.kohnen@seamagine.com Tel. (909) 626-6262	*Annual meeting of the MTS MUV committee. Annual review of 2006 and objectives for 2007. 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 205	DAY 3 – February 1, 2007	SESSION L-5 (3:30PM – 5:00PM)
#23 1:30PM	**AMERICAN BUREAU of SHIPPING** **ABS Industry Meeting with Submersible Users – A year's progress in review** By: Ravi Tanwar American Bureau of Shipping, Houston TX USA Email: rtanwar@eagle.org Tel: (281)877-6472	*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 2007 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.*