UI 2009 CONFERENCE

MTS Manned Submersible Program

ROOM 206	DAY 1 March 3, 2009	DAY 2 March 4, 2009	DAY 3 March 5, 2009
900-9:30	**MTS Overview of Manned Submersible Activity in 2008** by: William Kohnen Marine Technology Society Chairman, Manned Underwater Vehicles Committee	**US Navy Deep Submergence Systems and Submarine Rescue.** By: NDC Mark Schleef, Portsmouth Naval Shipyard	**ABS Surveys & Inspections for Underwater Vehicles, Systems and Hyperbaric Facilities** by: Michael Michaud ABS Americas
9:30 to 10:00	**Megayachts and Minisubs – Growth of the Fleet** by: Richard Boggs Camper & Nicholsons International	HOV 11 - Continued by: John Hill, Phoenix International by: Elan Groberman, Oceanworks International	**ABS Industry Meeting with Submersible and Diving System Users** by: Roy Thomas American Bureau of Shipping
10:00 to 10:30	BREAK	BREAK	BREAK
10:30 to 11:00	**Attempt to Install HDTV video System for Manned Submersible use on the DSV "SHINKAI 6500"** by: Itaru Kawama JAMSTEC Yokosuka, Japan	**Rapid Prototyping Program for Experimental Submarines: An Overview of S201 & S301 Design, Construction and Operations.** By: Brett A. Phaneuf ProMare Inc.	**Technology Panel Discussion:** **High Definition Video Systems for Manned Submersibles PART II** by: MTS Underwater Imaging Committee
11:00 to 11:30	**Status Update for Development of RHOV Personnel Sphere.** Jerry Henkener Southwest Research Institute	**SUBPACK - Personal Rebreather System for Rescue Submarine Operations** by: Mark Johnson & Gene Melton O2 Dive Technologies Inc	Panelist No. 1: Leonard Pool, Sidus Solutions Inc. Panelist No. 2: Frazer Dalgleish, Univ. Florida Panelist No. 3: Donna Kocak, Green Sky Imaging, LLC
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1:30 to 2:00	**Activities of PC8B Research Submersible in the Black Sea** By: ilko shtirkov Institute of Oceanology, Bulgaria Academy of Sciences Vilna, Bulgaria	**Anchoring System Remediation using the DeepWorker Manned Submersible.** By: Jeff Heaton Nuytco Research Ltd. Canada	**Advanced Finite Element Methods for Non-Linear Analysis of Interfaces and Pressure Vessels** by: Dr. Stefan Delin Deltica Consulting
2:00 to 2:30	**Scientific Work and Video Documentation with the Manned Submersible LULA down to 500m of depth in the Azores** By: Kirsten + Joachim Jakobsen Rebikoff-Niggeler Foundation Horta, Açores, Portugal	**150 Years Later: From the Ictineo (1859) to Ictineu 3, a Modern Manned Submersible for Scientific Work** by: Pere Fores & Gian Piero Giuffré Ictineu Submarins S.L Spain	**FILM PRESENTATIONS:** **BIKINI – The Ghost fleet of Bikini Atoll** D. Petry - Context TV
2:30 to 3:00	**The DEEPSEE Submersible – A Proven and Successful Privately Owned Operation** A FILM Presentation by: Steve Drogin - San Diego	**UVS Mini Submarines as a Universal Sub Surface Solution** by: Fredrik Gerhardsson SUB MARE Technologies Sweden	
3:00-3:30	BREAK	BREAK	BREAK
3:30 to 4:00	**Use of Manned Submersibles for First Records of Deep-sea Species from Guadalupe Island** Mauricio Hoyos, Manuel Lazcano, Centro Interdisciplinario del Ciencias Marinas Mexico	**27,000 Miles Under the Sea** by: Scott Cassell Undersea Voyager Project	**MTS Manned Underwater Vehicle Committee** ANNUAL MUVC MEETING Chaired by: William Kohnen
4:00 to 4:30	**Deep Flight Submersibles: A compelling case for positively buoyant, extreme lightweight, winged submersibles for long-range survey and exploration needs.** Graham Hawkes, Hawkes Ocean Technologies	**NOAA Overview of Research HOV Activity in 2008** by: Karen Kohanowich NOAA Ocean Exploration and Research	

