

Meeting Report

National Deep Submergence Facility Vehicles Science and Operations Training Sessions

January 25, 2004

Oregon Convention Center - Room C124
777 NE Martin Luther King Jr. Blvd., Portland OR 97232

To download a pdf version of this report click <[200401desmi.pdf](#)>

Executive Summary:

The DEep Submergence Science Committee (DESSC) held their winter meeting on Sunday, January 25, 2004, the day before the start of the AGU Ocean Sciences Meeting (26-30 January) in Portland, Oregon. This was the first time that the DESSC community meeting was held at a forum other than the fall AGU conference. The change in venue was made in an effort to better reach the non-G&G deep submergence community.

The meeting began with presentations by the Principle Investigators who used submergence vehicles in 2003. A variety of reports were made by the National Deep Submergence Facility (NDSF) operator to summarize facility operations and planned activities, system upgrades, and vehicle design efforts. Funding agency representatives provided budget information as well as agency priorities. DESSC activities, future plans and issues were reported, including discussions of long-range and expeditionary planning, public outreach and educational activities.

The second half of the meeting included a training session on National Deep Submergence Facility vehicles science and operations. This training session was the first of its kind and was offered to provide detailed information on both the capabilities of the NDSF vehicles (primarily Alvin, Jason2 ROV, and the DSL-120A sidescan sonar) and sensor suites, and their at-sea operations procedures. The session also provided insightful information on the effective operating procedures for these systems. The latest upgrades to the facilities were presented as well as planned improvements. Information was also provided on autonomous vehicle operations and how ABE has been used effectively with the NDSF vehicle systems in recent surveys.

Recommendations / Endorsements: None from this meeting.

Action Items / Tasks:

New Actions: None

Open Actions From Previous Meetings:

Task	Status	Assignment
Inventory of Vehicles and Equipment–	Ongoing	Annette, Patty, Dan, and

Develop a web page that will provide an inventory of deep submergence vehicles and equipment. NDSF, as well as, PI owned equipment/tools should be included		DESSC
---	--	-------

Index of Appendices

- I. [Agenda](#)
- II. [Meeting Participant List](#)
- III. Science Reports:
 - a. [ALVIN Programs](#) (6.8 MB)
 - b. [NDSF ROV Programs](#) (2.1 MB)
 - c. [Other Vehicle Programs](#) (2.7 MB)
- IV. NDSF Operator's Reports
 - a. [2003 Vehicle Operations](#) (3.5 MB)
 - b. [Vehicle Schedules: 2004 and 2005](#)
 - c. [NDSF Website – new features](#)
 - d. [NDSF Archives](#)
 - e. [New ALVIN Design Study status](#)
- V. [NOAA Report](#) (4.9 MB)
- VI. NSF Report:
 - a. [Written Report](#)
 - b. [PowerPoint Slides](#)
- VII. [NDSF Vehicle Requests: 2005 and Beyond](#)
- VIII. [UNOLS Working Group on Ocean Observatory Facility Needs](#) (15.4 MB)
- IX. [DESSC Activities, Plans, and Issues](#)
- X. [REVEL Program](#)
- XI. [NOAA Explorations](#)
- XII. [MATE Program](#)
- XIII. Other Facility Operator Reports:
 - a. [HBOI](#)
 - b. [MBARI](#)
 - c. [Southampton Oceanographic Center](#)
 - d. [MPL](#)
 - e. [HURL](#)
 - f. [ROPOS](#)
 - g. [JAMSTEC](#)

Meeting Report:

Morning: DEep Submergence Science Committee Planning Meeting

Introduction – The annual Deep Submergence Science Committee (DESSC) community meeting was held on January 25, 2004 at the Oregon Convention Center. Patty Fryer, DESSC Chair, opened the meeting at 0830. She introduced the members of DESSC and reported that a few committee positions will open this year, including the position of DESSC Chair. The positions will be advertised in EOS.

Patty explained the purpose of this meeting is to bring together the members of the community to report on the latest activities and future plans for the National Deep Submergence Facility (NDSF). The meeting is a forum to obtain direct community feedback on their future needs, both in terms of research geographic areas and system upgrades. This is the first time that the DESSC is holding their winter meeting away from the Fall AGU meeting. The move was made to better engage the non-G&G community. DESSC will return to the Fall AGU meeting in December 2004.

Also, for the first time, a NDSF training session will be held in the afternoon of the meeting. The training session will provide useful information to both the new users and experienced users of the NDSF vehicles.

The minutes of June 2003 DESSC meeting were approved with the comments provided by Patty Fryer.

The meeting agenda was followed in the order as reported herein. The agenda is included as [Appendix I](#) and the participant list is included as [Appendix II](#) of this report.

2003 Science Reports – Principal Investigators (PIs) who used the NDSF in 2003 were invited to give a brief report on their project. Debbie Kelley moderated this session and provided reports from PIs who could not attend. Science presentations that were made at the meeting are included in Appendix III. [Appendix IIIa](#) includes the ALVIN reports. [Appendix IIIb](#) includes the NDSF ROV reports and [Appendix IIIc](#) includes reports for non-NDSF vehicles.

ALVIN Science Reports ([Appendix IIIa](#)):

Debbie Kelly began the science reports with a presentation on her cruise to the Mid Atlantic Ridge at Lost City on April 21- May 22, 2003. During this cruise, Pat Hickey celebrated his 500th dive as an ALVIN pilot. The main objective of the cruise was to characterize the Lost City Hydrothermal Field. Debbie's cruise included 19 ALVIN dives averaging 5.7 hours in length. This was the first cruise using ALVIN after its overhaul. They focused on the 2km x 1km top of Lost City. During the ALVIN dives vents were sampled for fluid, microbes, and chimney material. Thirteen students participated in the cruise and 11 went to the seafloor in the vehicle. ABE was used to characterize the bathymetry and water column around the field and for exploration of possible fields less than 80 km away. ABE operations were carried out at night. Seventeen ABE missions were carried out for a total of 127 hours. Approximately 200

km of seafloor was surveyed. The entire field was mapped in detail. ABE worked incredible well and they were able to image very small features.

The chimneys at the study area were the size of a 15-story building. Approximately 30,000 images were collected using Dan Fornari's cameras. Approximately 25,000 frame grabs were taken with ALVIN. The new frame grabbing system provides images immediately after a dive. This was very useful for planning the next dives.

Debbie reported on some of the problems that were experienced during her cruise. There were some navigation issues related to transponder set-up. Also, there were problems with ALVIN's computers resulting in blank monitors. There were also condensation problems with the pan and tilts. The sonar was not available until the last ALVIN dive. Fortunately this did not impact the program since they could use the ABE survey data. One ALVIN dive was lost because of a variable ballast problem. There were navigation data problems and as a result, Dana Yoerger reprocessed the data at the end of the cruise.

All in all, Debbie reported that it was a successful cruise.