UI 2009 CONFERENCE
Manned Submersible Program

March 3, 4, 5 2009 - New Orleans LA, USA

Room 206	*DAY 1 – March 3, 2009*	***SESSIONS*** *(9:00AM – 5:00PM)*
#1 9:00AM	**MTS Overview of Manned Submersible Activity in 2008** by: William Kohnen Marine Technology Society Chairman, Manned Underwater Vehicles Committee Email: will.kohnen@seamagine.com	A short summary of the state of the Manned Submersible industry in 2008. 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.
#2 9:30AM	**Megayachts and Minisubs – Growth of the Fleet** By: Richard Boggs Camper & Nicholsons International Ft-Lauderdale, FL, USA Email: rb@ftl.cnyachts.com	*The extraordinary growth in the size of the yachting industry and the size of the yachts themselves has created a rapidly expanding market for the recreational submersible. The number of submersibles sold into this market and how well those vehicles have integrated into the industry is difficult to assess. Despite the visibility of the yachts themselves, information concerning their operation is normally shrouded in secrecy, hiding the successes as well as the problems associated with putting a submersible on these magnificent floating machines. This paper attempts to catalogue those submersibles currently operating from yachts and those which are no longer in service.*
	10:00 – 10:30 COFFEE BREAK	

#3 10:30AM	**Attempt to Install HDTV video System for Manned Submersible use on the DSV "SHINKAI 6500"** By: Takashi Murashima By: Itaru Kawama Agency for Marine-Earth Science and Technology (JAMSTEC) Yokosuka, JAPAN Email: itaru@jamstec.go.jp By: Takashi Murashima, JAMSTEC, Japan Email: takashim@jamstec.go.jp By: Kazuhisa Ito, Nippon Marine Enterprises Ltd, Japan Email: kazu@nme.co.jp	*Deep manned submersible "SHINKAI 6500" was built in 1989, and will reach 20 years old shortly. Meanwhile, the technology for science improved and there are many high spec instruments for a research already. Therefore, requests from scientists about equipping advanced function instruments on SHINKAI increased but these requests had consequences. At first, the conversion of the TV camera was investigated. The ROV system can be equipped with HDTV easily because the vehicle and the support ship are connected by the umbilical cable including a fiber optic cable. However, in case of MUV, pins on a connector are generally metal. Therefore, it is very difficult to use for the high-speed and high-capacity communication like HD-SDI.* *In this paper, the historical-report of an investigation and an attempt about the equipping of the HDTV camera in case of SHINKAI is described.*
#4 11:00AM	**Status Update for Development of RHOV Personnel Sphere.** By: Jerry Henkener SouthWest Research Institute, San Antonio TX USA Email: jerry.henkener@swri.org	*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 for the Replacement Human Occupied Vehicle (RHOV). SwRI has completed the personnel sphere design to meet the requirements of ABS and we are presently in the fabrication phase. The personnel sphere is designed for 6500 MSW and is optimized for weight based upon achievable material properties for titanium alloy 6AI-4V ELI. The hemisphere and insert forgings are nearly complete and we will soon be ready to start the machining and welding processes. Last year at UI-08 our project update focused on the personnel sphere design features and planned forging operations. This year our project update will focus on the forging challenges, the material properties achieved and the planned machining and EB welding preparations and operations.*
	11:30 – 1:30 LUNCH	
#5 1:30PM	**Activities of PC8B Research Submersible in the Black Sea** By: ilko shtirkov Institute of Oceanology, Bulgaria Academy of Sciences Vilna, Bulgaria Email: ilkoshtok@yahoo.com	*PC8B was constructed by Perry Cubmarine Builders and launched in 1971. The submersible is rated to 800 ft and was the first design to incorporate a large spherical segment acrylic front view window. This feature was thereafter included in all of the Perry submersibles. The submersible design was ordered by NASA, the submersible changed several owners, working in Atlantic Ocean, Caribbean Sea, Mediterranean Sea, North Sea. In 1986 the Bulgarian Institute of Oceanology acquired the submersible for its research program in the Black Sea. Since then a number of technical improvement of PC8B has been taken and new scientific equipment has been added. PC8B has worked on a number of projects such as "Black Sea Bottom changes Studies", "Historical Studies – Cuba" "Soviet Black Sea Lost Submarines Studies" "Noah Flood – Black Sea Studies" etc. PC8B is still in operation today and is in excellent working condition. It was initially inspected and classified by ABS and then (after 1986) by Bulgarian Register of Shipping. The presentation will include a brief history of PC8B – one of the most remarkable submersible, its operation at the Bulgarian Institute during recent 22 years as well as a look at planned activity for the future.*