Jess Adkins reported on his ALVIN cruise at the NE Seamounts in May/June 2003. The cruise was named "Medusa" and it was the first use of ALVIN for paleoclimate work. The goals of the program were to collect depth transects of fossil and modern deep-sea corals, figure out how to better collect them in the future, and to characterize the living community at seamounts. A nested approach to use of the systems was applied.

Fifteen dives were funded, but 10 dives were carried out due to weather conditions. ALVIN had more than 45 hours of bottom time. Alvin operations were at 1,000-3,000 meters. There were eight ABE dives, 3 Tow Cams, one dredge, 13 CTD casts, and two MITESS casts. Six seamounts were mapped and photo-mosaics have been created. Approximately 10,000 photos were taken using ABE and the towed camera sled. A lot of species were collected.

Outreach activities included a web link to Dive and Discover #7, as well as, a radio interview and web link with the Museum of Science.

The cruise was very successful.

Jesse provided some suggestions for system upgrades and operations improvements:

- Navy Clearance issue - there needs to be flexibility for unexpected events (such as dives lost due to weather)
- Transponderless Operation – new software is needed.
- More efficient sampling – Install a dredge on Alvin? Front Loader?
- It would be helpful if the ship crew included an electrician. The Hydrowinch did not work during the cruise. The crew worked hard to fix the winch, but was unsuccessful.

Debbie summarized **Rob Reeve-Sohn's** cruise, "Seismicity of TAG Experiment." The ATLANTIS/ALVIN cruise took place on June 21 to July 8, 2003 on the Mid-Atlantic Ridge (MAR). T-probe and tide gauge deployments on TAG mound were successful. Shrimp were collected. This was the first-ever enzymatically fixed shrimp samples in red light to determine if pigment on shrimp back allows for vision. Microbathymetric mapping w/Imagenex was conducted. The microbathymetric mapping was not completely successful as there were problems with data logging and "tuning" of the system.

Peter Rona provided material before the meeting. His July ALVIN program was to the TAG hydrothermal field at 26°N MAR. The purpose of the project was to solve the mystery of what makes the Paleodictyon pattern. They confirmed identity of the seafloor with fossil form. Analyses of cored specimens are in progress to determine what made the form. Preliminary results were reported at Fall 2003 AGU Abstract OS32A-0241.

Debbie summarized **Carolyn Ruppel** (Georgia Tech) and **Cindy Lee Van Dover** (William & Mary) program, Windows to the Deep. The program conducted biological sampling and high-resolution mapping at methane seeps on the Blake Ridge and Carolina Rise. The cruise dates were July 22 – August 3, 2003. The science party of 20 members included 16 graduate, undergraduate, or just graduated students, and a Master teacher from Southeast COSEE office. There was a broad range of disciplinary expertise. The NOAA Ocean Exploration Program sponsored the program. ALVIN successfully completed 7 out of 7 scheduled dives. Water depths were 2000 to 3500 m in three primary locations. Eleven of the 16 students visited the seafloor. Accomplishments included:

- Sampled sulfate - and methane-dependent seep organisms
- Acquired sediment push cores
- Sampled bacterial mats and free-living bacteria
- Retrieved geological samples
- Overnight operations: Mapping and subbottom imaging

The most complete map ever of the Cape Fear submarine slide (associated with gas hydrate deposits) was produced. Details of the program can be found at <<http://oceanexplorer.noaa.gov/explorations/03windows/welcome.html>>.

Barbara Moore reported on **Ivar Babb's** ALVIN program, "Mountains in the Sea: Exploring the New England Seamount Chain." This is a two-year NOAA Office of Ocean Exploration funded project. Year-one utilized ATLANTIS and ALVIN to conduct some of the first exploration of these 100 million year old seafloor features. The program took place on July 11-19, 2003 and included a multidisciplinary, multi-institutional, research and education team. The viewgraphs include the list of principal expedition members, collaborators and roles. The cruise objectives were to:

- Map the distribution of the octocorals and assess the overall diversity of organisms living in the coral communities of the New England seamount chain.
- Determine the reproductive state and potential larval strategies of seamount octocorals.
- Investigate the colonization dynamics of dense coral aggregations.

- Determine whether seamount octocorals are genetically isolated between seamounts and from continental slope species.
- Determine the relationship of demersal nekton to the landscape features with and without corals.
- Assess physical impact of bottom trawling on octocoral communities and seamount biodiversity.
- Provide education & outreach opportunities for local teachers based on OE lesson plans & Web site.

ATLANTIS conducted hundreds of miles of seafloor mapping with its multibeam sonar. These images were used for selecting ALVIN dive sites based upon the steepness or irregularity of the seafloor, areas believed to be most favorable to deep coral settlement. ALVIN was used to collect specimens and document biodiversity with video and digital still imagery. Twenty-four deep-water coral species were collected. Hundreds of *Desmophyllum* fossil corals were collected as part of the collaboration with Jess Adkins who is using these samples for paleoceanographic research. A number of fishes and invertebrates were encountered; the total biodiversity is currently being assessed by video and image analysis.

Mission highlights included:

- 7 Submersible Dives
- 29 hours of bottom time
- First mapping and exploration of Kelvin seamount
- Over 440 specimens collected
- A total of 36 hours of video
- Imagery and specimens are being analyzed
- Live chat session with high school students and scientists in Alvin at 1600 m
- Thousands of still images
- 59 coral specimens (of 24 coral species)

Good planning, magnificent weather, and great professionalism on the part of the crews of the ATLANTIS and ALVIN combined to make this a tremendously successful cruise.

Bob Carney reported on his ALVIN/ATLANTIS program to the Gulf of Mexico Lower Slope. He was co-PI with Chuck Fisher, PSU. NOAA-NURP, NOAA-OE, and NSF supported the program. The program had multiple objectives:

- Deploy Sulfide Biogenerators Widely
- Biodiversity & Biogeography Sampling at Known Seeps.
- Trophic Analysis for Depth Comparisons

Rabbit food was used to promote tubeworm growth.

Accomplishments of the cruise included:

- Deployed 96 sulfide biogenerators
- Extended ecological/geological sampling at 3 known sites confirming exposed hydrates at one.

- Explored 3 new sites finding “Dune-Grass” Seep at HEBBLE site off W. Fla. Escarpment

Chuck Fisher reported on his ALVIN cruise with Janet Voight and Karen Von Damm. The program was on 31 October to 24 November 2003 to EPR 8° 37'N to 13°N and included 11 ALVIN dives. Biological collections were made from five vent habitats. Sea-Beam surveys and towed camera runs were made. Chuck reported that it was an excellent cruise but there was one major problem, the bow thruster failed after nine dives, but the impact was minimal. Six of the ALVIN dives were funded for Karen and Chuck’s program. Nine species were collected by elevator. Full reports will be in the RIDGE event newsletter. Out-reach efforts for the program can be found at <http://www.fmnh.org/expeditions/janet2_expedition/about.html>.