#6 2:00PM	**Scientific Work and Video Documentation with the Manned Submersible LULA down to 500m of depth in the Azores** By: Kirsten + Joachim Jakobsen Rebikoff-Niggeler Foundation Horta, Açores, Portugal Email: info@rebikoff.org	*The semi autonomous submersible LULA (crew of 3, diving depth 500 metres) is operating in the Archipelago of the Azores/Portugal since 2001. LULA is classed by the American Bureau of Shipping. The diesel/electric sub is not bound to a large mothership, making operation efficient. LULA is specialized in quality video documentation and sampling. Lula belongs to the Rebikoff-Niggeler Foundation, a non-profit institution. Several projects have been carried out over the years, such as bio-erosion studies, habitat mapping on deep water corals, sampling of deep water species for genetics and underwater archaeological work for the Azorean Government.*
#7 2:30PM	**A FILM PRESENTATION** **The DEEPSEE Submersible – A Proven and Successful Privately Owned Operation** By: Steve Drogin San Diego, California, USA Email: sbdrogin@san.rr.com	*San Diego based Steve Drogin, a lifelong scuba diver and underwater photographer, hired SEAmagine Hydrospace Corp. to build a three-person submersible to reach 465 meters. The DEEPSEE submersible has been actively diving since mid 2005 and now has in excess of 800 dives off Catalina Island, Costa Rica, the Sea of Cortez, and Guadalupe Island. At-sea support for DEEPSEE is provided by the UnderSea Hunter Group using the newly remodeled and lengthened vessel ARGO, now 132 ft long. The submersible is used for exploration, filming, photography and discovery. ARGO can be deployed worldwide by this completely privately owned operation. The presentation will review the discoveries and travels made by the submersible.*
	3:00 – 3:30 COFFEE BREAK	
#8 3:30PM	**Use of Manned Submersibles for First Records of Deep-sea Species from Guadalupe Island** By : Mauricio Hoyos, Manuel Lazcano Centro Interdisciplinario del Ciencias Marinas La Paz, Baja CA Sur, Mexico Email : amuaka@gmail.com Co-Author : Hector Reyes Universidad Autonoma De Baja California Sur La Paz, Baja CA Sur, Mexico	*The paucity on information of deep sea communities of Isla Guadalupe and other marine parks in Mexico corresponds to the high cost and logistic difficulty in the use of submersibles. In most areas, the knowledge on the deepwater fauna is based on specimens collected by trawling or dredging and these methods do not allow the researchers to observe the animals in their natural habitats. During Ja'tay expedition up to 14 deep between the depths of 64-257 m were done to conduct a preliminary assessment of the previously unknown deepwater life in Guadalupe Island and eight different species from different taxa were identified. Not only their presence was recorded but direct and indirect interactions among these species were witnessed by the submersible scientific staff. Thanks to the fact that Guadalupe Island is surrounded by deep waters (Pierson, 1987), the access to this deep life is more accessible compared with other locations. The island bears a surprising variety of fauna result of the conjunction of nutrient rich waters produced by the California Current System (CCS) influence.*

#9 4:00PM	**Deep Flight Submersibles: A compelling case for positively buoyant, extreme lightweight, winged submersibles for long-range survey and exploration needs.** By: Graham Hawkes, Hawkes Ocean Technologies Richmond, CA, USA Email: graham@deepflight.com	*The Deep Flight project started in the late 1980's as a program to provide cost-effective vehicles for science, exploration and adventure. Graham Hawkes decided that to move efficiently through the 3 dimensional space of the ocean territories, his submersibles had to sprout wings and fly. Since that time, Hawkes has built four generations of Deep Flight submersibles, including the world's only full ocean depth capable submersible (Deep Flight Challenger) that was built for adventurer Steve Fossett. With only a handful of submersibles in the world capable of diving below 5000 feet, Hawkes has achieved his goal of creating a new generation of lightweight, cost effective craft that will hopefully be put to wide use for exploration and science.*