NDSF ROV Science Reports ([Appendix IIIb](#)):

George Luther provided a poster in advance of the meeting on his ALVIN program, “Deployable *In situ* electrochemical analyzer (ISEA) for remote and automatic analysis of O₂, H₂S and sulfur species in hydrothermal vent environments.” The cruise dates were November 28 to December 21, 2003 and was supported by NSF/OTIC. Solid-state voltammetric electrodes to measure redox chemistry were deployed to profile the water column of the hydrothermal vents and to profile microbial mats and sediments. The electrodes are robust and are now being tested for longer-term deployments. During the cruise the ISEA was deployed twice, once in survey mode on the DSV ALVIN and another time on the bottom for a period of five days. The four electrodes were run continuously including electrochemical conditioning between each scan to maintain electrode integrity. Dissolved O₂, free sulfide (H₂S/HS⁻) and Mn²⁺ data were obtained at 4 separate *Riftia* tubeworms during the 5-day deployment.

Maurice Tivey (WHOI) provided slides on a DSL-120/THOMPSON program he co-Pied with Will Sager (Texas A&M) and Sang Mook Lee (KORDI). NSF supported the program titled, DeepTow Magnetic Survey of the Jurassic Quiet Zone. The science objectives were to extend marine timescale to the oldest possible crust and to determine character of JQZ: is it a period of constant polarity or is it a period of rapid reversals? The specific goals of the program included:

- Tying in drillhole data from ODP Hole 801C
- Confirming seafloor magnetic stripes exist in JQZ
- Defining intensity envelope
- Constraining early history of pacific plate spreading

The cruise had DSL-120A sidescan operations, including 3-component magnetometer and towing KORDI absolute field magnetometer system. The cruise statistics included:

- 5 DSL-120 Lowerings with ~27 days bottom time surveying
- 1553 km along track near-bottom magnetic data
- 1863 sq km sidescan data
- 930 sq km phase bathymetry
- 323 Gbytes raw sonar data

The DSL-120A sidescan and magnetometer sensors worked well. The phase bathymetry was still an issue and required customized processing. The navigation sensors (Doppler, LBL, acoustic range) all worked, but there needs to be better integration of navigation data.

Maurice's report included a cruise assessment of the support ship. The ship worked well and within the new IMS regulations. One issue was that they could not survey with the ship's sea surface magnetometer faster than 6 kts. They were given permission to operate at 8 kts but it was still too slow for the transit speed of 10-12 kts. The sub-bottom 3.5 khz profiler worked well but no digital output in a usable form was available. Problems with Hydrosweep bathymetry resulted in poor quality and essentially unusable data. Basically, the water depth was too deep for the EM300 system.

Patty Fryer used Jason2 and DLS-120A from R/V THOMPSON in a cruise that began on 17 March and ran through 4 May. Operations were at the South Mariana Arc to study deep-sourced mud volcanism. The cruise included a visit to an ODP site to support Geoffrey Wheat's borehole instrument recovery.

Patty reported that they were able to obtain detailed imaging using DSL-120A and EM300. Patty presented the images on the screen and meeting participants could view the images using 3-D glasses. The surveys were done in very high relief areas.

Jason2 performed well throughout the cruise. This was the first cruise that the vehicle was operated at its full depth capability of 6500 km. The dive was due south of Guam. Transit to the bottom was approximately 4 hours long and the dive was one day.

Patty provided a few suggestions and comments. Towing of DSL in rough terrain was very difficult. Launch and recovery of Jason2 could be improved by operating from a starboard side A-frame. Patty also commented that it would be better to have more Butterfield samplers?

Dan Fornari commented that NDSF is trying to get community input on what type of samplers need to be included with the facility. Tim Shank has been taking the lead on this effort and it will be addressed later in the meeting.

Alan Chave reported on his Jason2, H2O Service cruises. There were two THOMPSON cruises, one in May and the other in September/October. The goals of the first cruise were for J-box recovery for major modification, near bottom geomagnetic survey, and installation of the UH temporary J-box to power H2O seismometer during J-box modifications. All goals were met except that the temporary j-box did not work. Jason2 performance was excellent.

The goals of the second cruise were re-installation of the J-box, installation of bio-observatory and two geomagnetic observatories, and installation of the UH small experiment module. The outcome was the "cruise from hell." The UH-designed j-box power supply was delivered in non-working condition without engineering support or

spare parts. This resulted in a 1-day sailing delay to get parts. Power supply repairs occupied over 1/2 of the cruise time. An emergency medical evacuation resulted in loss of 1/2 of the station time. A broken shackle during initial j-box deployment resulted in its loss, requiring 3.5 days for a search to recover it. The J-box power supply partially failed upon power up after installation. The UH small experiment module did not fully work. The bio-observatory and geomagnetic observatories were not installed due to a lack of time. One of the few highlights was that Jason2 performance was excellent.

Debbie Kelley wrapped up the NDSF ROV science reports by discussing her Jason2/THOMPSON cruise to Endeavor segment Middle Valley, and Flanks on June 18 to 1 July. The program was for “Field testing of an in-situ incubator to explore the limits of life in submarine hydrothermal systems: Active sulfide deposits as natural laboratories.” This was the first time the MBARI drill was used with Jason2 and the sled was switched while out at sea. Jason2 worked exceedingly well, with 11 lowerings and ~139 hours bottom time. The vehicle successfully and efficiently drilled clean sulfide (45 min) and basalt holes (2 hr). The Mothra field was mapped with SM2000 (300 x 700 m). Three sulfide-microbial incubators were installed. The cruise included participation in the education outreach program, REVEL. The program included three K6-12 teachers from the states of Wisconsin, California, and New York.

The cruise included work for Kier Becker for data recovery at Northeast Pacific CORKs. Debbie reported that all but one dive went well.

Non-NDSF Vehicle Science Reports ([Appendix IIIc](#))

Fred Speiss reported on the Scripps Institution of Oceanography’s (SIO) MPL Control Vehicle operations. The Control Vehicle (CV) was used to install four precision acoustic ranging units within the axial valley at the South Cleft segment of the Juan de Fuca Ridge during a REVELLE cruise in September 2003. The water depth at the work area was approximately 2300 meters. Details of the operation can be found in the cruise plan at <http://shipsked.ucsd.edu/schedules/2003/rr_2003/chadwell_1/cp.pdf>.

The CV was also used to replace seafloor transponders and conduct a precision vertical deformation survey on the continental shelf offshore Lima Peru as part of seafloor geodetic study of subduction zone deformation. These operations were conducted during a REVELLE cruise in December 2003. Details of the cruise plan can be found at <http://shipsked.ucsd.edu/schedules/2003/rr_2003/chadwell_2/cp.pdf>. David Chadwell was the Chief Scientist during both cruises.