Room 206	***DAY 2 – March 4, 2009***	***SESSIONS*** ***(9:00AM – 5:00PM)***
#10 9:00AM	**US Navy Deep Submergence Systems and Submarine Rescue.** By: NDC Mark Schleef Portsmouth Naval Shipyard Code 205.1MS Portsmouth Naval Shipyard, NH USA Email: mark.schleef@navy.mil	*This presentation encompasses two sessions (#10 & #11) and will be presented by a diverse panel from the US Navy Deep Submergence team which includes representatives from the U.S. Navy Deep Submergence Unit (DSU), Portsmouth Naval Shipyard (PNS), Phoenix International Holding Incorporated (PHNX) and Oceanworks International (OWI).* *1. We will begin with an introduction of the panel and a brief history of the Portsmouth Naval Shipyard Deep Submergence System Programs and Technical support Department Code 200DSS moving into an overview of the Navy's current Deep Submergence Systems under the PNS responsibility.* *2. Oceanworks International will talk about the development, delivery, and certification of the US Navy's new submarine rescue vehicle Pressurized Rescue Module (PRM)* *3. Phoenix International will talk about their role as the maintainer and operator of the PRM and other submarine rescue support equipment for the US Navy.* *4. The Deep Submergence Unit will present an overview of the successful operations in support of world wide submarine rescue and the status of current systems. They will also talk about the dynamics of working with such a diverse team of military, civil and contractor personnel to keep the deep submergence vehicles operating.* *5. The panel will be open for a brief question and answer period.*
#11 9:30AM	**PHOENIX INTERNATIONAL Inc.** By: John Hill San Diego, CA USA **OCEANWORKS INTERNATIONAL** By: Elan Groberman North Vancouver, BC CANADA	
	10:00 – 10:30 COFFEE BREAK	

#12 10:30AM	**Rapid Prototyping Program for Experimental Submarines: An Overview of S201 & S301 Design, Construction and Operations.** By: Brett A. Phaneuf ProMare Inc. Houston, TX USA Email: Brett@promare.org	*In 2005 ProMare & Submergence Group, LLC embarked on a program of rapid prototyping of advanced electric submarines in concert with Marlin Submarines in the UK. The program was aimed at producing submarines capable of autonomous operation and long duration submerged transits across the seafloor. The first submarine in the series, S201, was operated under contract to the US Navy (NAVSEA) and spawned the development of S202, and the latest in submarine in the series, S301 – a diver lock-in/out submersible, capable of deployment horizontally and vertically from host submarines. This presentation will provide an overview of the rapid prototyping program and the operation characteristics of S201, S202 and S301 from 2005 through 2008.*
#13 11:00AM	**SUBPACK - Personal Rebreather System for Rescue Submarine Operations** By: Mark Johnson O2 Dive Technologies Inc Houston, TX USA Email: oijohnson@hotmail.com By: Gene Melton O2 Dive Technologies Inc Houston, TX USA Email: gmelton@hs-eng.com	*In 2007 O2 Dive Technologies Inc. was commissioned to develop a personal rebreather system for use onboard a rescue submarine for the Australian Navy. The SubPack was developed for use by the operators during their missions.*
	11:30 – 1:30 LUNCH	
#14 1:30PM	**Anchoring System Remediation using the DeepWorker Manned Submersible.** By: Jeff Heaton Nuytco Research Ltd. North Vancouver, BC CANADA Email: Jeff@Nuytco.com	*March – April 2008, Nuytco Research Ltd. provided Submersible services to perform an anchoring system remediation on an active Aquaculture Net pen site. Based on initial survey results, Nuytco designed and built a custom subsea shackle which was mechanical in nature, capable of withstanding 40 ton shock loads, and was suitable for permanent installation by the manipulator on the DeepWorker Manned Submersible. During the course of 6 days, Nuytco performed the entire remediation in water depths to 1,000 feet.*

#15 2:00PM	**150 Years Later: From the Ictineo (1859) to Ictineu 3, a Modern Manned Submersible for Scientific Work** By: Pere Fores Ictineu Submarins S.L Barcelona, SPAIN Email: pere@solstici.com Presenter: Gian Piero Giuffré Ictineu Submarins S.L Barcelona, SPAIN Email: ictineu3@gmail.com	*In 1859 Narcis Monturiol launched his first submarine in Barcelona. The Ictíneo (fish-boat in Greek) was an olive wood-copper ellipsoid enclosed in an outer hull. The submersible (7m long, 10 tonnes displacement) could fit up to six people and it was designed for 50m depth. In 1864 a second Ictíneo was built: 17m long, 72 tons displacement. It employed an anaerobic engine able to produce steam for propulsion and breathable oxygen.* *After 150 years the firm Ictineu Submarins is developing a modern scientific submersible. It will dive down to 1200m and host a crew of up to three people. It will be called Ictineu3, paying tribute to its old ancestor.*
#16 2:30PM	**UVS Mini Submarines as a Universal Sub Surface Solution** By : Fredrik Gerhardsson SUB MARE Technologies. OSKARSHAMN, SWEDEN Email : cjf@submaretechnologies.co	*With the UVS-1300 submarine, Sub Mare Technologies brought building of underwater crafts to a new dimension when it comes to optimizing technological capabilities and at the same time make maximum use of financial means. The UVS-1300 can be modified specifically upon need. Simplicity of construction admits this. The 1300- class uses modules in its construction, which provides a minimum of workforce to either build or maintain it. The presentation will explain how the modules offer flexibility and enable various kinds of propulsion, arms systems, electronics, tools and machines and the option for divers' lockout to be fitted. As for armament, submarines can be equipped with a wide range of weapons including sea-to-sea missiles, torpedoes, mines and automatic cannons.*
	3:00 – 3:30 PM COFFEE BREAK	
#17 3:30PM	**27,000 Miles Under the Sea** By: Scott Cassell Undersea Voyager Project Escondido, CA, USA Email: scott@underseavoyager.org	*The Undersea Voyager project is a Non-Profit organization designed to utilize Human Occupied, uniquely specialized submersibles taking a physical look at the first 100-1,000 feet of water on a five year mission to circumnavigate the Earth (27,000 miles) underwater. Through these scientific transects we will advance & communicate Information, knowledge and understanding of the Oceans to a global audience, including its interrelationship with the global climate, human impact and through serendipity discover new species of life. During dives the Aquanauts can interact with students around the Earth utilizing live feeds from the sub's umbilical via satellite uplink to the Internet.*