Jaye Cable reported on her Johnson Sea Link cruise program, “Artificial Seeps and Radioactive Brine,” in September 2003. NOAA-NURP and NOAA Ocean Explorations supported the cruise. There were many cruise objectives including deployment of 72 Sulfide biogenerators and characterizing radon and radium content of brine pool. The sulfide biogenerators used the same rabbit food devices that were described earlier by Bob Carney. Twelve were deployed at six sites, three known seep sites (~ 500 - 600m)

and three non-seep sites (~ 500 – 600m). They will begin sampling these sites in 2005. Jaye provided information on the radioactive brine findings.

John Delaney reported that a 5-year \$5M Keck foundation proposal has been funded for installation of a prototype regional observatory. THOMPSON and ROPOS are being used to start the observatory installation at the Endeavour Segment. John presented a map of where instruments have been deployed and the next site of interest. He commented that the REVEL education program has been a big success. The observatories will include an educational component. John remarked that navigation is a serious issue that requires attention. There needs to be ways that navigation systems can be compatible with all systems. We need to standardize the routine access to navigation for all of the vehicles (WHOI, MBARI, ROPOS, etc).

Bob Embley reported on the THOMPSON/ROPOS cruise on 27 August to 8 September to support the New Millennium Observatory (NeMO). Bill Chadwick was the PI. A new NeMO Net system was deployed to record temperature and pressure changes in near real-time as well as provide the ability for scientists on shore to signal the taking of chemical samples at any time. ROPOS Operations were at Axial Volcano and included:

1. Biologic/chemical sampling at hydrothermal vents
2. Deployment and recovery of instruments with ROPOS and the elevator mooring,
3. Seafloor pressure measurements with ROPOS,

Shirley Pomponi reported on the science programs that used HBOI's JOHNSON SEA LINK (JSL) submersible in 2003. She commented that more than half the operations conducted were by non-HBOI users. Eighty-four dives were carried out in the Gulf of Mexico. Marsh Youngbluth used the sub for mid-water work to study tropic interactions on jellies.

Benthic research was conducted by Tammy Frank and Eddie Widder to determine what wavelengths of light are the benthic species most sensitive. Benthic traps, deployed and retrieved with JSL, allowed for collection of live animals with intact eyes.

Amy Wright had a program to study the effects of lasonolides on human pancreatic cancer cell lines using a number of assays, including DNA microarrays, to determine MOA. Selective, non-destructive collections were made using JSL.

Chuck Fisher remarked that he also had a very successful cruise. They used the vehicle with a bushmaster installed.

National Deep Submergence Facility (NDSF) Operator's Report - Dick Pittenger provided the introduction for the NDSF report. He began by apologizing for the hydro-winch failure. The failure was due to a voltage regulator failure. The problem wasn't discovered until they were getting ready for Jess Adkin's cruise. Maintaining winches is very important.

ALVIN and ATLANTIS have had a very busy past year. It started with the ATLANTIS' INSURV and ALVIN's overhaul period. The ATLANTIS bowthruster failure rippled through the first half of the ship's schedule.

The NDSF group devoted a lot of time to supporting the OSB study by Dan Walker and John Armstrong.

The new ALVIN design study is well underway.

Barrie Walden, who normally attends the DESSC meeting, could not attend so that he could oversee ALVIN's engineering dive that is scheduled to immediately follow this meeting off San Diego.

2003 Operations Summary – Rick Chandler provided a summary of 2003 NDSF vehicle operations. His slides are contained in [Appendix IVa](#). ROV operations scanned half the globe with seven cruises. Rick cautioned that if the vehicles are going to continue to operate at this level, scheduled down time for maintenance is needed.

ALVIN operations were successful with 100 dives and 224 operating days over eight science legs. The average dive depth was 2138 meters with an average dive duration of 7.5 hours. The average bottom time was 5 hours. Dives were normally terminated due to daylight or work completion, as opposed to battery power limitations. Four dives were lost due to weather. ALVIN operations were at the Mid-Atlantic Ridge, New England Seamounts, Blake Ridge, Gulf of Mexico and East Pacific Rise. Four technicians are currently in pilot training. Rick presented the annual cost breakdown for ALVIN operations. Salaries represent 66 % of the operating costs and supplies were 11 %.

Rick continued with a review of 2003 ROV operations. Jason2 / Medea had five cruises with 47 lowerings for a total of 752 hours of bottom time. Approximately 188 NM were covered. The deepest dive was made at 6,500 m during Patty Fryer's cruise. There were two DSL 120a cruises with ten lowerings and a total of 319 hours of bottom time. 398 NM were covered and the deepest dive was at 5,800 m deepest dive.

Some of the ROV highlights included:

- Rock drilling into basalt and sulfide for D. Kelley
- Recovered and deployed H2O junction box 3 times
- Large volume hydrothermal fluid sampling (200+ gal) for P. Johnson
- Six week maintenance period in Woods Hole

NDSF Scheduling for 2004/2005 - Jon Alberts continued the WHOI report (see [Appendix IVb](#)). This year the DSL group had support teams out simultaneously to support DSL and Jason2 operations. There were a total of 190 operating days for the ROVs. Jon reviewed the 2004 ALVIN and ROV schedules. ALVIN will have an engineering dive tomorrow. Nine ALVIN programs are planned this year with work at

EPR, off Costa Rica, JdF, Gulf of Alaska, and off California. Additionally, ATLANTIS will support three non-ALVIN cruises.

Six ROV cruises are planned in 2005. Five of these cruises will use Jason2 and two will use DSL 120A. Work areas include Easter Is, MAR, Gulf of Alaska, and off Hawaii.

Jon commented that the 2005 vehicle requests are coming in and already there are many.

BREAK

NDSF Website – Rick Chandler reported on new features of the WHOI NDSF website, <<http://www.whoi.edu/marops/vehicles/index.html>>. The ATLANTIS web page includes updated ship layout drawings. These are now available in pdf format, which shows more detail. The ATLANTIS shipboard computing web page has also been updated to inform users that everyone must scan their computers before coming aboard. The following statement has been added, *“Because of recent virus and worm problems with (primarily) Windows computers, all science computers brought onboard should have the latest service packs and up to date virus scanning software installed. Prior to connecting to the ship network, all computers will be scanned for viruses. Any Windows or Macintosh machine that does not have scanning software installed and does not pass the scan will not be allowed to connect to the network.”*

The ALVIN web page includes a useful Frame-Grabber site <http://www.whoi.edu/marops/vehicles/alvin/alvin_framegrabber.html>. The *Alvin* Frame-Grabber system provides the NDSF community with online access to *Alvin's* video imagery co-registered with vehicle navigation and attitude data for shipboard analysis, planning of deep submergence research cruises and synoptic review of data post-cruise. The system is built on methodology and technology developed for the Jason2 Virtual Control Van and a prototype system that was deployed on ALVIN dives at the East Pacific Rise and the Galapagos (Cruises AT7-12 and AT7-13). The deployed prototype system was valuable in facilitating real-time dive planning, review, and shipboard analysis. The ALVIN website also included a New ALVIN page <<http://www.whoi.edu/marops/vehicles/newalvin/index.html>> that provides an update on the New ALVIN design process.

The Jason2 website has been updated to include virtual control van information, <http://www.whoi.edu/marops/vehicles/jason/van_main.html>.

The WHOI Cruise Planning Document has been updated with new features that will help prepare for future cruises. The website also provides safety guidelines and ISM information that potential ship users need to be aware of.

John Delaney suggested that a page similar to the WHOI page should be available for all UNOLS facilities, not just WHOI.

NDSF Archive Update – Dan Fornari provided a status report on NDSF archives. His viewgraphs are included as [Appendix IVd](#). A new shipboard data archiving/sign-off sheet is available and can be obtained from the WHOI. There is now a frame-grabber website for ALVIN and Jason2. The site provides examples and a practical approach to providing useful data and metadata on a real-time and archiving basis as well as a template for migration of legacy data, <http://www.whoi.edu/marops/vehicles/alvin/alvin_framegrabber.html>

Dan reported that archiving and data distribution to PIs for NDSF vehicle operations is complete for all programs through the end of 2003. To date, WHOI has supported the routine maintenance and proper storage of NDSF archival material through use of overhead and endowment or private funds, as part of its responsibility as NDSF operator. This has included construction of climate controlled storage facilities, purchase of specialized equipment for processing and duplicating film, and personnel salaries to assist in the overall effort.

Dan reported that several archive related improvement issues have become evident over the past few years. The most critical ones are:

- Migration and better access to the 35mm ALVIN and Jason still images through digitization and proper cataloging with relevant meta-data
- Preservation of older 35mm films from ALVIN,
- Assessing ALVIN data logger data, migrating data on older media no longer in common use, and properly labeling and evaluating vehicle attitude and navigation data,
- Migrating older ALVIN and Jason video data, especially data recorded onto Hi-8 tape that is very susceptible to degradation on each replay, to newer digital format media such as DVD,
- Improving the capabilities of the NDSF archives to better serve the increasingly complex needs of the oceanographic community.

Proposed archiving improvements include:

- 1) Complete selection of ‘best hits’ of Alvin 35mm and Jason 35mm images, digitize and place on line with key meta-data (time, location [geographic and lat/lon], altitude, heading, depth).
- 2) Migrate, clean, or duplicate any older ALVIN or Jason 35mm films, and get estimates for digitization of large quantities of spooled film and assess how much would need to be done, either in terms of specific geographic areas of importance for future work or representative seafloor settings.
- 3) Transfer video footage currently on Hi-8 and VHS tape to digital media. At the same time as this is being done, frame grab imagery at reasonable resolution (640x480) at 30 sec. Intervals and compile the images within a web-browser format, such as has already been done for the recent Jason and Alvin frame grabbed imagery. These images would be tagged with time, thereby permitting integration of vehicle attitude and navigation data once that is available.

Dan reviewed the archiving related outreach activities:

- Distributed about 700 press kits or information packages in hard copy and another 500 electronic packages as part of our on-going media relations activities this year.
- Organized a press conference at the AGU Fall Meeting in San Francisco December 9 on deep submergence
- Supported journalists making cruises on R/V ATLANTIS, and helped organize several web casts from sea for various organizations.
- Provided images and information for a number of activities related to the ALVIN replacement study and Ocean Studies Board report, and for continuing Ocean Commission activities.
- Provided materials for many exhibits and special presentations at such locations as The Exploratorium in San Francisco, Harvard Museum of Natural History, American Museum of Natural History in New York, Museum of Science and New England Aquarium in Boston, the Carnegie Academy for Science Education in Washington, DC, the Mart Museum in Italy, and the Royal Society Christmas Lectures in London.
- Responded to dozens of educators around the country sharing information with their classrooms separate from the many web sites and other educational activities we support with images and information.
- Dozens of articles appeared in print in the U.S. and abroad, and dozens of radio and television programs and web sites featured the National Deep Submergence Facility.

Lastly Dan summarized the income from NDSF vehicle imagery/data and WHOI outreach activities. Imagery requests logged 358 NDSF-related requests in 2003, compared to 400 in 2002, 342 in 2001, 234 in 2000 and 214 in 1999. NDSF-related licensing revenue total \$27,838. Income was received from video from the National Deep Submergence Facility Archive or of the NDSF vehicles amounts to \$14,125.75. Of that total \$1,100 comes from the 1985/86 TITANIC expeditions, with the remainder (about \$13,000) from hydrothermal vent cruises (underwater footage and footage of NDSF vehicles). Income received in 2003 from still images related to the NDSF amounts to \$13,707.26 of this total hydrothermal vents accounted for \$7,679.32, TITANIC images from the 1985/86 cruises for \$2,793.00, and images of the vehicles themselves (on deck, being launched, etc.) for \$3,234.94 of the total. WHOI's contribution to managing licensing and distribution of imagery for UNOLS/NDSF amounts to ~0.5-.75 FTE in the Media Relations Dept. at WHOI.

Bob Embley asked a question regarding legacy data and if there is a template that users can use to submit their data so that it is included in the archives. Dan replied that WHOI would be interested in any NDSF data that can be included in the archives. Dan indicated that he would discuss this issue further internally.

WHOI NDSF Chief Scientist Position Progress - Dick Pittenger reported that Dan Fornari has agreed to stay through the summer. Bob Gagosian has asked Bob Detrick to chair an internal committee, "WHOI Access to the Sea Task Force." They will study marine operations at the institution, future facility demands, and future impacts on

requirements. They will also study how to better integrate the HOV and ROV, as well as, how to better integrate new technology. This effort will address the functionality of the NDSF chief scientist position. The committee report is scheduled to be complete by July. WHOI plans to conduct a National search for a chief scientist.

New ALVIN Design Study Status - Bob Brown reviewed the status of WHOI's New ALVIN concept design study. His slides are included as [Appendix IVe](#). The sphere concept design calls for five viewports. The two smaller viewports are for PIs, but these are bigger than what is currently on ALVIN. They have started to build the mock-up of the sphere. It has been decided that the new sub will be a new construction effort and will not use an existing sphere. The planned construction method will weld forged hemispheres into a sphere. Two US and one foreign forger have been located and quotes are pending. The vehicle concept design calls for variable ballast and trim using seawater. The energy source for the vehicle will be Li polymer. Future work includes preparation of a Request for Proposal, titanium materials properties investigations, and a finite element analysis of SEA CLIFF to establish creep design criteria. The cost estimate is about \$20M for construction of a new sub.