#18 4:00PM	**NOAA Overview of Research HOV Activity in 2008** By: Karen Kohanowich, Deputy Director NOAA Undersea Research Program, Silver Springs MD, USA Email: Karen.Kohanowich@noaa.gov	A review of recent Manned Submersible activities for Ocean Research and requirements for deep submergence research and tools for science.

Room 206	*DAY 3 – March 5, 2009*	***SESSIONS*** *(9:00AM – 11:00AM)*
#19 9:00 AM	**ABS Surveys & Inspections for Underwater Vehicles, Systems and Hyperbaric Facilities** By: Michael Michaud ABS Americas Los Angeles/Long Beach, CA USA Email: mmichaud@eagle,org	*Classification perspective on Manned and Passenger Underwater Vehicles, Systems and Hyperbaric Facilities surveys during construction and requirements to confirm underwater vehicles and hyperbaric facilities together with their mechanical and auxiliary equipment are being maintained in good order and satisfactory operating conditions for which they were approved during Annual Surveys and Special Surveys.*
#20 9:30 AM	**ABS Industry Meeting with Submersible and Diving System 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 2009 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.*
	10:00 – 10:30 PM COFFEE BREAK	

#21 10:30 AM	TECHNICAL PANEL DISCUSSION **Technology Panel Discussion: High Definition Video Systems for Manned Submersibles PART II** Chaired By: Donna Kocak MTS Underwater Imaging Committee Email: dkocak@greenskyimaging.com Panelist No. 1: Leonard Pool, Sidus Solutions Inc. Panelist No. 2: Frazer Dalgleish, Univ. Florida Panelist No. 3: Donna Kocak, Green Sky Imaging, LLC	*Sponsored by the MTS Underwater Imaging committee, the Technology Panel in 2008 discussed the basics of HD format and addressed the growing need for digital asset management software this year's panel discussion discusses the practical challenges in integrating the high data rate equipment on Manned Submersibles. Discussions include review of equipment technology in HD cameras, integrated systems and remote controls with a focus on engineering challenges/technologies available to bring very high bandwidth signals through noisy hull environments.* *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.*
	11:30 – 1:30 LUNCH	
#22 1:30PM	Advanced Finite Element Methods for Non-Linear Analysis of Interfaces and Pressure Vessels By: Dr. Stefan Delin Deltica Consulting Email: deltica@aol.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.*
#23 2:00PM	**FILM PRESENTATIONS** **BIKINI – The Ghost fleet of Bikini Atoll** By: Daniel Petry Context TV GmbH, Berlin GERMANY Email: petry@context.tv	*BIKINI – The Ghost fleet of Bikini Atoll* *In February 2008 our top team of scientists, historians, divers and Bikini experts embarked on an exciting scientific mission to this "paradise lost" in order to find some answers to the questions surrounding the atoll, its nature and how it has dealt with its nuclear history. A submersible designed to hold eight people allowed our scientists to explore the underwater world and the nuclear fleet it still harbours on its grounds in a way no scientist has ever been able to before. "Bikini – The Ghost fleet of Bikini Atoll" is a fascinating scientific investigation in HD format which brings the unparalleled beauty and excitement of this mission into the viewer's home.*

	3:00 – 3:30 PM COFFEE BREAK	

Room 206	***March 5, 2009 - MARINE TECHNOLOGY SOCIETY – MUV Committee***	
#24 3:30 to 4:30	**MTS Manned Underwater Vehicle COMMITTEE ANNUAL 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 2008 and objectives for 2009. 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.*