Agency and UNOLS Reports:

National Oceanic and Atmospheric Administration (NOAA) – Barbara Moore provided the NOAA report and discussed activities of both the NOAA Undersea Research Program (NURP) and Ocean Exploration (OE) programs. Her slides are included as [Appendix V](#). She began with an introduction to NURP. NURP consists of six regional NURP Centers and the National Institute of Undersea Science and Technology. It funds peer-reviewed, research targeted at the research needs of NOAA's resource managers and provides scientists with access to underwater technologies (HOVs, ROVs, AUVs, mixed gas diving and technical diving) including the NDSF. The OE program funds internal and external projects focused on gaining a broad perspective of the Nation's underwater resources by conducting experiments & expeditions to unknown or poorly known areas. They use outreach and education activities to provide information about the ocean.

NOAA, Navy, and NSF fund the NDSF through an MOU. Barbara presented a chart showing NOAA's annual ALVIN support from 1998 through 2004. In 2003 the funding level was \$1.97M and in 2004 it is expected to be \$1.59M. In 2003 there were three programs. The Mountains in the Sea program took place on July 11-19 and included PIs: S. France, L. Watling, P. Auster, I. Babb, and J. Moore. They conducted seven ALVIN Dives. The objectives were to map, explore, and characterize deep-sea coral habitats found in association with seamounts. The cruise track included three New England Seamounts. The second program, Windows to the Deep, took place on August 1-14 and included PIs C. Ruppel, C. Van Dover, and W.S. Holbrook. Eight ALVIN dives were conducted. The objectives were focused on mapping and exploring chemosynthetic communities found on the Blake Ridge and South Atlantic Bight. The discovered a new species of nautiliniellid worm that lives inside a deep-sea clam. The third cruise, Gulf of Mexico (GOM) Slope Habitats, took place on October 14-16 with

PIs R. Carney and C. Fisher. Five ALVIN dives were conducted. The objectives were to revisit two known cold seep sites in the GOM and to investigate some potential cold seep sites. They collected samples from mussel communities and tubeworm communities. The overall ecology of the deep gulf was determined to consist of a lot of mud and few organisms.

For 2004, there are two NOAA proposed projects with NDSF. There is 24-dive ALVIN program in the Gulf of Alaska scheduled for July 16 to August 14 to study seamounts. There is also a 50-day Jason2 program in the Aleutian Islands/W. Gulf of Alaska on July 5 to August 17. The objectives of this program include study of the origin and evolution of seamounts, deep-sea coral ecosystem distributions, deep submarine canyons and plutonism, and the biological effects of catastrophic disturbances.

The 2005 NOAA proposed projects with NDSF include two ALVIN programs, one at Galapagos to study vents and one off the east coast of the US to study deep-sea coral ecosystems.

National Science Foundation (NSF) – Jim Yoder provided the NSF report. This written report is provided below and as [Appendix VIa](#). His slides are included as [Appendix VIb](#).

Presentation to DESSC

Jim Yoder

25 January, 2004

Background:

This response was discussed within OCE and with NOAA and ONR representatives.

Important to distinguish between OCE science/facility operations accounts and those funds we are required to set aside within OCE budget to fund midsize infrastructure projects (loosely defined as projects costing on order of \$20-25M).

Comparatively small infrastructure projects such as Jason-2 and HROV are funded through science/facility accounts.

Report points out that NSF and other NDSF sponsors will need to increase funding for deep submergence operations at 10-15 percent over the next 3 years – Not likely

NRC Deep Submergence Report Recommendations:

1. NSF should establish a small pool of funds on the order of 10% of the annual NDSF budget that could be specifically used to support the use of non-NDSF vehicles for funded research when legitimate barriers to the use of NDSF assets can be demonstrated.

We accept this recommendation and with the following caveats:

- *Emphasis on the phrase “on the order of 10% of annual NDSF budget”*
- *Emphasis on the phrase “when legitimate barriers can be demonstrated”*
- *When operated on a UNOLS vessel.*
- *When OCE and other agency budgets are back in a growth mode, i.e. not this year and possibly not next year.*
- *For human-occupied vehicles, when inspection/safety requirements are developed (Dolly will discuss).*

2. NSF/OCE should construct an additional scientific ROV system dedicated to expeditionary research.

Not in the near future (next couple of years), because

- *We cannot yet afford to operate a second vehicle.*
- *Surge capability (up to 60 days per year) is available through ISIS barter, and this should handle short-term needs*
- *We want to determine what type of ROVs will be required for ORION, as there may be cost savings if NSF purchased and then operated more than 1 new vehicle.*
- *We are also evaluating options to enhance Jason II, along the lines recommended by the report.*

3. NSF/OCE should consider basing a second ROV system at a second location [probably on the West Coast].

Reasonable recommendation and we will consider this at the appropriate time.

4. NSF/OCE should construct a new, more capable HOV (with improved visibility, neutral buoyancy capability, increased payload, extended time at working depth, and other design features).

5. Thus, constructing an HOV capable of operating at significantly greater depths (6000+ meters) should only be undertaken if additional design studies demonstrate that this capability can be delivered for a relatively small increase in cost and risk.

Accept these recommendations with the following caveats

- *New HOV is a **replacement** for ALVIN, not an **addition** to the fleet.*
- *Owing to the risks discussed in the report (and to take advantage of funds OCE sets aside for midsize infrastructure projects) NSF may start sphere development before we make a decision on a new ROV.*

UNOLS Report - Tim Cowles, UNOLS Chair, provided the report and addressed the major areas of concern facing the academic fleet. He began by discussing the recent budget shortfalls and its impact of ship schedules. Demand for ship time has been going up over the years, yet there is only a finite amount of funds to support both science and ship operations. Unexpected budget decisions have resulted in 2004 scheduled programs

being deferred or modified. There will be increased challenges in sharing facilities. The ship scheduling committee, operators and agencies are working together to address the recent scheduling/budget issues.

Another major problem in the past year has been associated with marine mammal and acoustic permit issues. There have been increasing conflicts do to planned seismic work and acoustic permits. Programs on both the EWING and NEW HORIZON had to be postponed due to these issues. UNOLS is working with the agencies to address these problems.

In UNOLS committee news, Margo Edwards, is the new AICC Chair. One of their major activities will be to address the aging Polar Class issues. The USCG Polar Class icebreakers equipment has a life expectancy of 0 to 7 years. It will require \$200M/ship for a service life extension Program (SLEP). The USCG is addressing this and AICC is providing input on their plans. Due to the repeated Polar Class failures, HEALY has had to go to Antarctic during the Austral summer months and will likely continue to support these missions in the future.

SCOAR, UNOLS' new aircraft committee has met. The chair is John Bane. Tim Askew is the new chair of the RVOC.

Lastly Tim reported that there are important documents on the UNOLS website that need community input. These are the report on Ocean Observatory Facility Needs (Chave Report) and the Next Generation Wire performance specifications.

DESSC Activities, Plans and Issues:

Patty Fryer introduced the discussion on DESSC activities and plans. Her presentation is included as [Appendix IX](#) and is supplemented with slides presented by input from key individuals.

Long-Range and Expeditionary Planning Discussion – Annette DeSilva reviewed future facility requests for the NDSF. Requested days are plotted on world maps. The maps are included as [Appendix VII](#). There is already a lot of funded work for 2005. Work areas of interest include Off Hawaii, NEPR, Costa Rica, Galapagos, JdF, Vancouver Island, California Coast, Western Pacific, Lau Basin, Fiji, Pito Deep, and Easter Is. Funded science days include 70 ALVIN, 174 Jason2 and 45 DSL-120A. There are also funded and pending days for 2006 and beyond.

Core Needs - Patty continued by reporting on other core facility needs from programs such as RIDGE 2000 and Margins. The R2K Integrated Studies Sites will all require HOV and ROV/AUV. These sites include the Endeavor Segment, Juan de Fuca Ridge, 8 - 11° N, East Pacific Rise, and the Lau Basin Spreading Center. The Margins Science Plans that will all require HOV and ROV/AUV and include: 1.Source to Sink

(continental slope and abyssal distribution), 2. Subduction Factory (trench and deep forearc/backarc), and 3. SEIZE (trench and deep forearc).

Future Submergence Facility Needs – Patty reported that over the past year there have been a variety of Ocean Study Board reports addressing facility needs. Patty briefly summarized the findings and recommendations as they pertain to deep submergence science/facilities:

- Exploration of the Seas <<http://www.nap.edu/catalog/10844.html>> - Recognizes the need for establishing seafloor observatories
- Seafloor Observatory Network <<http://www.nap.edu/books/0309089905/html/>> - NSF will establish the OOI to facilitate creation of a global ocean observing system.
- Future Needs in Deep Submergence Science: <http://books.nap.edu/books/0309091144/html/53.html#page_top> - The need exists for greater access both to assets and for geographic diversity. Recommends a new deep-water ROV and an improved HOV. NSF's response is given under Jim Yoder's response during the NSF report.

Sea Floor Observatories Facility Needs - Dana Yoerger provided a summary of the draft report from the UNOLS Working Group on Ocean Observatory Facility needs. His viewgraphs are available as [Appendix VIII](#). The full report is available on the UNOLS website at <<http://www.unols.org/committees/fic/observatory/observrpt.pdf>>

The UNOLS Council formed the working group in early 2003. The group membership and full task statement is included in Appendix VIII. The group was asked to identify facility support needs for ocean observatories in terms of both ships and submergence vehicles. They studied:

- Deep ocean seafloor observatories
- Deck handling and mooring deployment/recovery needs
- ROV and AUV requirements
- Mapping requirements
- Coastal observatory requirements (including aircraft)
- Vessel characteristics, possible improvements, and recommendations for new vessel designs.

The group reviewed recommendations from recent studies to determine ship and vehicle time requirements. Installation, operation, and maintenance requirements have been extensively documented in DEOS global buoy feasibility and implementation reports, NEPTUNE feasibility and O&M reports, and NRC OOI Implementation reports. The working group agrees with these estimates and emphasizes that access to ROVs must become routine for observatory maintenance and science. The NRC OOI estimates are:

- Global buoy component: 20 ship-months/year (10 with ROV)
- Regional cabled observatory: 4-8 ship-months/year (with ROV)
- Coastal observatories: 6 ship-months/year

Improvements to UNOLS vessels are needed to support the observatories. These include:

- A heavy lift capability for cable servicing (20,000 lbs or more) – equipment and specially trained personnel.
- Large open deck space
- More sophisticated, redundant DP capability
- The ability to operate in higher sea states
- Routine access to ROVs for all observatories operations.
- Shrouded Z-drive nozzles to protect props from cables
- Slight increase in fuel capacity

UNOLS should also consider the acquisition or long-term lease of a heavy lift vessel. The submarine telecommunications marketplace collapsed in 2001 just as major cable ship deliveries took place. As a result, cable maintenance vessels can be purchased for approximately 10% of construction cost. This is a short-term opportunity that will not last.

The working group stresses the major safety issues regarding ocean observatory operations. These operations will require specially trained crew with expertise in heavy lifting work.

Routine access to ROVs will be required for all observatory operations. One additional vehicle will be required when the OOI is implemented (2-3 years from now). One more vehicle will be required when OOI facilities are fully operational (5-7 years from now). Commercial ROVs are not suitable for most science operations but may be usable for routine maintenance tasks.

Inventory of facilities, tools and sensors – Patty Fryer presented slides (Appendix IX) listing a variety of submergence vehicles. The list is sorted by HOVs, ROVs, and AUVs. The list will be placed on the UNOLS/DESSC web site. We would like to compile a similar inventory for deep submergence tools and sensors. We hope to create a site on the UNOLS DESSC web pages where users can go to find this compilation. For this effort we will need community input. It was suggested that a column be added to the vehicle chart showing how many days the vehicle supported science and how many days are available for collaboration.

Archeology Programs – Dave Mindell provided a brief report on ocean archeology activities. Plans are in the works to upgrade Bob Ballard's Hercules from 4,000 m to 6,000 m. He is establishing an Institute for Exploration at the University of Rhode Island. There may be a major titanic expedition planned for next year.

Public outreach and education activities: Patty reviewed a list of outreach and education programs that are associated with deep submergence activities. She invited individuals who participated in these programs to provide additional details:

- Dive and Discover: <<http://science.whoi.edu/DiveDiscover/>> - Cruises have taken place this year and can be visited on the web.
- REVEL: <<http://www.ocean.washington.edu/outreach/revel/>> – Veronique Robigou provided a status report on the REVEL Project. The program is for

research and education of volcanoes, exploration and life. It is supported in part by the National Science Foundation and facilitated by the University of Washington, School of Oceanography. REVEL is now a National program. Eight new teachers participated in 2003 (2 from the Midwest). There were two programs on THOMPSON in the past year that used Jason2 and ROPOS. There is now a REVEL collaboration with R2K E&O. A collaborative workshop was held and included 8 REVEL teachers, 6 R2K-SEAS teachers, and 7 past REVELers.

The 2004 REVEL program will focus on Ocean Observatory science and concepts (technology, real-time data analysis, and data visualization) to enrich inquiry-based teaching. REVEL will continue its partnership with R2K E&O. REVEL applications are now on-line.

- Mud Volcanoes from the Mantle:
<<http://www.soest.hawaii.edu/expeditions/mariana>> - Patty reported that this was an education/outreach program carried out during her Jason2 cruise. It worked well.
- Extreme <<http://www.extremescience.com/>>
- NOAA Explorations <<http://oceanexplorer.noaa.gov/>>
- IMAX movie on ALVIN explorations of Ridges released in 2003
- NeMO
- MATE: ROV competition –<<http://www.marinetech.org/>> - The MATE Office provided a written report prior to the meeting. It is included as [*Appendix XII*](#).
- RIDGE2000 Lecture Series – The series is underway.

Other Facility Operator Reports:

HBOI – Shirley Pomponi reported on Johnson Sea Link I and II operations in 2003. Her slides are included in [*Appendix XIIIa*](#). The vehicles made 198 dives in 2003. A lot of time was spent in Gulf of Mexico operations (83 dives). Other dive areas included the South Atlantic Bight, off Florida, Gulf of Maine and the Bahamas. The vehicles supported a lots of biology work (73 divers). There was no NSF funded submersible time. HBOI, NURP and OE supported sub dives. NSF provided funds for ship operations.

In 2004, 125 days are currently scheduled. Sub time is being funded by NOAA/OE, NURP and HBOI. HBOI was recently received Center of Excellence funding from the state of Florida. Work areas in 2004 include the Gulf of Maine, South Atlantic Bight, Florida and the Gulf of Mexico.

MBARI – Mark Chaffey reported that it has been a busy year for TIBURON with 162 at-sea days. MBARI operated several scientific research expeditions outside of Monterey Bay in 2003. Operations included work in the Sea of Cortez. In 2004, 136 TIBURON project days are planned. The schedule includes NURP funded days. VENTANA had

175 at-sea days in 2003 and 154 days are planned in 2004. MBARI is operating an AUV. In 2004 the AUV tender, ZEPHYR, has 141 at-sea days planned. MBARI ship schedules are posted at: <http://www.mbari.org/dmo/schedules/ship_schedules.htm>.

A major project at MBARI is the Monterey Accelerated Research System (MARS) observatory project. MARS is a cabled observatory system with benthic instrument nodes, AUVs, and various benthic and moored instrumentation. MARS will enable the community to test arrays of sensors and data handling for future observatory needs. It is scheduled to be installed in 2005. The permitting process has begun and is necessary since it will be installed in the sanctuary. The observatory will have a major ROV operation.

MPL – Fred Spiess provided slides on the status of the Advanced Tether Vehicle (ATV). His viewgraphs are included as [Appendix XIII d](#). ATV was a US Navy asset, designed and built by NOSC. It has a depth rating of 6100 m with a 200+ lb nominal payload. ATV was transferred from the Navy to SIO in 2000. With ONR support, SIO reactivated and evaluated the ATV. Sea trials were conducted in May 2003. Operations were in an area west of San Diego. Three dives conducted over two days were carried out at a maximum depth of 1100m. ATV was used to collect 35 kg of rock samples. A lost acoustic transponder was recovered. They were able to stream real-time video to the Internet, via RoadNet.

HURL – Patty summarized 2003 HURL operations for PISCES IV and V (see [Appendix XIII e](#)). Operations were carried out at the NW Hawaiian islands, on flanks of Nihoa, Maro, Pearl and Hermes Reefs, Midway, Kure Atoll, NE Oahu, LOIHI and the west coast of the Bg Island. Simultaneous two-sub dives (P-IV & -V) were conducted in the marine sanctuaries sites.

ROPOS – Patty also summarized 2004 ROPOS planned operations (see [Appendix XIII f](#)). The vehicle has an ambitious 2004 schedule. Operations are planned off Guam, the West Coast of North America, and Strait of Georgia. Details of the schedule can be found at <<http://www.ropos.com/calendar/itin.htm>>.

JAMSTEC – Patty reported that the JAMSTEC vehicle, Kaiko, the 11000 m ROV was lost at sea in May 2003). Plans are underway to replace the ROV. Additional details about JAMSTEC operations are available at <www.jamstec.go.jp/jamstec-e/index-e.html>.

Southampton Oceanographic Center – Chris German reported on their new ROV, ISIS. It is a Jason2 clone. The vehicle went through sea trials in March 2003. Chris highlighted the differences between the Jason2 and ISIS. To start, Jason2 is blue and ISIS is red. Science tools include a coring system, suction samplers, fluid/gas samplers, gas tight syringes, a water sampler, butterfly nets, and a basket recovery for rock sample. The vehicle was acquired with a Dynacon launch system. The system only requires one person for launch and recovery. Chris reported that they are a bit behind schedule in building a support ship with dynamic positioning. The ISIS system is completely

flyaway. Chris ended his report with a description of planned operations for 2004. His slides are included as [Appendix XIIIc](#).

DESSC Membership – Patty wrapped up the regular meeting by reporting that she will be rotating off DESSC this year. We will be recruiting a new committee Chair. An advertisement for a replacement will be placed soon. Three other DESSC members will also rotate off and nominations for new committee members will be entertained at the spring DESSC meeting. Interested individuals should contact Annette DeSilva at office@unols.org with a one-page CV and one-page statement of interest.

National Deep Submergence Facility Vehicles – Science and Operations Training Session

Immediately following the regular DESSC meeting a NDSF training session was held. This training session was the first of its kind and was offered to provide detailed information on both the capabilities of the National Deep Submergence Facility vehicles (primarily Alvin, Jason2 ROV, and the DSL-120A sidescan sonar) and sensor suites, and their at-sea operations procedures. The session also provided information on the effective operating procedures for these systems. The latest upgrades to the facilities were presented as well as planned improvements. Handouts with key information, contacts and URL links were provided.

The training session outline included:

- Overview/Purpose of the Workshop - Dan Fornari
- Pre-Cruise Planning of Funded Proposals- Jon Alberts
- Particular Requirements for Alvin Equipment In-Ball Testing - Rick Chandler
- Vehicle Systems/Sensors Presentations
- DVL and LBL Navigation- 20 min – Dan Fornari
- ROV Jason2 - Matt Heinz and Tim Shank
- Alvin – Dudley Foster and Debbie Kelley
- DSL-120A- 30 min – Andy Bowen and Dan Fornari
- Synergistic Vehicle Systems – AUVs and Towed Vehicles - Dana Yoerger

NDSF Training Session Presentations: (Presentations not linked to the list below can be obtained by contacting WHOI).

- [Overview/Purpose of Workshop](#)
- [Pre-Cruise Planning](#)
- Particular Requirements for ALVIN Equipment In-Ball Testing
<http://www.whoi.edu/marops/vehicles/alvin/cruise_planning.html#gas>
- Vehicle Systems/Sensors Presentations:
 - [DVL and LBL Navigation](#) (2.4 MB)
 - [ROV Jason II](#) (17.1 MB)
 - ALVIN <<http://www.whoi.edu/marops/vehicles/alvin/index.html>>
 - [DSL-120A](#)
- Synergistic Vehicle Systems

- [HROV](#)

The meeting adjourned at 1730 hours.

We thank all individuals who attended the DESSC meeting and NDSF Training Session. Your feedback regarding the training session is requested. This information will be useful in planning for future training opportunities. Please take a few minutes and provide your comments to the survey at the URL:
<http://www.unols.org/meetings/2004/200401des/survey.asp>